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CONCORRÊNCIA 001/2000



PASTA - 18



RQS nº 03/2005 - CN -
CPMI - CORREIOS
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RQS nº 03/2005 - CN -	
CPMI - CORREIOS	
Fls. Nº	002
Doc:	03653

MP ECT001/2000

Brasília, 09 de Maio de 2000.

À

ECT – EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS

Comissão Especial de Licitação da Administração Central – CEL/AC

Setor Bancário Norte Quadra 01 Bloco "A"

Brasília - DF

A/c.: Sr. Presidente da Comissão Especial de Licitação

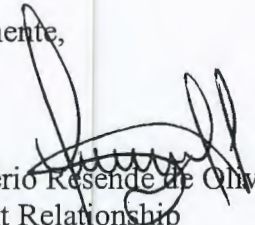
Ref.: Concorrência Nº 001/2000 - CPLAC

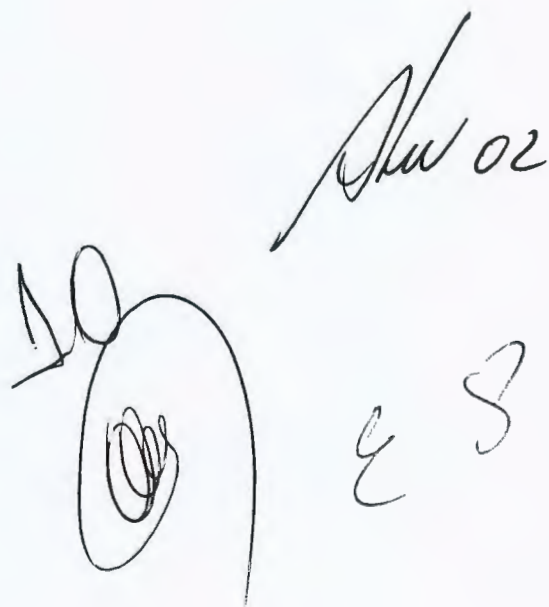


Prezado Senhor,

Em atenção ao Edital em epígrafe, apresentamos em anexo, nossa Proposta Técnica para o fornecimento de servidores de rede, desenvolvimento e aplicação.

Atenciosamente,


Marco Valério Resende de Oliveira
Government Relationship
Enterprise Account Organization
CI 726.006 SSP/DF



RQS nº 03/2005 - CN
CPMI - CORREIOS
Fls. Nº 003
03653
Doc: _____

CONCORRÊNCIA Nº 001/2000CPL/AC

PROPOSTA TÉCNICA

I - EDITAL DE CONCORRÊNCIA 001/2000

Razão Social: Hewlett Packard Brasil S.A .

C.G.C.: 89.411.771/0001-85

Endereço: Alameda Rio Negro, 750 – Alphaville

Barueri - SP

CEP 06454-000

Endereço Eletrônico : www.hp.com.br



II PRAZO E CONDIÇÕES DE GARANTIA

Os produtos ofertados têm prazo de garantia de 36 (trinta e seis) meses “on-site”, com reposição de peças defeituosas, contados a partir da data de emissão do último termo de aceitação.

Assistência Técnica Prestada pela Rede Credenciada - CAS - Centro Autorizado de Serviços , empresas credenciadas pela Hewlett Packard Brasil S.A., com infra-estrutura completa, composta por técnicos treinados na fábrica da HP altamente qualificados, bem como estoque de peças de reposição.

A manutenção corretiva ocorrerá mediante chamado técnico ao CAS através do número 0800 13-0999, com identificação do equipamento defeituoso, bem como descrição do tipo do problema ocorrido, para o qual se procederá a intervenção de técnico especializado, em até 2 horas, que após diagnosticado o conjunto defeituoso, providenciará a devida substituição dos respectivos módulos ou placas. Caso o reparo não possa ser efetuado no período de 24 horas a HP providenciará outro equipamento para substituição.

A relação dos Centros Autorizados de Serviços encontra-se no final desta proposta técnica.

III PRAZO DE ENTREGA E QUANTIDADES

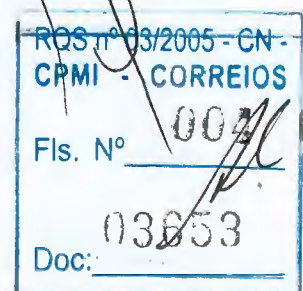
De acordo com a pauta de distribuição nos termos do anexo III do edital em epígrafe e conforme relação no final da proposta técnica.

IV LOCAL DE ENTREGA

A entrega ocorrerá nos almoxarifados da ECT, obedecendo a relação de endereços e quantidades informados nos anexos III e IV do Edital em epígrafe.

IV ENDEREÇO ELETRÔNICO DA HEWLETT PACKARD CO

www.hp.com



I.1 - SERVIDOR TIPO INT1

SERVIDOR HEWLETT PACKARD, MODELO NETSERVER LC2000 PIII/600.

Fabricante : Hewlett Packard Co.

Distribuidor nacional : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 - Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Dois Processadores Intel Pentium III, com clock de 600 MHz, cada.
Barramento do sistema de 133 MHz.

Memória Cache 256 Kb on-die ECC L2 por processador
512 MB ECC SDRAM, *expansível até 4 GB, instalada "on board"*.

Cinco slots PCI livres, sendo 3 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 1/2" com capacidade de 1,44 MB.

Controladora Integrada padrão Ultra2 SCSI com 2 canais.

Três unidades de discos rígidos internos, hot-swappable, com capacidade de 9.1GB cada, padrão Ultra2 SCSI.

Gabinete Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable. Ventiladores redundantes e Hot-Swap.

Teclado Alfanumérico, padrão Mini-Din, com 101 teclas.

Placa de Video, integrada à placa mãe (on-board), padrão VGA, com 2 MB.

Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

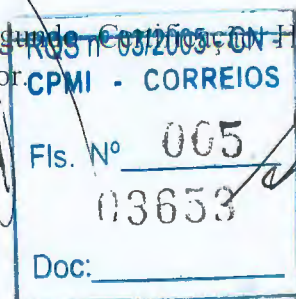
Uma unidade interna, de CD-ROM tecnologia IDE, com velocidade de 32X, com driver de instalação para Windows NT Server 4.0.

Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3, saída 10Base-T / 100Base-TX, velocidade dupla 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade de gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reset, alertas via pager se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Software de gerenciamento HP TopTools for Servers e HP Netserver Navigator para instalação do servidor, com as características mínimas de monitoramento do sistema, administração e resolução remota de problemas.

O equipamento cotado é compatível com produtos Microsoft segundo a Microsoft Hardware Compatibility List, na categoria System/Server Multiprocessor.



O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em **anexo**

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

2. DESEMPENHO

Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.	ATENDE	02

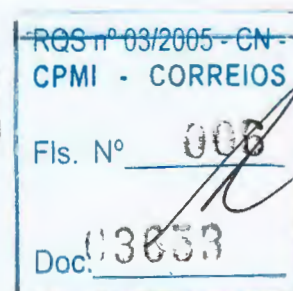
Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual ou superior a 1 Gbyte	-----	02

Capacidade do Disco Rígido		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento</i>	Resposta	Pontos
Acima de 18 GBytes, cada.	-----	02
Entre 10 e 17 GBytes, cada.	-----	01

Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação redundante, hotswappable.	ATENDE	02
Fonte de alimentação redundante.		01

3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01





3. SUPORTE DE SERVIÇOS

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral - 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :

Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.2. - SERVIDOR DE REDE TIPO INT2

SERVIDOR HEWLETT PACKARD, MODELO NETSERVER LC2000 PIII/600.

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 - Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Dois Processadores Intel Pentium III, com clock de 600 MHz, cada.
Barramento do sistema de 133 MHz.

Memória Cache 256 Kb on-die ECC L2 por processador
512 MB ECC SDRAM, *expansível até 4 GB, instalada "on board".*
Três slots PCI livres, sendo 1 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 1/2" com capacidade de 1,44 MB.

Placa controladora NETRAID - 1Si, com um canal, Tecnologia Ultra2 SCSI e suporta os níveis de RAID 0,1,3,5,10,30 e 50.

Controladora Integrada padrão Ultra2 SCSI com 2 canais.

Três unidades de disco rígido internas, hot-swappable, com capacidade de 18.2GB cada, padrão Ultra2 SCSI.

Uma unidade externa de fita, padrão DLT para utilização de mídias com capacidade de 40 GB, sem compressão e 80 GB com compressão e taxa de transferência de 6 Mb/seg.

Uma Placa controladora padrão Ultra/Wide SCSI para conexão da Fita DLT;

Gabinete Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable.

Fontes e Ventiladores redundantes e Hot-Swap.

Teclado Alfanumérico, padrão Mini-Din, com 101 tecla.

Placa de Vídeo, integrada à placa mãe (on-board), padrão VGA, com 2 MB.

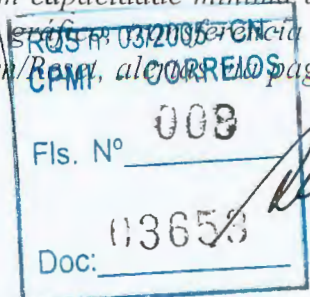
Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.

Uma unidade de CD-ROM interna, tecnologia IDE, com velocidade de 32X, com driver de instalação para Windows NT Server 4.0.

Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saída 10Base-T / 100Base-TX, velocidade dupla 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade mínima de gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reboot, alarme e pager



se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Software de gerenciamento HP TopTools for Servers e HP Netserver Navigator para instalação do servidor, com as características mínimas de monitoramento do sistema, administração e resolução remota de problemas.

O equipamento cotado é compatível com produtos Microsoft segundo Certificação HCL - Hardware Compatibility List, na categoria System/Server Multiprocessor.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em **anexo**

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

2. DESEMPENHO

Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.	ATENDE	02

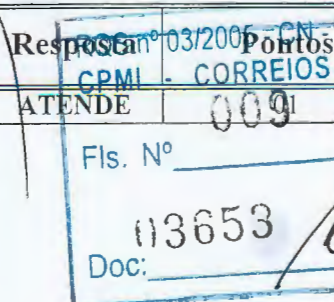
Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 1 Gbyte	-----	02

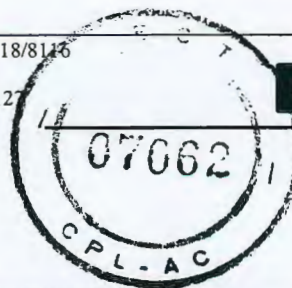
Capacidade do Disco Rígido		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento</i>	Resposta	Pontos
Acima de 30 GBytes, cada.	-----	02
Entre 20 e 28 GBytes, cada.	-----	01

Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação redundante, hotswappable.	ATENDE	02
Fonte de alimentação redundante.		01

3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	009





4. SUPORTE DE SERVIÇOS

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte

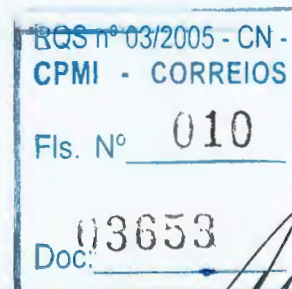
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado.

Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01





I.3. - SERVIDOR DE APLICAÇÃO TIPO INT3

SERVIDOR HEWLETT PACKARD ,MODELO NETSERVER LH4 PIII XEON 550MHZ

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 - Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Quatro Processadores Intel Pentium III Xeon, com clock de 550 MHz, cada.

Barramento do sistema de 100 MHz.

Memória Cache 1 MB ECC L2 por processador.

Memória RAM 2 GB ECC EDO, expansível a 4 GB, instalada "on board".

Seis slots PCI livres, após montada configuração proposta, sendo 4 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 1/2" com capacidade de 1,44 MB.

Integrada Controladora padrão Ultra2 SCSI com 2 canais.

Dois discos internos com capacidade de 9.1GB cada, espelhado, com tempo médio de acesso menor a 9 ms e rotação de 10.000RPM.

Controladora NETRAID Integrada, com dois canais, padrão I2O ULTRA2 SCSI que suporta os seguintes níveis de RAID: 0,1,3,5,10,30 e 50

Cinco discos rígidos Hot-Swap, com capacidade de 18.2GB cada, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor a 9 ms, com "HOT SPARE".

Uma unidade de fita padrão DAT 24i, para utilização de mídias com capacidade de 12 Gb, sem compressão e 24GB com compressão.

Uma Placa controladora padrão Ultra/Wide SCSI para conexão da Fita DAT;

Gabinete Torre, com capacidade interna para 12 (doze) unidades de disco rígido "Hot-swappable".

Fontes e ventiladores redundantes e Hot-Swap;

Teclado Alfanumérico, padrão Mini-Din, com 101 teclas.

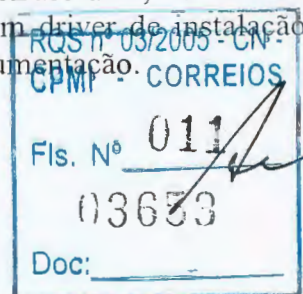
Placa de Vídeo integrada à placa mãe (on-board), padrão VGA, com no mínimo 1 MB.

Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.

Uma unidade de CD-ROM interna, interface EIDE, com velocidade 32X, com driver de instalação para Windows NT Server 4.0.

Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saída 10Base-T / 100Base-TX, velocidade dupla 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.



Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade mínima de: gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reset, alertas via pager se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Softwares de gerenciamento HP TopTools for Servers, HP ManageX/SE e HP Netserver Navigator para instalação do servidor, monitoramento do sistema, administração, resolução remota de problemas e gerenciamento de aplicações.

O equipamento cotado é compatível com produtos Microsoft segundo Certificação HCL – Hardware Compatibility List, na categoria System/Server Multiprocessor.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em **anexo**

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

2. DESEMPENHO

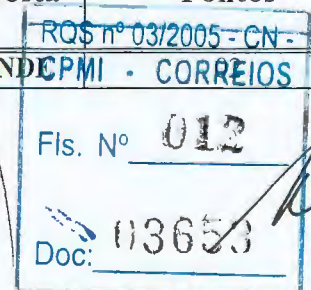
Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.		03
Quatro processadores Intel Pentium III Xeon, clock igual a 550 MHz.	ATENDE	02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 4 Gbytes	-----	02

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	





3. QUALIDADE



Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

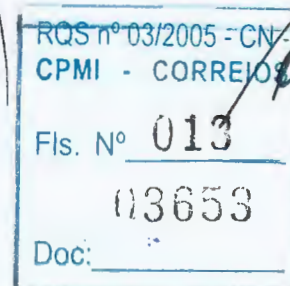
4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :</i>		
Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia		
<i>Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.4. – SERVIDOR DE APLICAÇÃO TIPO INT4

SERVIDOR HEWLETT PACKARD MODELO NETSERVER, LH4 PIII XEON 550MHZ

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Quatro Processadores Intel Pentium III Xeon, com clock de 550 MHz, cada.

Barramento do sistema de 100 MHz.

Memória Cache 1 MB ECC L2 por processador.

Memória RAM 4 GB ECC EDO, instalada "on board".

Seis slots PCI livres, após montada configuração proposta, sendo 4 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 1/2" com capacidade de 1,44 MB.

Controladora integrada, padrão Ultra2 SCSI com 2 canais.

Dois discos rígidos internos com capacidade de 9.1GB cada, espelhado, com tempo médio de acesso menor que 9 ms e rotação de 10.000RPM.

Controladora NETRAID integrada com dois canais, padrão I2O ULTRA2 SCSI que suporta os seguintes níveis de RAID: 0,1,3,5,10,30 e 50.

Seis discos rígidos Hot-Swap, com capacidade de 18.2GB cada, perfazendo um total mínimo de 72 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor a 9 ms, com "HOT SPARE".

Uma unidade de fita padrão DAT 24i, para utilização de mídias com capacidade de 12 Gbytes, sem compressão e 24GB com compressão.

Uma Placa controladora padrão Ultra/Wide SCSI para conexão da Fita DAT;

Gabinete Torre, com capacidade interna para 12 (doze) unidades de disco rígido "Hot-swappable".

Fontes e ventiladores redundantes e Hot-Swap;

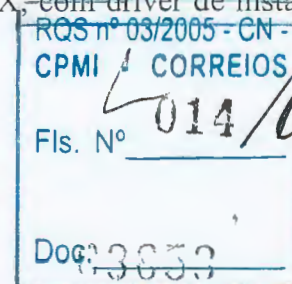
Teclado Alfanumérico, padrão Mini-Din, com 101 teclas.

Placa de Vídeo integrada à placa mãe (on-board), padrão VGA, com no mínimo 1 MB.

Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

Uma unidade de CD-ROM interna, interface EIDE, com velocidade 32X, com driver de instalação para Windows NT Server 4.0.



Uma placa de rede padrão Ethernet de 32 bits – IEEE 802.3, saída 10Base-T / 100Base-TX , velocidade dupla 10/100 Mbps autosenso, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade mínima de: gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reset, alertas via pager se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Softwares de gerenciamento HP TopTools for Servers, HP ManageX/SE e HP Netserver Navigator para instalação do servidor, monitoramento do sistema, administração, resolução remota de problemas e gerenciamento de aplicações.

O equipamento cotado é compatível com produtos Microsoft segundo Certificação HCL – Hardware Compatibility List, na categoria System/Server Multiprocessor.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em anexo

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

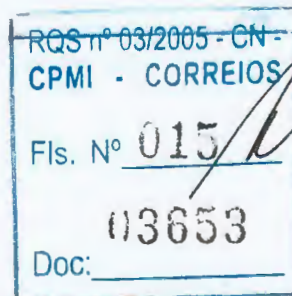
2. DESEMPENHO

Processador		
<i>Assinalar com a palavra "Atende" no campo " Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.		03
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 550 MHz, cada.	ATENDE	02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo " Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Superior a 4 Gbytes	-----	02

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo " Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo " Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02



**Fonte de Alimentação Hot-swappable
(que suporte a configuração máxima do equipamento)**

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02

3. QUALIDADE

Certificação

Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :

Possui Certificação atualizada conforme Segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

4. SUPORTE DE SERVIÇOS

Prazo de Atendimento

*Assinalar com a palavra "Atende" a opção correspondente ao
prazo máximo de atendimento ao equipamento cotado :*

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte

*Assinalar com a palavra "Atende" a opção correspondente ao
horário de atendimento às chamadas referentes ao equipamento cotado :*

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte

*Assinalar com a palavra "Atende" a opção correspondente às
facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:*

Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

*Assinalar com a palavra "Atende" a opção correspondente a
duração da garantia dada pelo fabricante para o equipamento cotado.*

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		
4 (quatro) anos		
3 (três) anos	ATENDE	01

RQS nº 03/2005 - CN -
CPM - CORREIOS
Fls. Nº 016
03653
Doc: _____

I.5. – SERVIDOR DE APLICAÇÃO TIPO INT5

SERVIDOR HEWLETT PACKARD , MODELO NETSERVER LH4 PIII XEON 550MHZ

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Dois Processadores Intel Pentium III Xeon, com clock de 550 MHz, cada.

Barramento do sistema de 100 MHz.

Memória Cache 512 KB ECC L2 por processador.

Memória RAM 1 GB ECC EDO, expansível a 4 GB, instalada "on board".

Seis slots PCI livres, após montada configuração proposta ,sendo 4 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 ½" com capacidade de 1,44 MB.

Controladora Integrada padrão Ultra2 SCSI, com 2 canais;

Dois discos rígidos internos com capacidade de 9.1GB cada, espelhado, com tempo médio de acesso menor a 9 ms e rotação de 10.000RPM.

Controladora NETRAID Integrada ,com dois canais I2O, padrão ULTRA2 SCSI que suporta os seguintes níveis de RAID: 0,1,3,5,10,30 e 50

Cinco discos rígidos Hot-Swap , com capacidade de 18.2GB cada, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor a 9 ms, com "HOT SPARE".

Uma unidade de fita padrão DAT 24i , para utilização de mídias com capacidade de 12 GB, sem compressão e 24GB com compressão.

Uma Placa controladora padrão Ultra/Wide SCSI para conexão da Fita DAT;

Gabinete Torre, com capacidade interna para 12 (doze) unidades de disco rígido "Hot-swappable".

3 Fontes e 8 ventiladores redundantes e Hot-Swap;

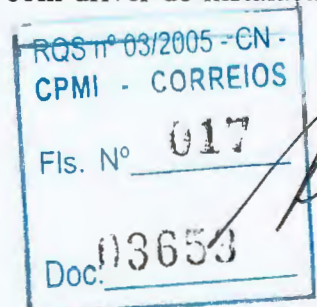
Teclado Alfanumérico, padrão Mini-Din, com 101 teclas.

Placa de Vídeo integrada à placa mãe (on-board), padrão VGA, com no mínimo 1 MB.

Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de, 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.

Uma unidade de CD-ROM interna, interface EIDE, com velocidade 32X, com driver de instalação para Windows NT Server 4.0.



Uma placa de rede padrão Ethernet de 32 bits – IEEE 802.3, saída 10Base-T / 100Base-TX, velocidade dupla 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade mínima de: gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reset, alertas via pager se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Softwares de gerenciamento HP TopTools for Servers, HP ManageX/SE e HP Netserver Navigator para instalação do servidor, monitoramento do sistema, administração, resolução remota de problemas e gerenciamento de aplicações.

O equipamento cotado é compatível com produtos Microsoft segundo Certificação HCL – Hardware Compatibility List, na categoria System/Server Multiprocessor.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em anexo

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

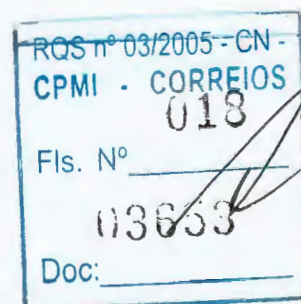
2. DESEMPENHO

Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.		03
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 550 MHz, cada.	ATENDE	02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 4 GBytes	-----	02
Igual a 2 GBytes	-----	01

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02



Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	

3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
<i>Possui Certificação atualizada conforme segue :</i>	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
<i>Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :</i>	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :</i>		
<i>Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :</i>	Resposta	Pontos
Horário integral - 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01

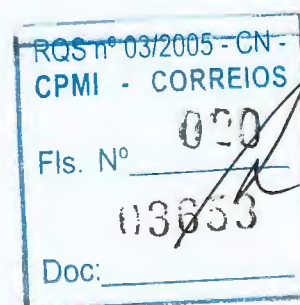
Central de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :</i>		
<i>Está disponível, para o atendimento aos chamados :</i>	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01



Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.6. – SERVIDOR DE REDE TIPO INT6

SERVIDOR HEWLETT PACKARD , MODELO NETSERVER LC2000 PIII/600.

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Dois Processadores Intel Pentium III, com clock de 600 MHz, cada.

Barramento do sistema de 133 MHz.

Memória Cache 256 Kb on-die ECC L2 por processador

512 MB ECC SDRAM, *expansível até 4 GB, instalada "on board"*.

Cinco slots PCI livres, sendo 3 de 32 Bits e 2 de 64 Bits.

Duas interfaces seriais padrão RS-232C.

Uma interface paralela padrão Centronics.

Fonte de alimentação interna bivolt, redundante e Hot-Swap, compatível com configuração máxima do equipamento.

Uma unidade de 3 1/2" com capacidade de 1,44 MB.

Controladora integrada padrão Ultra2 SCSI, com 2 canais.

Dois discos rígidos internos hot-swappable, com capacidade de 9.1GB cada, padrão Ultra2 SCSI, espelhados com tempo médio de acesso menor a 9ms e rotação mínima de 10.000RPM.

Placa controladora NETRAID-3Si, com três canais, padrão ULTRA2 SCSI que suporta os seguintes níveis de RAID: 0,1,3,5,10,30 e 50.

Cinco discos rígidos Hot-Swap , com capacidade de 18.2Gbytes cada, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor a 9 ms, com "HOT SPAIR".

Uma unidade de fita padrão DAT 24i , para utilização de mídias com capacidade de 12 GB, sem compressão e 24GB com compressão.

Gabinete Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable.

Fontes e Ventiladores redundantes e Hot-Swap.

Teclado Alfanumérico, padrão Mini-Din, com 101 teclas .

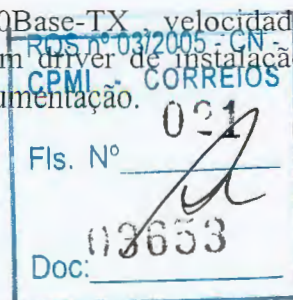
Placa de Video, integrada à placa mãe (on-board), padrão VGA, com 2 MBytes.

Monitor de Vídeo SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm, resolução de 1024 x 768, aderente às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-264 VAC - full-range.

Mouse padrão Mini-Din, com duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

Uma unidade de CD-ROM interna, tecnologia IDE, com velocidade de 32X, com driver de instalação para Windows NT Server 4.0.

Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saída 10Base-T / 100Base-TX, velocidade dupla 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.



Placa de acesso remoto integrada ao servidor HP Remote Assistant, com capacidade mínima de: gerenciamento remoto incluindo redirecionamento da console em modo gráfico, transferência de arquivos, monitoração de Voltagem/Temperatura, Power Up/Power Down/Reset, alertas via pager se necessário, monitoração de performance, testes de diagnósticos, configuração do hardware, checagem de log de erros de hardware, independente das conexões de rede;

Software de gerenciamento HP TopTools for Servers e HP Netserver Navigator para instalação do servidor, com as características mínimas de monitoramento do sistema, administração e resolução remota de problemas.

O equipamento cotado é compatível com produtos Microsoft segundo Certificação HCL – Hardware Compatibility List, na categoria System/Server Multiprocessor.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em anexo

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

3. DESEMPENHO (DE)

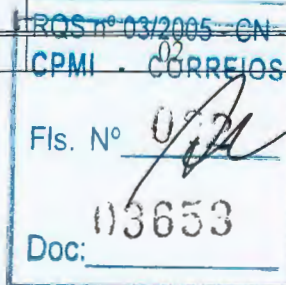
Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 600 MHz, cada.	ATENDE	03
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.		02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 1 GByte	-----	02

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02



3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

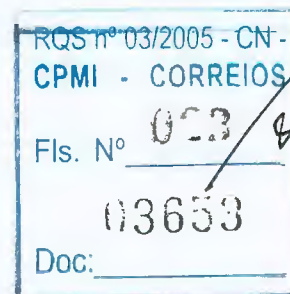
4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas		01

Horário de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :</i>		
Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia		
<i>Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01





I.7. – SERVIDOR DE DESENVOLVIMENTO TIPO INT7

NÃO ESTAMOS COTANDO.

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RQS nº 03/2005 - CN -	
CPMI - CORREIOS	
Fls. Nº	024
Doc:	03653

I.8. – SERVIDOR DE REDE TIPO RISC1

SERVIDOR HEWLETT PACKARD , MODELO HP VISUALIZE J7000

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Quatro processadores PA 8500 RISC, de 64 bits, com 440 Mhz, cada

Memória Cache interna de 1,5 MBytes por processador.

Memória RAM ECC com 4 GB expansível até 8 GB "on board", tempo de acesso de 60 ns.

SPECint_rate95 igual a 1158

SPECfp_rate95 igual 1488.

Suporte à Arquitetura SMP – Symetric Multi Processing

Cinco "slots" de 32 bits livres após montada configuração proposta.

Fonte de alimentação interna bivolt, compatível com configuração máxima do equipamento.

Controladora de disco rígido interno padrão *ULTRA II-SCSI*

Dois discos rígidos de 18 (dezoito) Gb cada, totalizando 36 (trinta e seis) GB formatados, expansível à 72 GB, com possibilidade de "Hot pluggable", com rotação de 10.000rpm GB, tempo médio de acesso de 5,2 ms e taxa de transferência de 80 MBytes/seg.

Monitor de vídeo policromático, de 19", dot-pitch 0.24 mm., aderente às normas MPR III, EPA Energy Star, TCO99, Blue Angel, seleção automática de tensão entre 90-264 VAC - full-range, com resolução de 1280 x 1024.

Teclado alfanumérico com 101 teclas.

Mouse de 02 teclas e resolução de 300 dpi, mouse-pad e driver de instalação.

Uma unidade de disco flexível de 3 1/2" com capacidade de 1,44 MB.

Duas interfaces seriais padrão RS-232C.

Uma unidade de CD-ROM com velocidade de 32X ATAPI SCSI-II instalada e reconhecida pelo HP-UX.

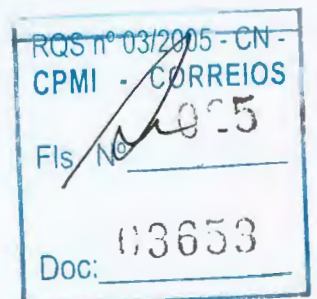
Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 40 GB, sem compressão, e com taxa de transferência sustentada de 20 MB/seg.

Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de 10/100 Mbps autosenso, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.

Sistema Operacional HP-UX, 64 bits, instalado e configurado para Rede Local e Corporativa da ECT, com 8 acessos simultâneos, capaz de suportar a Plataforma de Gerenciamento HP Open View – NNM (Network Node Management) na versão 5.0 ou superior, e os módulos HP Open View, entregues em mídia CD-ROM com toda documentação e licenças.

O produto é imune a quaisquer problemas decorrentes do "Bug do milênio", conforme documentação em anexo

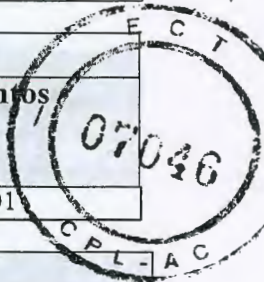
Acompanha Cabos, acessórios, manuais e documentação necessários ao pleno funcionamento do equipamento.



2. DESEMPENHO

Performance		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento</i>	Resposta	Pontos
SPECint_rate95 igual ou superior a 240.	ATENDE	01
SPECfp_rate95 igual ou superior a 250.	ATENDE	01

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual ou superior a 1 Gbyte	ATENDE	01



Capacidade do Disco Rígido		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento</i>	Resposta	Pontos
Igual ou superior a 30 Gbytes.	ATENDE	01

Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação redundante, hotswappable.	-----	02
Fonte de alimentação redundante.	-----	01

3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 02 horas	ATENDE	02

RQS nº 03/2005 - CN -
CPMI - CORREIOS

Fls. Nº 16

Doc. 03653

Horário de Atendimento e Suporte

*Assinalar com a palavra "Atende" a opção correspondente ao
horário de atendimento às chamadas referentes ao equipamento cotado :*

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral - 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte

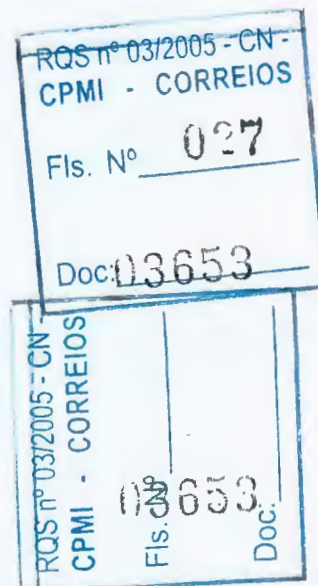
*Assinalar com a palavra "Atende" a opção correspondente às
facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :*

Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

*Assinalar com a palavra "Atende" a opção correspondente a
duração da garantia dada pelo fabricante para o equipamento cotado.*

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.9. – SERVIDOR DE REDE TIPO RISC2

SERVIDOR HEWLETT PACKARD MODELO VISUALIZE B2000

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Um processador PA 8500 RISC, de 64 bits, com 400 Mhz .

Memória Cache *interna* de 1,5 MByte por processador

Memória RAM ECC com 1 GB expansível até 2 GB, "on board", tempo de acesso de 60 ns.

SPECint_rate95 igual 286, SPECint95 igual 31,8

SPECfp_rate95 igual 472, SPECfp igual 52,4

Três "slots" de 32 bits livres após montada configuração proposta

Fonte de alimentação interna bivolt, compatível com configuração máxima do equipamento.

Controladora de disco rígido Interno Padrão ULTRA-II SCSI

Dois discos rígidos de 9 (nove) GB cada totalizando 18 (dezoito) GB formatados, *tempo médio de acesso de 5,2 ms* e taxa de transferência *de 80 MBytes/seg.*

Monitor de vídeo : policromático de 19", *dot-pitch de 0.24 mm.*, atendendo às normas *MPR III*, *EPA Energy Star*, *TCO99*, *Blue Angel*,. seleção automática de tensão entre 90-264 VAC - full-range.

Com resolução mínima de 1280 x 1024.

Teclado Alfanumérico com 101 teclas.

Mouse de 02 teclas com resolução de 300 dpi, mouse-pad e driver de instalação.

Duas interfaces seriais padrão RS-232C.

Uma unidade de CD-ROM com velocidade de 48X, ATAPI SCSI-II, instalada e reconhecida pelo HP-UX.

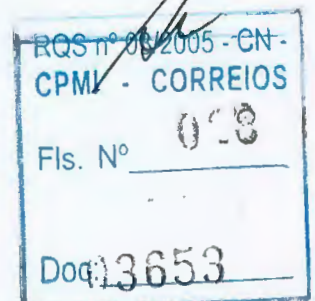
Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 40 GB, sem compressão, e com taxa de transferência sustentada de 20 MB/seg.

Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.

Sistema Operacional HP-UX, Versão 10.2, 64 bits, instalado e configurado para Rede Local e Corporativa da ECT, com um mínimo de 3 acessos simultâneos, com capacidade para capaz de suportar a plataforma de Gerenciamento HP Open View – NNM (Network Node Management) na versão 5.0 ou superior, entregue em mídia CD-ROM com toda documentação e licenças.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em **anexo**.

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.



2. DESEMPENHO

Performance		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento</i>	Resposta	Pontos
SPECint_rate95 igual ou superior a 92 ou SPECint95 igual ou superior 19	ATENDE	01
SPECfp_rate95 igual ou superior a 115.ou SPECfp95 igual ou superior 27	ATENDE	01

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual ou superior a 1 Gbyte	ATENDE	01

Capacidade do Disco Rígido		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento</i>	Resposta	Pontos
Igual ou superior a 10 GBytes.	ATENDE	01

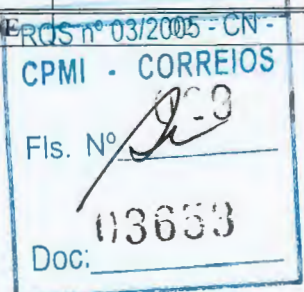
Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento</i>	Resposta	Pontos
Fonte de alimentação redundante, hotswappable.	-----	02
Fonte de alimentação redundante.	-----	01

3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 02 horas	ATENDE	01





Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :

	Resposta	Pontos
Horário integral - 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :

Está disponível, para o atendimento aos chamados :

	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.

O fabricante oferece garantia para o produto por um período de :

	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.10. – SERVIDOR DE APLICAÇÃO TIPO RISC3

SERVIDOR HEWLETT PACKARD , MODELO N4000

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Cinco processadores PA 8500 RISC, de 64 bits, com 440 Mhz , expansível à 8 (oito) processadores
Memória Cache interna de 1,5 MB por processador.

Memória RAM ECC com 8 GB expansível até 32 GB "on board", tempo de acesso de 60 ns

TpmC igual a 30.817, expansível a 49.308, auditados segundo o TPC-C,

Suporte à Arquitetura SMP – Symetric Multi Processing

Seis "slots" de 32 bits livres após montada configuração proposta.

Fonte de alimentação interna redundante Hot-Swap de 220 VAC acompanhada de transformador 220V/110V, compatível com a configuração máxima do equipamento.

Controladora de disco rígido interno padrão *ULTRA II-SCSI*

Dois discos rígidos internos de 9 (nove) Gb cada, totalizando 18 (dezoito) Gb formatados, espelhados, expansível à 36 (trinta e seis) GB, "Hot pluggable", com rotação de 10.000rpm GB , tempo médio de acesso de 5,2 ms e taxa de transferência de 80 MBytes/seg.

Placa controladora de Array externo RAID 4Si Four port Ultra-II Wide SCSI, com suporte a RAID: 0,1,,5,10, e 50

Array externo de discos HP SureStore E modelo SC10 com 9 (nove) discos de 18.2 GB "Hot-Swappable", Ultra-II Wide SCSI, totalizando 109 (cento e nove) GB formatados, líquidos após implementação de RAID 5 incluindo o disco de "Hot Spare". Discos com tempo médio de acesso de 5,2 ms e rotação de 10.000 rpm

Console composta de um microcomputador HP Brio, processador Intel Celeron de 500 Mhz, 256 KB de cache, 64 MB de memória RAM, HD DE 4.3 GB, placa de vídeo de 4 MB, monitor de vídeo policromático com 15", dot-pitch máximo de 0.28 mm., aderente às normas MPR II, EPA Energy Star, seleção automática de tensão entre 90-240 VAC – full-range, resolução de 800 x 600, teclado alfanumérico com 101 teclas e mouse de 02 com resolução de 400 dpi, mouse-pad e driver de instalação.

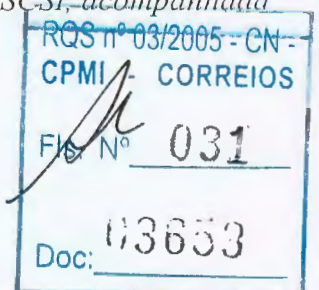
Duas interfaces seriais padrão RS-232C.

Unidade de DVD-ROM, com velocidade 32x, SCSI-2, instalada e reconhecida pelo S.O. HP-UX.

Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 40 GB, sem compressão, e com taxa de transferência sustentada de 20 MB/seg. em canal de I/O exclusivo.

Placa de rede integrada padrão Ethernet de 32 bits – IEEE 802.3 - CSMA/CD com driver para HP-UX, saída 100Base-TX (RJ-45), velocidade de dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais e documentação.

Placa com duas saídas 100Base-TX (RJ-45), velocidade de 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, compatível com TCP/IP, e duas interfaces ULTRA-II SCSI, acompanhada dos respectivos manuais e documentação.



Sistema Operacional HP-UX Versão 11.0, padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa dos Correios - CorreiosNet, com número ilimitado de usuários simultâneos entregues em mídia, CD-ROM, com toda documentação e licenças.

Suporta a Plataforma de Gerenciamento HP Open View - NNM (Network Node Management) na versão 5.0 ou superior, os módulos HP OpenView e o Maestro Tivoli, todos adquiridos pela ECT com a Solução Integrada de Gestão Empresarial.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em anexo

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

2. DESEMPENHO

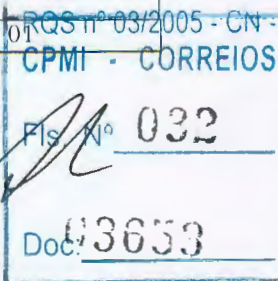
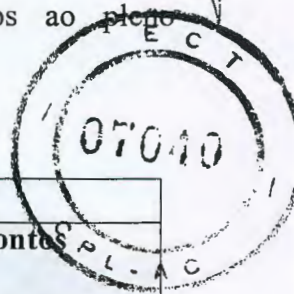
Escalabilidade de Performance Auditada ou Estimada		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade máxima de performance atingida pelo equipamento</i>	Resposta	Pontos
TpmC igual ou superior a 50000		03
TpmC igual ou superior a 40000	ATENDE	02
TpmC igual ou superior a 35000		01

Performance Auditada ou Estimada		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento</i>	Resposta	Pontos
TpmC igual ou superior a 28000	ATENDE	03
TpmC igual ou superior a 24500		02
TpmC igual ou superior a 22000		01

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória RAM instalada do equipamento</i>	Resposta	Pontos
Igual ou superior a 8 Gbytes	ATENDE	02
Igual a 6 Gbytes		01

Memória Cache		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória cache por processador do equipamento</i>	Resposta	Pontos
8 Mbytes por processador	-----	03
4 Mbytes por processador	-----	02
2 Mbytes por processador	-----	01

Expansibilidade de Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade de expansão de memória RAM do equipamento</i>	Resposta	Pontos
Acima de 16 Gbytes	ATENDE	01



Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	??????????	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02

Fonte de Alimentação Interna "Hot-swappable" (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Fonte de Alimentação Interna do equipamento.</i>	Resposta	Pontos
Fonte "Hot-swappable".	ATENDE	01

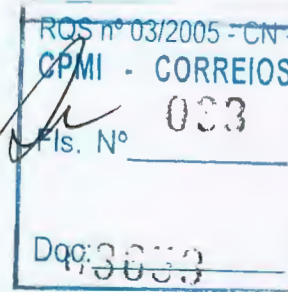
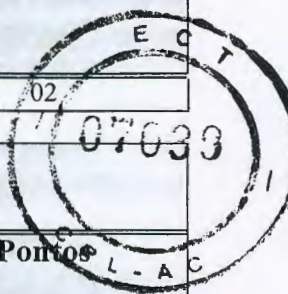
3. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

4. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 02 horas	ATENDE	02

Horário de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral - 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)		01





Central de Atendimento e Suporte

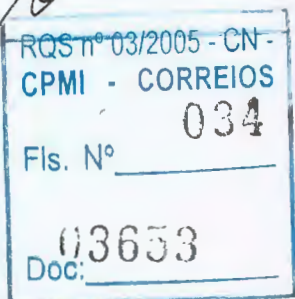
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :

Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.

O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01



I.10. – SERVIDOR DE APLICAÇÃO TIPO RISC4

SERVIDOR HEWLETT PACKARD , MODELO N4000

Fabricante : Hewlett Packard Co.

Distribuidor autorizado : Hewlett Packard Brasil S.A.

Endereço: Alameda Rio Negro, 750 – Alphaville
06454-000 Barueri - SP

Representante em Brasília : Marco Valério Resende de Oliveira
SCN Quadra 02 Bl. "A" 5º andar
70712-900 Brasília D.F.
Tel.: 61 329-6023



1. CONFIGURAÇÃO

Três processadores PA 8500 RISC, de 64 bits, com 440 Mhz , expansível à 8 (oito) processadores
Memória Cache interna de 1,5 MB por processador.

Memória RAM ECC com 6 GB expansível até 32 GB "on board", tempo de acesso de 60 ns

TpmC igual a 18.490, expansível a 49.308, auditados segundo o TPC-C,

Suporte à Arquitetura SMP – Symetric Multi Processing

Oito "slots" de 32 bits livres após montada configuração proposta.

Fonte de alimentação interna redundante Hot-Swap de 220 VAC acompanhada de transformador 220V/110V, compatível com a configuração máxima do equipamento.

Controladora de disco rígido interno padrão *ULTRA II-SCSI*

Dois discos rígidos internos de 9 (nove) Gb cada, totalizando 18 (dezoito) Gb formatados, espelhados, expansível à 36 (trinta e seis) GB, "Hot pluggable", com rotação de 10.000rpm GB , tempo médio de acesso de 5,2 ms e taxa de transferência de 80 MBytes/seg.

Console composta de um microcomputador HP Brio, processador Intel Celeron de 500 Mhz, 256 KB de cache, 64 MB de memória RAM, HD DE 4.3 GB, placa de vídeo de 4 MB, monitor de vídeo policromático com 15", dot-pitch máximo de 0.28 mm., aderente às normas MPR II, EPA Energy Star, seleção automática de tensão entre 90-240 VAC – full-range, resolução de 800 x 600, teclado alfanumérico com 101 teclas e mouse de 02 com resolução de 400 dpi, mouse-pad e driver de instalação.

Duas interfaces seriais padrão RS-232C.

Unidade de DVD-ROM, com velocidade 32x, SCSI-2, instalada e reconhecida pelo S.O. HP-UX.

Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GB, sem compressão, e com taxa de transferência sustentada de 10 MB/seg. em canal de I/O exclusivo.

Placa de rede integrada padrão Ethernet de 32 bits – IEEE 802.3 - CSMA/CD com driver para HP-UX, saída 100Base-TX (RJ-45), velocidade de 10/100 Mbps autosense, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais e documentação.

Sistema Operacional HP-UX Versão 11.0, padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa dos Correios - CorreiosNet, com número ilimitado de usuários simultâneos entregues em mídia, CD-ROM, com toda documentação e licenças.

O produto é imune a quaisquer problemas decorrentes do " Bug do milênio ", conforme documentação em anexo.

Acompanha Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.



2. DESEMPENHO

Performance Auditada ou Estimada		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento</i>	Resposta	Pontos
TpmC igual ou superior a 13000	ATENDE	03
TpmC igual ou superior a 10000		02
TpmC superior a 8500		01

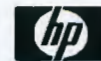
Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória RAM instalada do equipamento</i>	Resposta	Pontos
Igual ou superior a 6 GBytes	ATENDE	04
Igual ou superior a 4 Gbytes		02

Memória Cache		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória cache por processador do equipamento</i>	Resposta	Pontos
8 Mbytes por processador	-----	03
4 Mbytes por processador	-----	02
2 Mbytes por processador	-----	01

Expansibilidade de Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade de expansão de memória RAM do equipamento</i>	Resposta	Pontos
Acima de 8 Gbytes	ATENDE	01

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	???????????	02

Fonte de Alimentação Interna "Hot-swappable" (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Fonte de Alimentação Interna do equipamento.</i>	Resposta	Pontos
Fonte "Hot-swappable".	ATENDE	01



2. QUALIDADE

Certificação		
<i>Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :</i>		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	ATENDE	01

3. SUPORTE DE SERVIÇOS

Prazo de Atendimento		
<i>Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 02 horas	ATENDE	02

Horário de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme Segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana	ATENDE	02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)		01

Central de Atendimento e Suporte		
<i>Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :</i>		
Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

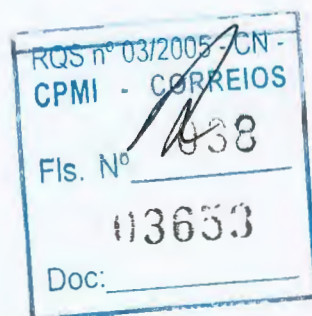
Duração da Garantia		
<i>Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	ATENDE	01





PRAZO DE ENTREGA E QUANTIDADES

Tipo		INT1					INT2	INT3	INT4			INT5		
Local	Prazo de Entrega (dias)	45	90	120	150	Subtotal	45	45	45	90	Subtotal	45	90	Subtotal
AC		3	0	9	13	25	8	2	1	1	2	3	1	4
AL		1	1	2	4	8	2	0	0	0	0	0	2	2
AM		1	1	2	6	10	2	0	0	0	0	0	2	2
BA		1	1	2	2	6	2	0	0	0	0	2	0	2
BSB		1	1	3	6	11	2	0	0	0	0	2	0	2
CE		1	1	2	4	8	2	0	0	0	0	0	2	2
ES		1	1	2	6	10	2	0	0	0	0	2	0	2
GT		1	1	2	4	8	2	0	0	0	0	2	0	2
MA		1	1	2	4	8	2	0	0	0	0	0	2	2
MG		1	0	4	4	9	2	1	0	0	0	1	0	1
MS		1	1	2	3	7	2	0	0	0	0	2	0	2
MT		1	1	2	5	9	2	0	0	0	0	2	0	2
NO		1	1	2	4	8	2	0	0	0	0	0	2	2
PA		1	1	2	4	8	2	0	0	0	0	0	2	2
PB		1	1	2	4	8	2	0	0	0	0	0	2	2
PE		1	1	2	4	8	2	0	0	0	0	2	0	2
PI		1	1	2	5	9	2	0	0	0	0	0	2	2
PR		1	0	3	5	9	2	1	0	0	0	1	0	1
RJ		1	0	6	3	10	4	1	0	0	0	1	0	1
RN		1	1	2	6	10	2	0	0	0	0	0	2	2
RS		1	0	3	3	7	2	1	0	0	0	1	0	1
SC		1	1	2	4	8	2	0	0	0	0	2	0	2
SE		1	1	2	3	7	2	0	0	0	0	0	2	2
SPM		1	0	7	3	11	4	2	0	1	1	0	1	1
SPI		11	0	1	0	10	5	1	0	3	3	1	0	1
TOTAL		37	18	70	109	232	63	9	1	5	6	24	22	46





Tipo		INT6	INT7		RISC1	RISC2	RISC3	RISC4	
Local	Prazo de Entrega (dias)	90	45	90	Subtotal	150	150	150	45
AC		11	30	15	45	1	1	1	2
AL		0	0	0	0	0	1	0	0
AM		0	0	0	0	0	1	0	0
BA		0	0	0	0	0	1	1	0
BSB		0	0	0	0	0	1	1	0
CE		0	0	0	0	0	1	0	0
ES		0	0	0	0	0	1	0	0
GT		0	0	0	0	0	1	0	0
MA		0	0	0	0	0	1	0	0
MG		4	0	0	0	0	1	1	0
MS		0	0	0	0	0	1	0	0
MT		0	0	0	0	0	1	0	0
NO		0	0	0	0	0	1	0	0
PA		0	0	0	0	0	1	0	0
PB		0	0	0	0	0	1	0	0
PE		0	0	0	0	0	1	1	0
PI		0	0	0	0	0	1	0	0
PR		4	0	0	0	0	1	1	0
RJ		4	0	0	0	1	1	1	0
RN		0	0	0	0	0	1	0	0
RS		4	0	0	0	0	1	1	0
SC		0	0	0	0	0	1	0	0
SE		0	0	0	0	0	1	0	0
SPM		5	0	0	0	1	1	1	0
SPI		0	0	0	0	0	1	1	0
TOTAL		32	30	15	45	3	25	10	2

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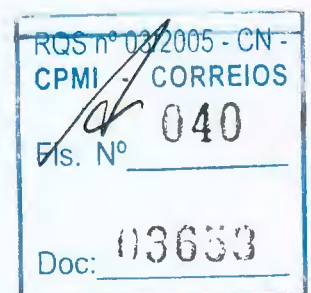
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Doc: 03633

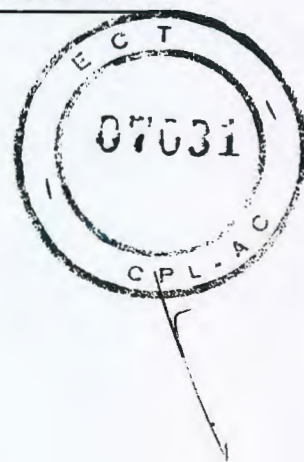


PAUTA DE DISTRIBUIÇÃO CONSOLIDADA INTEL/RISC

Tipo	INT1	INT2	INT3	INT4	INT5	INT6	INT7	RISC1	RISC2	RISC3	RISC4	Total
Local	45-150	45	45	45-90	45-120	90	45-90	150	150	120	45	CP L - A C
Prazo de Entrega (dias)												
AC	25	8	2	2	4	11	45	1	1	1	2	102
AL	8	2	0	0	2	0	0	0	1	0	0	13
AM	10	2	0	0	2	0	0	0	1	0	0	15
BA	6	2	0	0	2	0	0	0	1	1	0	12
BSB	11	2	0	0	2	0	0	0	1	1	0	17
CE	8	2	0	0	2	0	0	0	1	0	0	13
ES	10	2	0	0	2	0	0	0	1	0	0	15
GT	8	2	0	0	2	0	0	0	1	0	0	13
MA	8	2	0	0	2	0	0	0	1	0	0	13
MG	9	2	1	0	1	4	0	0	1	1	0	19
MS	7	2	0	0	2	0	0	0	1	0	0	12
MT	9	2	0	0	2	0	0	0	1	0	0	14
NO	8	2	0	0	2	0	0	0	1	0	0	13
PA	8	2	0	0	2	0	0	0	1	0	0	13
PB	8	2	0	0	2	0	0	0	1	0	0	13
PE	8	2	0	0	2	0	0	0	1	1	0	14
PI	9	2	0	0	2	0	0	0	1	0	0	14
PR	9	2	1	0	1	4	0	0	1	1	0	19
RJ	10	4	1	0	1	4	0	1	1	1	0	23
RN	10	2	0	0	2	0	0	0	1	0	0	15
RS	7	2	1	0	1	4	0	0	1	1	0	17
SC	8	2	0	0	2	0	0	0	1	0	0	13
SE	7	2	0	0	2	0	0	0	1	0	0	12
SPM	11	4	2	1	1	5	0	1	1	1	0	27
SPI	12	5	1	3	1	0	0	0	1	1	0	24
TOTAL	234	63	9	6	46	32	45	3	25	10	2	475
L												

Marco Valério Rosende de Oliveira
Government Relationship
Enterprise Account Organization
CI 726.006 SSP/DF





DOCUMENTAÇÃO TÉCNICA

SERVIDORES INTEL LC2000 : INT1, INT2 E INT6.

SERVIDORES INTEL LH4 : INT3, INT4 E INT5.

SERVIDOR RISC VISUALIZE J7000 : RISC1

SERVIDOR RISC VISUALIZE B2000 : RISC2

SERVIDORES RISC N4000 : RISC3 E RISC4

CERTIFICAÇÃO ISO

CERTIFICAÇÃO HCL

DECLARAÇÃO RELATIVA AO "BUG DO MILÊNIO"

CARTAS DE SOLIDARIEDADE DO FABRICANTE

RELAÇÃO COMPLETA DA REDE DE ASSISTÊNCIA TÉCNICA
AUTORIZADA

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SERVIDORES INTEL LC2000 : INT1,INT2 E INT6.

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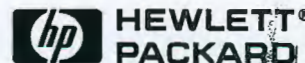
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HP NetServer LC 2000/2000r

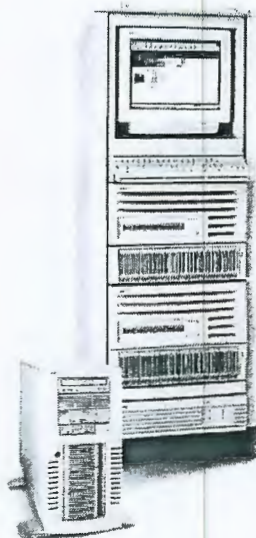
HP NetServers:
Simply Reliable

Rock-Solid Workgroup Server Your Growing Business Can Depend On

specifications

The HP NetServer LC 2000 delivers value to corporate workgroups, branch offices, and quickly-growing small businesses with:

- **High tech and high touch**—designed to be simple to install, configure, and upgrade, all HP NetServer LC 2000 components are easily accessible and designed for tool-less service—accented by color-coded “touch points”
- **High availability at a low price**—we created the LC 2000 to deliver the most essential uptime-protecting technologies at a very accessible price. With more hot-swappable and redundant components than have ever been offered in a workgroup server, the LC 2000 creates a super-reliable foundation for the growing network
- **Intelligent management**—the HP NetServer LC 2000 is complemented by a hardware and NOS management suite that combines unmatched flexibility with simplicity for precise control. HP management tools ensure that your LC 2000 can be managed from anywhere
- **Value, value, value**—with the unbeatable value delivered by the HP NetServer LC 2000, workgroup and remote office IT managers get all the features they need and pay for none that they don't
- **Best-in-class uptime protection**—with up to six hot-swappable disk drive bays, standard redundant, hot-swappable fans, optional hot-swappable redundant power supplies, support for redundant NICs, and duplexing
- **Freedom to Expand**—with capacity for 4GB SDRAM, 144GB of storage and six open PCI slots, the HP NetServer LC 2000 offers room for growth that is unprecedented in a workgroup server



A solid value for corporate workgroups, branch offices, and quickly growing small businesses that want enterprise-level system reliability features at an entry-level price. Designed with simplicity for easy installation, the HP NetServer LC 2000 meets the demands of your quickly growing business.

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Doc:

specifications

HP

NetServer

LC 2000/2000r



Features

Performance

Processor	Up to two Intel® Pentium® III 533MHz, 600MHz, 667MHz, 733MHz, or 800MHz processors, with 133MHz front-side bus
Level 2 Cache	256K on-die write-back cache
ECC Memory	Four DIMM sockets for 64MB, 128MB, 256MB, 512MB, or 1GB SDRAM PC-133 DIMM ¹
I/O Expansion Slots	Six full-length PCI slots (four 32-bit and two 64-bit slots)
SCSI Controller	Embedded dual channel Ultra-2
Mass Storage System	• 10 shelves total • One 3.5 inch flexible disk drive • One CD-ROM • Two open common tray removable media bays – Suitable for tape backup device or common tray disk drives • Six open hot-swappable mass storage bays (supporting six low-profile or three half-height drives) – Hot-swap drive backplane supports Ultra3 SCSI – Duplexing option available to split hot-swap drive backplane (3x2)
Maximum Internal Storage	108GB maximum hot-swap (6 × 18GB low-profile drives), plus two 18GB common-tray drives for maximum internal storage of 144GB
Expansion Slots	• Two 64-bit and four 32-bit PCI slots • Peer 32-bit/64-bit PCI buses, both at 33Mhz
Video	• Embedded ATI Rage IIc video controller • 1024x768, 64K color at 75Hz • 2MB SGRAM
CD-ROM Drive	Maximum 32x speed IDE
Flexible Disk Drive	3.5" 1.44MB flexible disk drive
Built-in I/O Ports	• One serial port • One 25-pin parallel port • One SCSI knockout port for external connections • One server management port (serial) • Video port—SVGA • Mini-DIN keyboard and mouse ports
Keyboard and Mouse	Localized keyboard and two-button mouse on pedestal-models

¹ Maximum useable memory will be less depending on configuration

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specifications

HP

NetServer

LC 2000/2000r



Features

Availability

Hot-Swap Power Supplies Standard redundant hot-swap fans, optional hot-swap redundant power supply

Self-Correcting Memory Automatic Error Checking and Correcting (ECC) system and cache memory

Hot-Swap Disk Drives

- Supports 9.1GB, 18.2GB 7200rpm Ultra2 SCSI disk drives
- Supports 9.1GB, 18.2GB, or 36.4GB 10,000rpm Ultra2 SCSI disk drives

Power Supply

- Hot swappable 1+1 redundant power supply option
- Two power cords per system, with redundancy option

Disk Array Controller Optional NetRAID-3Si Disk Array Controller or NetRAID-1si Disk Array Controller and three 9.1GB 7200 rpm disk drives

Network Interface

- Integrated 10/100TX NIC
- Supports redundant NICs

Fans Redundant, hot-swappable fans protect system components with uninterrupted cooling.

Duplexing Support Hot swap drive cage supports optional duplexing kit to split the six-drive backplane into two segments which address three drives each

One-Button Disaster Recovery Simple and reliable data restoration with the world's first hardware-based One-Button Disaster Recovery solution, standard with use of HP SureStore products

Intelligent Management

Installation and Configuration

- HP NetServer Navigator with automated, menu-driven system setup and configuration
- Guided network operating system installation
- Automatic installation of monitoring tools

Management Software

- HP TopTools for Servers, a comprehensive server management solution with intuitive browser-based user interface, facilitates troubleshooting, administration, and detailed inventory information
- Optional award-winning HP OpenView™ ManageX Event Manager for complete NOS management
- Easy integration with other leading network and system management products

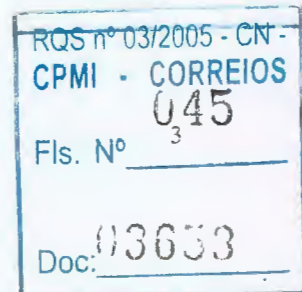
Remote Administration

- Integrated HP Remote Assistant provides emergency remote access over a modem with unified event log for faster troubleshooting (requires external modem)
- Optional HP TopTools Remote Control card for even more powerful remote management, remote LAN access, advanced security, on-line diagnostics, and group actions

Expandability

Design Features

- Rack-model at 5U rack height
- Rack models (and the rack conversion kit) ship with a single universal bezel that fits both HP and Rittal racks
- Includes a quick-release cable management arm
- Easy access to all system components from one panel
- Designed for serviceability with clearly labeled cabling and color coded handles



specifications

HP

NetServer

LC 2000/2000r



Features

Flexibility

Supported Operating Systems

Microsoft® WindowsNT® 4.0, Windows® 2000; Novell NetWare 4.2, 5.0; Red Hat Linux; SCO OpenServer and UnixWare; IBM OS/2

Security and Safety

System Security

- Startup password
- Flexible disk drive, CD ROM, and hard disk drive boot disable
- Power and reset switch lock
- Enable or disable serial port, parallel port, flexible disk drive, and write operations to the flexible disk drive
- Hot-swap hard disk drive cage lock
- Lockable chassis

Service and Support

Warranty

- Three-year, next-business day, onsite limited warranty from HP or authorized resellers (standard business hours) worldwide
- Pre-failure warranty on hard drives and memory
- Free telephone support for basic setup, installation, and troubleshooting in North America, Europe, and Asia Pacific during warranty

Hardware Maintenance

- Optional HP SupportPack for 3-year, 4-hour response during standard business hours
- Optional HP SupportPack for 3-year, 4-hour response, 24 hours a day, 7 days a week support
- Optional HP SupportPack for 3-year Call-to-Repair Commitment Service within 6 hours, 24 hours a day, 7 days a week

Software Maintenance

- HP Personalized Systems Support for proactive software support in mission-sensitive environments
- HP Critical Systems Support for high availability support in mission-critical environments

Reseller Support Services

- Comprehensive reseller support framework to ensure successful support of HP NetServers includes
- Proactive notification e-mail service
- Service and support Web site
- Server management and hardware troubleshooting courses (STAR)
- Troubleshooting toolkit
- 24x7 telephone support for authorized resellers
- HP Business Builders blueprints for new business opportunities

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specifications

HP

NetServer

LC 2000/2000r



Features

Regulatory Compliance

Electromagnetic Emissions

- USA: FCC Title 47, Part 15 Class A (Self Declaration)
- EU Countries: EN 55022 Class A
- Korea: M of C Class A
- Japan: VCCI Class A
- Australia/New Zealand: CISPR 22 Class A
- Taiwan: BSMI CNS 13438 Class A
- EN 61000-3-2: Harmonic Current
- EN 61000-3-3: Voltage Fluctuation and Flicker

Electromagnetic Immunity

Generic Immunity (EN50082-1, EU Countries), including:

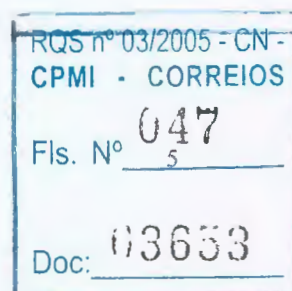
- ESD (IEC-801-2): 4KV Contact, 8KV Air
- Radiated Immunity (IEC-801-3): 3V/m, 80% AM Mod, 27MHz–1000MHz
- Fast Transient/Burst (IEC-801-4): 1.0KV Power, 0.5KV I/O lines

Safety

- EN 60950/IEC 950 Compliance (International)
- UL and cUL Listed (File E139742)
- Highly Specialized Equipment (Mexico)
- TÜV Certified (Germany)
- CE Marking (Europe)

Japan Energy Saving Law

- Category: J
- Energy Efficiency Ratio: 0.12
- Energy Efficiency Ratio is the quotient that consumed power measured according to the Energy Saving Law measurement method divided by the capacity specified in the Energy Saving Law



specifications



HP NetServer LC 2000/2000r

Accessories

	Product Accessory	Product No.
Memory	• 64MB 133MHz ECC SDRAM DIMM	D8264A
	• 128MB 133MHz ECC SDRAM DIMM	D8265A
	• 256MB 133MHz ECC SDRAM DIMM	D8266A
	• 512MB 133MHz ECC SDRAM DIMM	D8267A
	• 1GB 133MHz ECC SDRAM DIMM	D8268A
Storage Devices	• 9.1GB Ultra/Wide SCSI disk drive (7,200rpm—common tray)	D4911A
	• 18.2GB Ultra/Wide SCSI disk drive (7,200rpm—common tray)	D7176A
	• 9.1GB Ultra/Wide SCSI disk drive (10,000rpm—common tray)	D7049A
	• 9.1GB hot-swap Ultra2 SCSI disk drive (7,200rpm)	D6106A
	• 9.1GB hot-swap Ultra2 SCSI disk drive (10,000rpm)	D6107A
	• 18.2GB hot-swap Ultra2 SCSI disk drive (7,200rpm)	D7174A
	• 18.2GB hot-swap Ultra2 SCSI disk drive (10,000rpm)	D7175A
	• 36GB hot-swap Ultra2 SCSI disk drive (10,000rpm)	D8210A
Disk Trays	• Optional Duplexing Kit	D8280A
	• 3.5" hard disk drive mounting trays (3 pack, non-hot-swap)	D2198B
	• Tape/DAT/CD-ROM mounting trays (3 pack, no front panel)	D2199A
	• HP NetServer low-profile hot-swap disk tray	D6128A
Disk Array Controllers	• HP NetServer half-height hot-swap disk tray	D6127A
	• LC 2000 600MHz pedestal with NetRAID 1Si and three 9GB hard drives	D8521A
	• NetRAID-1Si one channel disk array controller	D2140A
External Storage Solutions	• NetRAID-3Si three channel disk array controller	D5955A
	• HP NetServer Storage System/6	D3604B
	• HP NetServer Rack Storage/12	D5989B
Internal Backup Drives	• HP NetServer Rack Storage/12 SCSI Card	D6025B
	• HP SureStore T20i/Xi tape drive	C4394A/C4401A
	• HP SureStore DAT8i tape drive	C1528K
	• HP SureStore DLT24i tape drive	C1555D
External Backup Drives	• HP SureStore DAT40i tape drive	C5686A
	• HP SureStore T20e/Xe tape drive	C4395A/C4402A
	• HP SureStore DAT8e tape drive	C1529K
	• HP SureStore DAT24e tape drive	C1556D
	• HP SureStore DAT40e tape drive	C5687A
	• HP SureStore DLT40e tape drive	C1579A
	• HP SureStore DLT80e tape drive	C5726A

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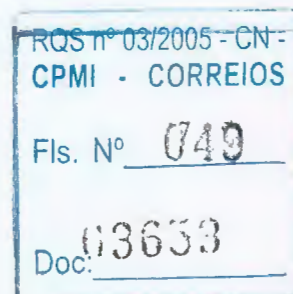
HP NetServer LC 2000/2000r

Accessories

	Product Accessory	Product No.
Rack-optimized Backup Drives	• HP SureStore DAT8k DDS-2 tape drive ¹	C6533A
	• HP SureStore DAT24k DDS-3 tape drive ¹	C6525A
	• HP SureStore DAT40k DDS-4 tape drive ¹	C6541A
	• HP SureStore DLT 40k DLT drive ¹	C6515A
	• HP SureStore DLT 70k DLT drive ¹	C6531A
	• HP SureStore DLT 80k DLT drive ¹	C6529A
	• HP SureStore TapeRack hot-swap, HA, rackmount enclosure for up to 4 drives	C5695A
	• HP SureStore DLT 40r for TapeRack	C5697A
	• HP SureStore DLT 80r for TapeRack	C5727A
Automated Backup	• HP SureStore DAT24x6i Autoloader	C5677A
	• HP SureStore DAT24x6e Autoloader	C1559B
	• HP SureStore DLT Autoloader 418	C6280F
	• HP SureStore Tape Library 2/20 ²	C7202/3NB
Processor Upgrades	• Intel Pentium III 533MHz, 133MHz front-side bus	D8509A
	• Intel Pentium III 600MHz, 133MHz front-side bus	D8510A
	• Intel Pentium III 667MHz, 133MHz front-side bus	D8511A
	• Intel Pentium III 733MHz, 133MHz front-side bus	D9184A
	• Intel Pentium III 800MHz, 133MHz front-side bus	D9185A
Monitors	HP offers a variety of monitors (15", 17", and 21"). Please refer to HP Order Assistant at http://www.netserver.hp.com/netserver/tools/ for complete configuration and order information.	
Network Interface Card	HP NetServer 10/100TX PCI LAN adapter	D5013B
Redundant Power Supply	Redundant hot-swap power supply	D8513A
Conversion Kit	Pedestal-to-rack conversion kit	D8512A
Remote Management	• Integrated HP Remote Assistant	Included
	• HP TopTools Remote Control Card	D6028A
	• AC/DC Adapter for TopTools Remote Control Card	D6138A
Uninterruptible Power Supply	UPS devices are available from American Power Conversion (APC). For additional information, contact your local APC reseller, or see APC's web page at http://www.apcc.com .	

¹ 2U k (C6542A) or 3U k rack kit required; (C6543A) required

² See www.automatedbackup.com for additional product and configuration options



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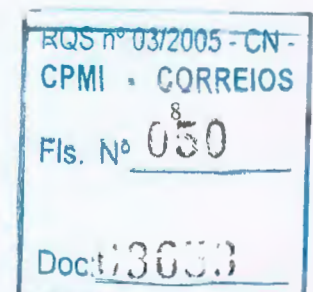
HP NetServer LC 2000/2000r



Accessories

	Product Accessory	Product No.
HP Racks	• HP Rack System/E41	J1500A
	• HP Rack System/E33	J1501A
	• HP Rack System/E25	J1502A
	• HP Rack System/U33	J1466A
	• HP Rack System/U25	J1464A
	• HP Monitor/Keyboard Switchboxes:	
	– 4-port switchbox (cable not included)	J1473A
	– 8-port switchbox (cable not included)	J1474A
	– 2-User Expansion Kit	J1475A
	– Cable, 8 foot	J1476A
	– Cable, 15 foot	J1477A
	• HP 15" Flat Panel Monitor/Keyboard	J1470A
	• Vertical Extension Kit (for Rack System/E)	J1471A
	• Rackmount Kits:	
	– Keyboard rackmount kit	J1518A
	– Monitor rackmount kit	J1519A
	– Sliding shelf rackmount kit	J1526A
	– Stationary shelf rackmount kit	J1520A

For a complete list of racks and rack accessories, download the HP NetServer Rack Assistant tool from <http://www.hp.com/netserver/products/racks>



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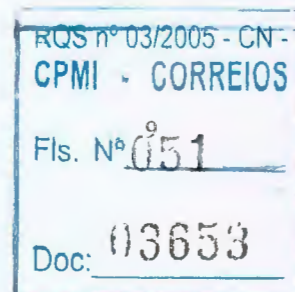
HP NetServer LC 2000/2000r



Accessories

HP SupportPacks	Product No.
Support can be delivered either by your local service-authorized reseller or by Hewlett-Packard. For more information, visit our web site at http://www.hp.com/go/netserver	
5-Year 24x7 6-Hour Onsite Hardware Call-to-Repair	H2824E/VV
5-Year 24x7 4-Hour Onsite Response	H2823E/VV
5-Year 4-Hour Onsite Response (regular business hours) ¹	H2822E/VV
5-Year Next Business Day Onsite Response	H2838E/VV
3-Year 24x7 6-Hour Onsite Hardware Call-to-Repair	H1820A/E/VV
3-Year 24x7 4-Hour Onsite Response	H5514A/E/VV
3-Year 4-Hour Onsite Response (regular business hours) ¹	H5519A/E/VV
HP NetServer Solution Installation and Configuration (L Series)	H5751A
Racking of HP NetServer Solution	H5756A
HP NetServer Cluster Solution Installation / Network Configuration	H5757A
Racking of HP NetServer Cluster Solution	H3368A
HP Personalized System Support for PC Servers	
• Proactive Management, 1 year	H2219AA/E
• Standard Recovery, 1 year	H2217AA/E
• Standard Recovery Applications Add-on, 1 year	H2216AA/E
• Proactive Support, 1 year	H2218AA/E
HP Critical Systems Support for Windows Servers	
• NT Solution, 1 year	H1931E
• Reactive Bundle, 1 year (second server)	H1932E
• Priority Recovery NT, 1 year (cluster server)	H1933E
• Priority Recovery NT, 1 year	H1934E
• Priority Management NT, 1 year	H1941E
• Operations Checkup NT, 1 engagement	H1950E
• Critical Systems Support NT and SAP R/3	H3035E
• Critical Systems Support NT and Microsoft Exchange	H1931E & H1947E
Microsoft Cluster Server Migration, 1 cluster	H1945E
Change Management Planning for NT, 1 year	H1943E
Additional Patch Management Reviews	H1944E
Performance Optimization for NT, 1 year	H1946E
Expert Technical Advice for NT, 1 topic	H1947E
Account Support Engineer Services for NT, 1 day	H1948E

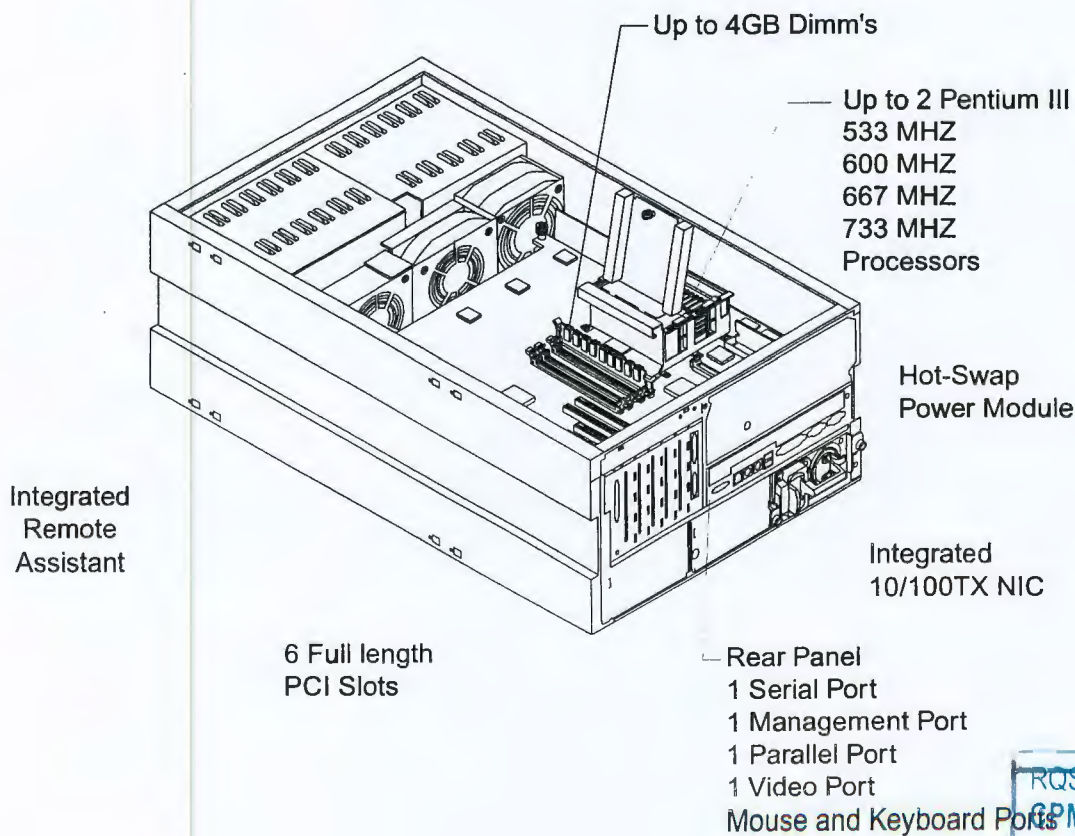
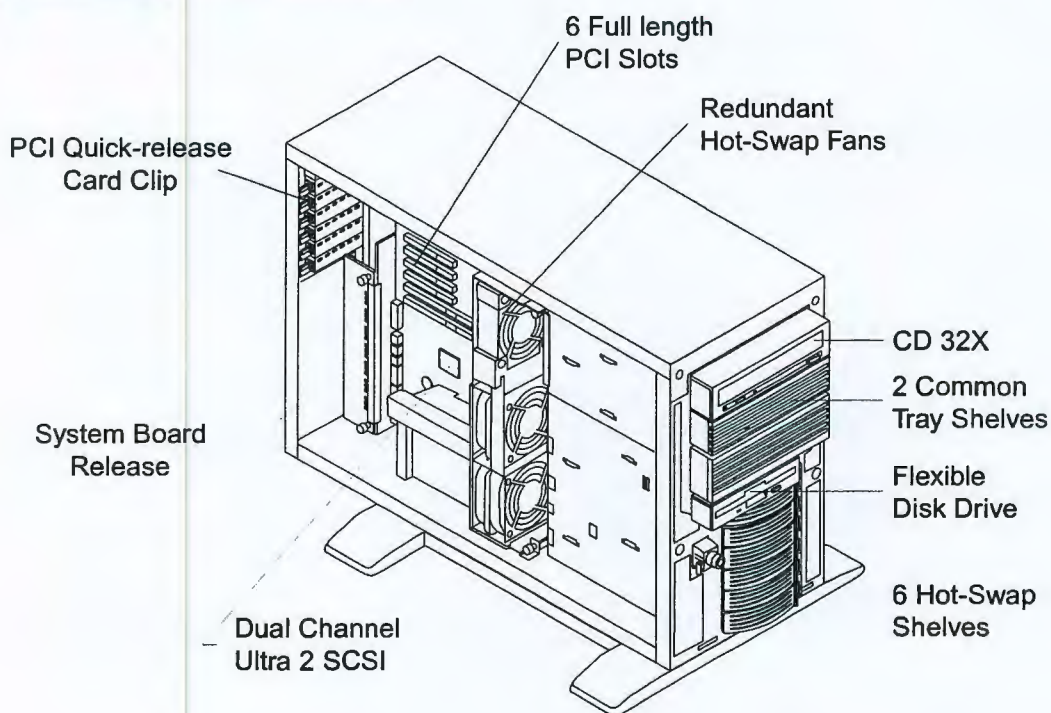
¹ Provides HP's best response time service during regular business hours, Monday through Friday, except HP Holidays



specifications



HP NetServer LC 2000/2000r



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HP NetServer LC 2000/2000r

Specifications

Operating Temperature	5°C–35°C
Operating Humidity	20%–80% RH
Acoustic Emissions	Sound Level: (LpA) <51 dB(A) bystander position
Power Supply	Universal Input 100–240 VAC, 50/60Hz
Power Availability	349W
Power Consumption	4.5A @ 120V, 2.3A @ 240V
System Dimensions	- Height: 460mm (18.05") with feet; 441mm (17.3") without feet - Width: 216mm (8.5") - Depth: 692mm (27.2") with rack bezel, 648mm (25.5") without bezel
System Weight	58 lbs.

Choose Your HP NetServer LC 2000 or LC 2000r

Product No.	Description	Configuration
D8514A	Pentium III 533MHz, 133MHz front-side bus	Pedestal
D8515A	Pentium III 533MHz, 133MHz front-side bus	Rack
D8519A	Pentium III 600MHz, 133MHz front-side bus	Pedestal
D8520A	Pentium III 600MHz, 133MHz front-side bus	Rack
D8521A	Pentium III 600MHz, 133MHz front-side bus and NetRAID-1Si Disk Array Controller and three 9GB, 7200 rpm disk drives	Pedestal
D8524A	Pentium III 667MHz, 133MHz front-side bus	Pedestal
D8525A	Pentium III 667MHz, 133MHz front-side bus	Rack
D9162A	Pentium III 733MHz, 133MHz front-side bus	Pedestal
D9163A	Pentium III 733MHz, 133MHz front-side bus	Rack
D9164A	Pentium III 800MHz, 133MHz front-side bus	Pedestal
D9165A	Pentium III 800MHz, 133MHz front-side bus	Rack

All models include:

128MB 133MHz ECC SDRAM with memory scrubbing; embedded, dual-channel, Ultra-2 SCSI controller; embedded 10/100TX NIC; redundant, hot-swappable fans; CD-ROM drive; flexible disk drive; integrated HP Remote Assistant; HP TopTools

Support:

Support can be delivered by your local service authorized reseller or by Hewlett-Packard

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www.hp.com/go/netserver



HP Select Express Program:

HP NetServer is also available through HP Select Express Program. This program offers custom integration of HP hardware offered at HP's lowest price and direct coordinated delivery. For more information visit our Web site at: <http://www.hp.com/go/netserver>

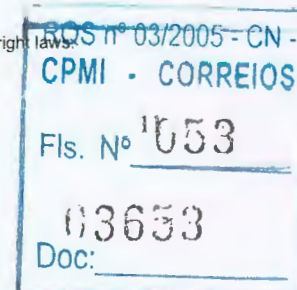
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March 2000





HP NetServer NetRAID-1Si



Disk Array Controller for HP NetServers

Affordable RAID data protection for low-to-mid-range servers

Information technology professionals rely on HP NetRAID disk array controllers to ensure maximum server uptime and data protection across the enterprise. Now you can get high availability for a low price with the NetRAID-1Si. Designed specifically to meet the needs of small to medium-sized businesses, the HP NetRAID-1Si has the feature set that has made the original HP NetRAID disk array controllers successful, packaged in a single-channel version.

Flexible and dependable results

Because it shares common features and software with other HP NetRAID products, the HP NetRAID-1Si disk array controller can easily be deployed and managed across a range of servers. An intuitive, graphical user interface with a wizard feature simplifies set up and allows you to monitor and manage physical and logical drives, add capacity, and migrate RAID levels on the fly.

With today's networks growing up and out, it's good to know you can also manage the HP NetRAID-1Si disk array controller from a remote console. And, of course, like all HP NetServer products, this solution is backed with HP's world-class service and support to ensure your success.

Leading the Way with I₂O and Ultra2 SCSI

The HP NetRAID-1Si is the important first step in deploying I₂O (Intelligent Input/Output) technology across HP NetServer systems. I₂O offers the potential to increase overall system performance by changing the design of device drivers. The I₂O split driver architecture allows computing overhead associated with I/O service requests to be shifted from the system CPU to dedicated I/O processors, such as the one on the HP NetRAID-1Si. Both I₂O and non-I₂O drivers are supported with the HP NetRAID-1Si controller.

Ultra2 (LVD) SCSI has been incorporated into the HP NetRAID-1Si for greater speed and flexibility. Low-voltage differential (LVD) technology is the latest step in the evolution of the small computer system interface (SCSI). It doubles the maximum bus transfer rate to 80MB/sec while extending bus length up to 12 meters. The HP NetRAID-1Si also supports hard drives and enclosures that use Fast/Wide and Ultra/Wide single-ended SCSI.

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Product Brief



HP NetServer NetRAID-1Si

Specifications	
RAID Levels Supported	0,1,3,5,10,30,and 50
SCSI Connectors	One 68-pin, high-density internal connector; One 68-pin, ultra-high-density external connector
SCSI Channels	One
Devices per SCSI Channel	Up to 12 Ultra2 SCSI hard drives
SCSI Device Types Supported	Synchronous or Asynchronous
SCSI Bus	LVD (Low Voltage Differential)
SCSI Data Transfer Rate	Up to 80MB/s (Ultra2 SCSI)
Termination SCSI	Active
Card Size	7.375" x 4" (half-length PCI)
Multiple Cards	Up to six HP NetRAID family adapters per system
Bus Type	Universal
Bus Data Transfer Rate	Up to 132 MB
Processor	Intel®i960RP™ 32-bit RISC processor @ 33MHz
Cache Configuration	16MB SIMM
Nonvolatile RAM	32KB
BIOS	HP NetRAID BIOS
Tone Generator	Audible warnings indicate degraded drives, offline drives, and drive rebuilds

Flexible, reliable RAID data protection priced within your budget

Features	Benefits
Easy To Manage	
- Graphical user interface - Integration with HP NetServer Assistant - Remote console monitoring - Configuration replication and storage on disks	- Easy, intuitive installation, array configuration, and monitoring - Centralized event notification - Simplified management of all HP NetRAID adapters in Microsoft Windows®NT™ and Novell®NetWare® servers - Prevents configuration loss in the event of array controller failure - External storage system can be easily moved to a new server
Maximum uptime and data protection	
- Seven RAID levels (0, 1, 3, 5, 10, 30, 50) - Online capacity expansion and RAID level migration - Hot spare disk drives - On-board tone generator	- Flexibility to maximize data storage performance under varied server uses - No need to back up and restore data to add capacity - RAID levels can be changed quickly to keep up with changing requirements - Completely unattended rebuild of failed drives - Audible warning of disk status for prompt attention
Superior value	
Priced for lean budgets	Affordable solution for data protection on file and application servers with a small number of disk drives

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Product Brief



HP NetServer NetRAID-1Si

Ordering Information

Description	Product No.
NetRAID-1Si	D2140A
Cable to use with HP NetServer E Series or LC family	D5968A ¹
Cable to use with HP NetServer LH 3/LH 4 and LX Pro	D4282B ¹
Cable to use with HP NetServer LPr	D7082A ¹
Cable to or external connection to the HP NetServer Rack Storage/8 and HP NetServer Rack Storage/12, and NetServer Storage System 6	D6020A, D6982A, D6983A

Supported HP NetServer systems: E 40, E 45, E 50, E 60, LPr, LCII, LC 3, LD Pro, LH 3, LH 4, LH Pro, LH II, LXe Pro, LX Pro, LXr Pro, LXr Pro8, LXr 8000, LXr 8500.

Drivers supported:² Netware for Small Business 4.2, Netware 4.2, Netware 5.0, NT 4.0 for Small Business, NT 4.0, NT 4.0 Enterprise, NT 4.0 Enterprise WMSCS³, NT 4.0 Terminal Server, Open Server 5.0.5 UP & SMP, UNIXWare 7, LINUX 6.0⁴, Warp Server SMP 4.0

Note: Only external storage is supported with the E 40. Internal storage in E 45 must be wide (not narrow) SCSI drives.

¹ See system configuration guide for details

² Must be supported by HP NetServer system. See HP NetServer Configuration Guide at www.hp.com/netserver

³ Fall, 1999

⁴ Linux support is restricted to specific configurations. See HP NetServer Configuration Guide.

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www.hp.com/go/netserver

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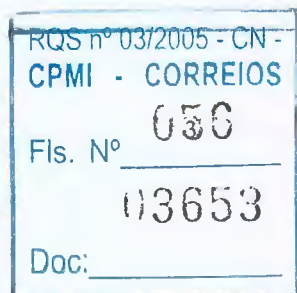
HP NetServer Website	Http://www.hp.com/netserver
HP FAX Response system	1-800-333-3333(U.S.) 1-333-333-3333 (worldwide from fax only)

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HP NetServer NetRAID-3Si



Disk Array Controller for HP NetServers

High performance and I₂O technology for RAID systems in the most demanding storage environments

Information systems professionals rely on HP NetRAID disk array controllers to ensure maximum server uptime and data protection across the enterprise. Now the HP NetRAID-3Si controller carries these strengths forward with added performance and new technology to serve more clients faster.

Taking Performance to a Higher Level

Building on the success of the original HP NetRAID product it replaces, the HP NetRAID-3Si boosts performance with a new hardware design. The processor has been upgraded to a 66MHz Intel® i960RD® and a new ASIC accelerates RAID parity calculations. The result is a significant performance increase under heavy client loads when higher performance matters most.

Leading the Way with I₂O and Ultra2 SCSI

The HP NetRAID-3Si is the important first step in deploying I₂O (Intelligent Input/Output) technology across HP NetServer systems. I₂O offers the potential to increase overall system performance by changing the design of device drivers. The I₂O split driver architecture allows computing overhead associated with I/O service requests to be shifted from the system CPU to dedicated I/O processors, such as the one on the HP NetRAID-3Si. Both I₂O and non-I₂O drivers are supported with the HP NetRAID-3Si controller.

Ultra2 (LVD) SCSI has been incorporated into the HP NetRAID-3Si for greater speed and flexibility. Low-voltage differential (LVD) technology is the latest step in the evolution of the small computer system interface (SCSI). It doubles the maximum bus transfer rate to 80MB/sec while extending bus length up to 12 meters. The HP NetRAID-3Si also supports hard drives and enclosures that use Fast/Wide and Ultra/Wide single-ended SCSI.

Flexible, Dependable Results

Sharing common features with the HP NetRAID family, the HP NetRAID-3Si can easily be deployed across a range of servers. An intuitive, graphical user interface with a wizard feature simplifies set up and allows you to monitor and manage physical and logical drives, add capacity, and migrate RAID levels on the fly. You can also manage the HP NetRAID-3Si from a remote console.

And of course, the HP NetRAID-3Si is backed up by HP's legendary service and support.

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HP NetServer NetRAID-3Si

A New Level of Performance for Flexible, Reliable Storage

Features	Benefits
Easy To Manage	
- Graphical user interface - Integration with HP NetServer Assistant and HP TopTools for Servers - Remote console monitoring - Configuration replication and storage on disks	- Easy, intuitive installation, array configuration, and monitoring - Centralized event notification - Simplified management of all HP NetRAID-3Si adapters in Windows NT® and Novell® NetWare® servers - Easy configuration of standardized servers
Maximum uptime and data protection	
- Seven RAID levels (0, 1, 3, 5, 10, 30, 50) - Online capacity expansion and RAID level migration - Hot-spare disk drives - On-board tone generator - Battery backup for cache memory	- Increased fault tolerance - Higher performance for larger volumes - No need to back up and restore data to add capacity - RAID levels can be changed quickly to keep up with requirements - Completely unattended rebuild of failed drives - Fewer drives required for maximum availability - Audible warning of disk status for prompt attention - Cache data protected in case of power loss
Superior performance	
- Ultra2 SCSI¹ - Intel i960RD 66MHz Intelligent I/O Processor - Custom ASIC	- Increase maximum data transfer rates by 2x for internal transfers and 4x for external transfers at a bus length of up to 12 meters - One disk array controller supports both internal and external disk drives - Configure for Ultra2 or single-ended SCSI operation (one or the other) - Single-chip I²O solution - Accelerates data transfer and RAID parity generation

¹ Ultra2 SCSI drives and enclosures are required for operation in Ultra2 (LVD) SCSI mode.

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Product Brief



HP NetServer NetRAID-3Si

Specifications

RAID Levels Supported	0,1,3,5,10,30,and 50
SCSI Channels	Three
SCSI Connectors	Three 68-pin, high-density internal connectors; three 68-pin, very-high-density external connectors
Devices per SCSI Channel	Up to 12
SCSI Device Types Supported	Synchronous or Asynchronous
SCSI Bus Types Supported	Low-Voltage Differential (LVD) and Single-Ended at 16-bit (Wide) width
SCSI Termination	Active termination enabled
Maximum SCSI Data Transfer Rates	LVD: 80MB/sec (int/ext); Single-Ended; 40MG/s (int) and 20MB/s (ext)
Processor	Intel i960RD 66MHz Intelligent I/O
BIOS	HP NetRAid
RAID Parity Engine/DRAM Controller	Custom ASIC
Cache	16MB 60ns EDO DRAM; one 36 bit 5V SIMM
Flash ROM	1MB used for BIOS and RAID firmware
Nonvolatile RAM	32KB NVRAM for configuration
Cache Backup Battery	Protects 16MB cache for 48 hours
Tone Generator	Audible warnings indicate degraded drives, offline drives, and drive rebuilds
HP NetRAID Family Cards per System	Up to 6
Card Size	12.3" x 4.2" (full length PCI)
Bus Type	PCI 2.1 (32-bit)
Bus Transfer Rate	132 MB/sec

Ordering Information

Cables	Description	Product No.
	For internal use with HP NetServer E Series or LC family	D5968A ¹
	For internal use with HP NetServer LH 3, LH 4 and LX Pro	D4282B ¹
	For internal use with HP NetServer LPr	D7082A ¹
	For external connection to the HP NetServer Rack Storage/12 and HP NetServer Rack Storage/12FC	D6020A
	¹ Must order when adding an HP NetRAID family controller	

Supported HP NetServer systems: E 50, LPr, LC 3, LH 4, LXr Pro8, LXr 8000.

Drivers supported: Microsoft Windows NT 3.51 and 4.0, Enterprise 4.0; Novell NetWare 3.2, 4.11, 4.11 (I20), 4.11 SFT III, and 5.0; SCO OpenServer 5.0.4; SCO Unix ODT 3.0; UnixWare 2.1.3 and 7.0; and IBM OS/2 Warp Server 4.0

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www.hp.com/go/netserver

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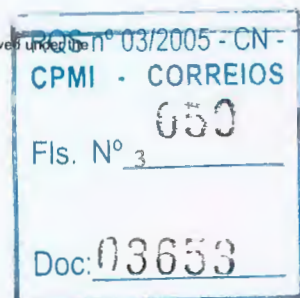
HP NetServer Website	Http://www.hp.com/go/netserver
HP FAX Response system	1-800-333-3333(U.S.) 1-333-333-3333 (worldwide from fax only)

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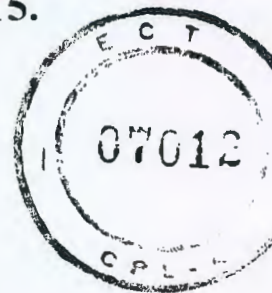


Hewlett-Packard Brasil
Alameda Rio Negro, 750 - Alphaville
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Tel (011) 726.8118/8116
Telex 1711351
Fax (011) 726.8127



SERVIDORES INTEL LH4 : INT3, INT4 E INT5.



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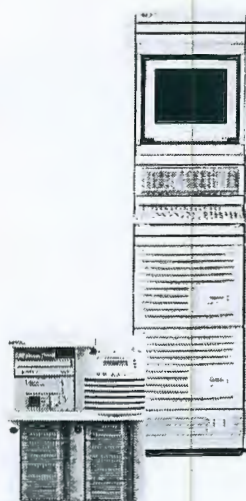
HP NetServer LH 4 and LH 4r

specifications

Entry-level enterprise servers

The HP NetServer LH 4 has the power, reliability, and expansion room to handle everything from Web hosting to ERP applications, for fast-growing workgroups all the way up to corporate data centers.

- Up to four-way processing with Intel® Pentium® II Xeon™ 400MHz, 450MHz or Pentium III Xeon 500MHz and 550MHz processors
- Capacity for up to 12 Ultra2 SCSI drives driven by an integrated dual-channel HP NetRAID controller with I₂O
- Up to 4GB ECC buffered EDO DRAM with memory scrubbing
- Hot-swap power supplies and redundant hot-swap fans standard
- Automatic hardware-level IRQ re-directs using HP's Smart IRQ technology to ease configuration and boost performance
- Supports industry-leading DAT or DLT technology
- HP TopTools for Servers with Web interface for device management, and HP OpenView™ ManageX/SE for NOS and application management
- Integrated HP Remote Assistant and optional HP TopTools Remote Control card for easiest remote access, advanced security, and diagnostics



As entry-level enterprise servers, the HP NetServer LH 4 and LH 4r close the performance gap for workgroups and departments on the fast track, with four-way processing power, high availability, and excellent value.

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specifications



P NetServer LH 4 and LH 4r

Features

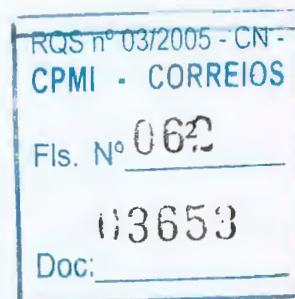
Performance	
<u>Processor</u>	Up to 4 Intel Pentium II Xeon 400MHz, 450 MHz or Pentium III Xeon 500MHz and 550MHz processors with 100MHz system bus
<u>Level 2 Cache</u>	512KB ¹ , 1MB ² , 2MB ³
<u>ECC Memory</u>	• 256MB high-performance 50ns ECC buffered EDO DRAM standard • Memory scrubbing reduces accumulated ECC errors that cause system crashes • 4GB maximum capacity
<u>I/O Expansion Slots</u>	8 total full-length PCI (two 64-bit, one occupied by preinstalled 10/100TX NIC, 1 shared with 2/3 length ISA)
<u>Controllers</u>	• Integrated dual-channel HP NetRAID disk array controller with I₂O. • Integrated dual Ultra2 SCSI controllers. • Additional Ultra2 to SE (single-ended) converter
<u>Mass Storage System</u>	• 4 front-accessible (half-height) shelves – One 3.5-inch flexible disk drive – One CD-ROM drive – Two open common tray (non-hot-swap) shelves, suitable for drives or tape backup (DLT, DDS, autoloader) • 12 front-accessible hot-swap shelves – Six low-profile standard (also supports 4 half-height or mixed low-profile and half-height) – Six additional low-profile (or 4 half-height) with optional cage for full duplex capability
<u>Maximum Internal Storage</u>	218.4GB maximum hot-swap (12 x 18.2GB half-height drives), plus two 9.1GB common tray drives for maximum internal storage of 236.6GB
<u>Video</u>	• Integrated; supports 1024x768, 256-color resolution at 60–75Hz • 1MB standard video memory, upgradeable to 2MB • SuperVGA drivers available with operating system
<u>CD-ROM Drive</u>	32x Max EIDE
<u>Flexible Disk Drive</u>	3.5" 1.44MB flexible disk drive
<u>Built-in I/O Ports</u>	• Two SCSI knock-outs • One 25-pin parallel port • Two 9-pin serial/RS-232 ports • Video port • Mini-DIN keyboard and mouse ports • Management port (9-pin)
<u>Keyboard and Mouse</u>	Localized keyboard and two-button mouse ⁴

¹ Intel Pentium II Xeon 400MHz or Pentium III Xeon 500MHz, 550MHz processors only

² Intel Pentium III Xeon 450MHz, 500MHz, 550MHz processors only

³ Intel Pentium III Xeon 550MHz processor only

⁴ Not included with HP NetServer LH 4r



specifications



P NetServer LH 4 and LH 4r

Features

Availability

Hot-Swap Power Supplies

- 3 hot-swap power supplies standard
- Add optional 4th supply for N+1 redundancy

High-Availability/Clustering Support

Combine HP NetServer LH 4 and LH 4r units with HP NetServer Rack Storage/12 for cluster configurations. See <http://www.hp.com/netserver/products/cluster> for details

Self-Restart Capability

Automatic Server Restart (ASR) that reboots the server in the event of a NOS hang

Self-Correcting Memory

Manageable Error Checking and Correcting (ECC) system memory and cache memory with memory scrubbing

Hot-Swap Disk Drives

- Supports 4.2GB, 9.1GB, and 18.2GB 7200rpm Ultra2 SCSI disk drives
- Supports 9.1GB and 18.2GB 10,000rpm Ultra2 SCSI disk drives
- Hot-swap and hot-spare support

Disk Array Controller

- Integrated dual-channel HP NetRAID disk array controller with I₂O technology
- 16MB write-back cache
- Supports RAID 0, 1, 3, 5, 10, 30, 50

Advanced Cooling System

- 8 Totally Cool hot-swap fans standard (for redundant system cooling)
- Active fan-speed control and failure sensing
- Superior air flow design for low internal temperature rise

IPMI (Intelligent Platform Management Interface)

- Open specification for system component monitoring
- Foundation for self-healing

Network Interface

Preinstalled 10/100TX network interface card with support for optional network interface card to support redundancy, load balancing, and Cisco® Fast EtherChannel®

Manageability

Installation and Configuration

- HP NetServer Navigator with automated, menu-driven system setup and configuration
- Guided network operating system installation
- Automatic installation of monitoring tools

Management Software

- HP TopTools for Servers, a comprehensive server management solution with an intuitive browser-based user interface; facilitates troubleshooting, administration, and information collection
- Detailed inventory information provided through standard DMI 2.0 protocol
- Industry-leading HP OpenView ManageX/SE for NOS and application management
- Easy integration with other leading network and system management products

Remote Administration

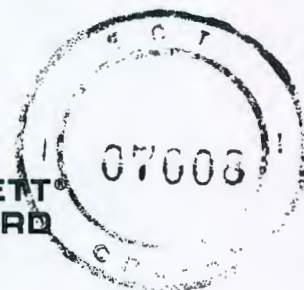
- Integrated HP Remote Assistant provides emergency remote access with a single event log and expanded inventory data collection for faster troubleshooting
- Optional HP TopTools Remote Control card for remote LAN access, advanced security, and online diagnostics
- File transfer capabilities for secure and easy remote updates

¹ See HP NetServer Management Web site at http://www.hp.com/go/netserver_mgmt

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P NetServer LH 4 and LH 4r

Features

Expandability

Design Features

- Tool-free access and interchangeable side covers
- All major assemblies easy to remove for upgrades or repair
- Simple conversion from pedestal to rack configuration
- Physically compatible with standard 19-inch racks

Flexibility

Supported Operating Systems

- Microsoft® Windows NT® Server; Novell® NetWare® and IntranetWare™; Linux; SCO® OpenServer™ and UnixWare®; and IBM® OS/2® Warp Server

Security and Safety

System Security

- Startup password
- Network server mode
- Power/reset switch cover and keyboard lock button
- Enable or disable serial port, flexible disk drives, and write operations to flexible disk drives
- Chassis intrusion detection
- System lock and hot-swap hard disk drive lock

Service and Support

Warranty

3-year, next-business day, onsite limited warranty from HP or authorized resellers (standard business hours) worldwide

HP SupportPack Options

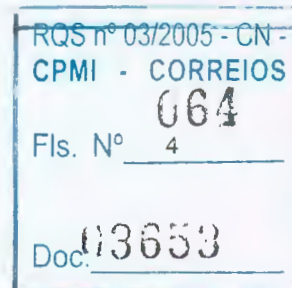
- Free telephone support for basic setup, installation, and troubleshooting in North America, Europe, and Asia Pacific during warranty
- Optional HP SupportPack for 4-hour response during standard business hours
- Optional HP SupportPack for 24 hours a day, 7 days a week
- Optional HP SupportPack for Comprehensive Technical Support

Reseller Support Services

Comprehensive reseller support framework to ensure successful support of HP NetServers includes

- Proactive Notification e-mail service¹
- Service and support website¹
- Server Management and Hardware Troubleshooting courses (STAR)¹
- Troubleshooting Toolkit¹
- 24x7 telephone support for authorized resellers
- HP Business Builders blueprints for new business opportunities

¹See <http://www.hp.com/netserver/servsup> for details



specifications



P NetServer LH 4 and LH 4r

Features

Regulatory Compliance

Electromagnetic Emissions

- USA: FCC Class B (Self Declaration)
- EU Countries: EN 55022 Class B
- Korea: M of C Class A
- Japan: VCCI Class B
- Australia/New Zealand: CISPR 22 Class B
- Taiwan: BCQI Class A
- IEC 1000-3-2: Harmonic Current
- IEC 1000-3-3: Voltage Fluctuation and Flicker

Electromagnetic Immunity

- Generic Immunity (EN 50082-1, EU Countries), including
- ESD (IEC-801-2): 4KV Contact, 8KV Air
 - Radiated Immunity (IEC-801-3): 3V/m, 80% AM Mod, 27MHz-1000MHz
 - EFT (IEC-801-4): 1.0KV Power, 0.5KV I/O lines

Safety

- EN 60950/IEC 950 Compliance (International)
- UL Listed (USA, File E139742)
- CUL Listed (Canada, File E139742)
- NOM Certified (Mexico)
- TÜV Certified (Germany)
- CE Marking (Europe)
- CSA Certified (Canada, File LR106647)

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P NetServer LH 4 and LH 4r

Accessories

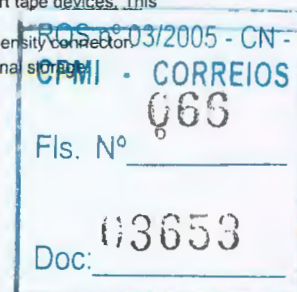
	Product Accessory ¹	Product No.
Memory	• 256MB 50ns EDO DIMM Kit (4x64MB)	D6112A
	• 1GB 50ns EDO DIMM Kit (4x256MB)	D6114A
	• 1MB Video RAM	D4219A
Processors	• Pentium II Xeon 400MHz, 512KB ECC L2 cache	D7007A
	• Pentium II Xeon 450MHz, 1MB ECC L2 cache	D6121A
	• Pentium III Xeon 500MHz, 512KB ECC L2 cache	D7109A
	• Pentium III Xeon 500MHz, 1MB ECC L2 cache	D7110A
	• Pentium III Xeon 550MHz, 512KB ECC L2 cache	D8529A
	• Pentium III Xeon 550MHz, 1MB ECC L2 cache	D8530A
	• Pentium III Xeon 550MHz, 2MB ECC L2 cache	D8531A
Storage Devices	• 4.2GB, Ultra/Wide SCSI disk drive (7,200rpm—common tray)	D4910A
	• 4.2GB, low-profile, hot-swap Ultra2 SCSI disk drive (7,200rpm)	D6104A
	• 9.1GB, Ultra/Wide SCSI disk drive (7,200rpm—common tray)	D4911A
	• 9.1GB, low-profile, hot-swap Ultra2 SCSI disk drive (7,200rpm)	D6106A
	• 9.1GB, low-profile, hot-swap Ultra2 SCSI disk drive (10,000rpm)	D6107A
	• 18.2GB, low-profile, hot-swap Ultra 2 SCSI disk drive (7,200rpm)	D7174A
	• 18.2GB, half-height, hot-swap Ultra2 SCSI disk drive (7,200rpm)	D6108A
	• 18.2GB, half-height, hot-swap Ultra2 SCSI disk drive (10,000rpm)	D7031A
Internal Storage Expansion	Second drive cage for up to 6 additional hot-swap drives ²	D6077A
Disk Controllers & SCSI Cables	• Integrated dual-channel HP NetRAID with I ₂ O technology	Included
	• HP NetRAID-1 Disk Array Controller (1 channel)	D4992A
	• HP NetRAID-3Si I ₂ O Disk Array Controller (3 channels)	D5955A
	• HP Ultra/Wide SCSI PCI adapter	D5025A
	• 2.5m SCSI Cable to connect from HP NetRAID Family Controller to External Storage ³	D6020A
	• HP NetServer LH 3/LH 4 Internal SCSI Cable Kit ⁴	D4282B
External Storage Solutions	• HP NetServer Rack Storage/8 (Ultra/Wide SCSI)	D4902A
	• HP NetServer Rack Storage/12 (Ultra2 SCSI)	D5989A
	• HP NetServer Rack Storage/12 SCSI Card	D6025A
	• HP NetServer Rack Storage/12FC	D5991A
Backup Devices	• Internal HP SureStore DLT 40i DLT 4000 tape drive	C5647A
	• Internal HP SureStore DLT 70i DLT 7000 tape drive	C5657A
	• External HP SureStore DLT 40e DLT 4000 tape drive	C5679A
	• External HP SureStore DLT 70e DLT 7000 tape drive	C5658A
	TapeRack:	
	• HP SureStore TapeRack Enclosure	C5695A
	• HP SureStore DLT 40r DLT 4000 tape drive	C5697A
	• HP SureStore DLT 70r DLT 7000 tape drive	C5698A
	Automated:	
	• HP SureStore 418 DLT Autoloader	C6280F
	• HP SureStore 718 DLT Autoloader	C6280J
	• HP SureStore Autoloader rackmount kit	C6287J

¹ Please see the *HP NetServers Configuration Guide* for important technical information when choosing your accessories or go to <http://www.hp.com/go/netserver>. For HP SureStore backup see <http://www.hp.com/storage>.

² When used in RAID configuration, additional SCSI HBA (D5025A) is required to support tape devices. This upgrade includes cable to connect to internal SCSI controller.

³ 2.5m SCSI Cable 68-pin male ultra-high-density offset connector to 68-pin male high-density connector.

⁴ Use in HP NetServer LH 3/LH 4 when HP NetRAID Family Controller is used with internal storage.




P NetServer LH 4 and LH 4r

Accessories

	Product Accessory ¹	Product No.
Redundant Power	• Redundant hot-swap power supply module	D6095A
Network Interface Cards	• HP NetServer 10/100TX PCI LAN adapter • HP DeskDirect 10/100VG PCI LAN adapter	D5013A J2585B
Remote Management	• Integrated HP Remote Assistant • HP TopTools Remote Control Card including battery • Optional AC adapter required for remote power on	Included D6028A D6138A
Uninterruptible Power Supply	UPS devices are available from American Power Conversion (APC). For additional information, contact your local APC reseller, or see APC's web page at http://www.apcc.com	
Conversion Kit	Pedestal-to-rack conversion kit	D6094B
Upgrade Kits ²	LH 3 to LH 4 upgrade kit includes 2 Intel Pentium II Xeon or Pentium III Xeon processors, system board, and 256MB 50ns EDO DIMM kit (4 x 64MB)	
	• Intel Pentium II Xeon 400MHz processors with 512K L2 cache	D7083A
	• Intel Pentium II Xeon 450MHz processors with 1MB L2 cache	D7015A
	• Intel Pentium III Xeon 500MHz processors with 512K L2 cache	D7111A
	• Intel Pentium III Xeon 500MHz processors with 1MB L2 cache	D7112A
	• Intel Pentium III Xeon 550MHz processors with 512K L2 cache	D9330A
	• Intel Pentium III Xeon 550MHz processors with 1MB L2 cache	D9331A
	• Intel Pentium III Xeon 550MHz processors with 2MB L2 cache	D9332A
Monitors	• HP 50 15" Color Monitor • HP M500 15" Color Monitor • HP 70 17" Color Monitor • HP M700 17" Color Monitor	D2826A D2832A D2837A D2838A
Disk Tray	• 3.5" hard disk drive mounting trays (3 pack, non-hot-swap) • Tape/DAT/CD-ROM mounting trays (3 pack, no front panel) • HP NetServer low-profile hot-swap disk tray • HP NetServer half-height hot-swap disk tray	D2198B D2199A D6128A D6127A
Disk/Tape/CD Bays	• HP Rack n Stack 2-bay rack kit holds 2 half-height modules • HP Rack n Stack 4-bay rack kit holds 4 half-height modules or 2 half-height modules and 1 full-height module	C6542A C6543A
HP Racks	For a complete list of racks and rack accessories, download the HP NetServer Rack Assistant tool from http://www.hp.com/netserver/products/racks .	
Keyboard and Mouse	• HP NetServer keyboard • Mouse	D4950B C3751B

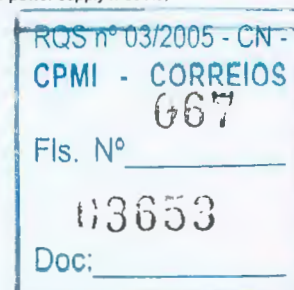
HP SupportPack Offering

Support can be delivered either by your local reseller or by the Hewlett-Packard Customer Support organization. For more information, visit our Web site at <http://www.hp.com/go/netserver>.

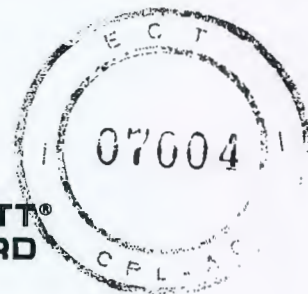
HP SupportPack	Order No.
3-year, onsite with 4-hour response (standard business hours)	H5518A
3-year, onsite with 4-hour response (24 hours/day, 7 days/week)	H5513A
Onsite installation and network configuration	H5751A
Remote NOS, Applications, LAN, WAN, and Management Phone Support	H1847AA

¹Please see the HP NetServers Configuration Guide for important technical information when choosing your accessories or go to <http://www.hp.com/go/netserver>.

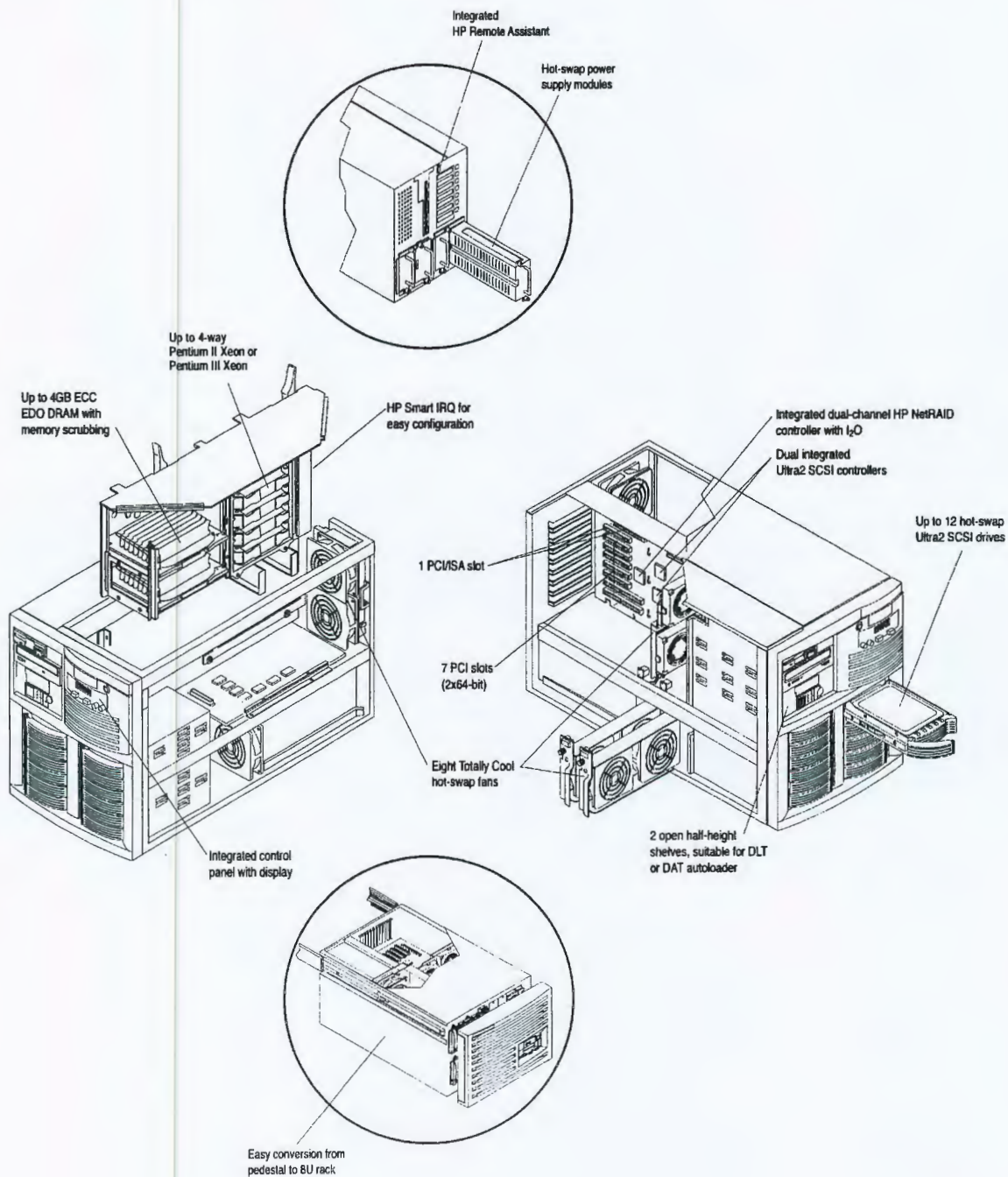
²LH 3 to LH 4 upgrade kit requires secondary fan tray and second power supply cage with one power supply module. Product No. D6093A.



specifications



P NetServer LH 4 and LH 4r



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P NetServer LH 4 and LH 4r

Specifications	
Operating Temperature	41 to 95 degrees F (5 to 35 degrees C)
Operating Humidity	20% to 80% noncondensing
Acoustic Emissions	Sound pressure (LpA): <55 dB(A), bystander position
Power Supply	Auto-ranging 90 to 132 VAC, or 180 to 264 VAC at 47-63Hz
Power Availability	810W
Power Consumption	1140/1100W maximum with 110/220V supply
System Dimensions	Rack: 19"W x 14"H x 29.5"D (482.6cm W x 354.7cm H x 749.2cm D) Pedestal: 13.8"W x 19.5"H x 28.5"D (350.5cm W x 494.8cm H x 724.2cm D)
System Weight	79-132lbs (36-60kg), depending on configuration

Choose Your HP NetServer LH 4 or LH 4r

Product Number	Processor	Configuration	All models include:
D7092A	Pentium II Xeon 400/512KB	Pedestal	256MB 50ns ECC buffered EDO DRAM with memory scrubbing, integrated dual-channel HP NetRAID controller with I ₂ O driving dual PCI Ultra2 SCSI controllers, bundled 10/100TX NIC, CD-ROM drive, flexible disk drive, hot-swap power supplies and fans, Integrated HP Remote Assistant, HP TopTools for Servers, HP OpenView ManageX/SE
D7093A	Pentium II Xeon 400/512KB	Rack ¹	
D6971A	Pentium II Xeon 450 / 1MB	Pedestal	
D6972A	Pentium II Xeon 450 / 1MB	Rack ¹	
D7103A	Pentium III Xeon 500/512KB	Pedestal	
D7104A	Pentium III Xeon 500/512KB	Rack ¹	
D6973A	Pentium III Xeon 500/1MB	Pedestal	
D6974A	Pentium III Xeon 500/1MB	Rack ¹	
D8552A	Pentium III Xeon 550/512KB	Pedestal	
D8553A	Pentium III Xeon 550/512KB	Rack ¹	
D8556A	Pentium III Xeon 550/1MB	Pedestal	
D8557A	Pentium III Xeon 550/1MB	Rack ¹	
D8560A	Pentium III Xeon 550/2MB	Pedestal	
D8561A	Pentium III Xeon 550/2MB	Rack ¹	

¹ Keyboard and Mouse not included with Rack Configurations

Note: All Models Not Available in all Worldwide Regions

HP Select Express Program:

HP NetServer LH 4 is also available through HP Select Express Program. This program offers custom integration of HP hardware offered at HP's lowest price. For more information visit our Web site at: <http://www.hp.com/netserver/product/sep>.

STAY IN TOUCH

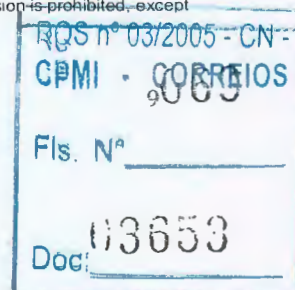
www.hp.com/go/netserver

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June, 1999





HP SureStore DAT24

24 GB DAT

**Reliable, high capacity backup
for distributed networks**



The HP SureStore DAT24 is the new generation of DAT drives for network professionals, combining outstanding capacity and performance with excellent reliability and low cost of ownership. It lets you store up to 7.2 GB of data per hour*.

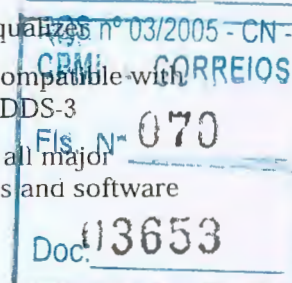
The HP SureStore DAT24 is packed with reliability features for unsurpassed data protection. The mean time between failure is an impressive 300,000 hours. Support for HP TapeAlert Certified Solutions means that you can stay

informed of any maintenance or media changes required. The Feed Forward Equalizer ensures maximum data integrity, while the internal cleaning mechanism helps prevent head clogging.

For added peace of mind, the HP SureStore DAT24 also includes TapeAssure for easy hardware installation, HP's two year Express Exchange hardware warranty** and free telephone support during the warranty period.

Key Features

- HP's new DDS-3 format
- Capacity of 24 GB and transfer rate of 2 MB/s*
- TapeAlert support
- 300,000 hours MTBF
- Internal head cleaner
- Feed Forward Equalizer
- Read and write compatible with DDS, DDS-2 and DDS-3
- Compatible with all major operating systems and software solutions





Specifications

Capacity	12 GB native, typically 24 GB with hardware data compression*, on DDS-3 125 meter cartridge
Recording Format	ANSI/ISO/ECMA DDS, DDS-DC, DDS-2 and DDS-3
Performance	
Transfer Rate	
Sustained	1 MB/s native, typically 2 MB/s with hardware data compression*, using DDS-3 125 meter cartridge
Burst	3 MB/s maximum asynchronous, 10 MB/s maximum synchronous
Search Speed	40 seconds average file access for any part of a 125 meter tape
MTBF	DAT24i: 300,000 hours at 12% duty cycle DAT24e/eU: 200,000 hours at 12% duty cycle
Media	DDS-3 (125 meter), DDS-2 (120 meter) and DDS (90 and 60 meter) Media Recognition System Cartridges
Interface	Single-ended, narrow SCSI-2
Form Factor (internal)	5.25-inch, half-height
Power Requirements	DAT24i: +5V DC $\pm 5\%$, 1.5 A typical, +12V DC $\pm 10\%$, 0.04A typical, 6W typical DAT24e/eU: 100-240V, 0.5A max, 50-60 Hz
Physical Characteristics	
Dimensions (H x W x D)	DAT24i: 41 mm x 102 x 150 mm (1.6 x 4.0 x 5.9 inches) DAT24e/eU: 95 x 116 x 220 mm (3.7 x 4.6 x 8.7 inches)
Weight	DAT24i: 1 kg (2.2 lbs), DAT24e: 2.6 kg (5.7 lbs) DAT24eU: 1.95 kg (4.3 lbs)
Product Certifications	UL Recognized to UL 1950, CSA Certification to C22.2 No 950, IEC 950, TUV-EN 60950, CE Declaration of Conformity, FCC Class B, VCCI Class 2

Ordering Information

Tape Drives

C1555B	HP SureStore DAT24i - 24 GB* internal DAT drive for PC or UNIX*
C1556B	HP SureStore DAT24e - 24 GB* external DAT drive for PC
C5653A	HP SureStore DAT24eU - 24 GB* external DAT drive for UNIX

Internal product includes: User documentation, HP SureStore Tape CD-ROM containing Colorado Backup by Computer Associates for Win/Win 95, TapeAssure and TapeAlert for OpenView, HP NetServer L-series mounting tray, HP Vectra and HP NetServer E-series rails, Compaq rails and screws, one DDS-3 data cartridge and one cleaning cartridge

External products include: User documentation, HP SureStore Tape CD-ROM containing Colorado Backup by Computer Associates for Win/Win 95, TapeAssure and TapeAlert for OpenView, SCSI cable (50 pin low density to 68 pin high density, 1 meter, thumb screw), SCSI terminator, power cable, one DDS-3 data cartridge and one cleaning cartridge

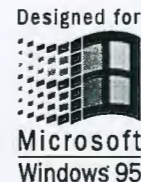
Media, Accessories and Support

C1517A	Five DDS-3 125 meter cartridges, 12 GB native capacity
92300A	Five DDS-2 120 meter cartridges, 4 GB native capacity
92283B	Five DDS 90 meter cartridges, 2 GB native capacity
92283K	Two DDS cleaning cartridges
92283L	DDS cartridge storage box (holds 12 cartridges)
C1574B	ISA SCSI host bus adapter (Adaptec AHA-1510B)
C5644-61000	Internal SCSI cable (4 port, 50-way, terminated, 1 meter)
92222B	External SCSI cable (50 pin low density to 50 pin low density, 1 meter, bail lock)
K2286	External SCSI cable (50 pin low density to 50 pin high density, 1 meter, latch)
C5665A	External SCSI cable (50 pin low density to 68 pin high density, high order line termination, single-ended, 1 meter)
K2291	SCSI terminator (active, 50 pin low density, bail lock)
H5465A	Support Pack upgrade to 3 year Express Exchange warranty

The latest information about HP's tape backup products is available on the World Wide Web at <http://www.hp.com/go/tape>.

To receive product information by fax, please call HP FIRST on 1-800-333-1917 or 1-208-344-4809.

To request printed literature or to find the authorized reseller nearest you, please call:
US: 1-800-826-4111
Canada: 1-800-387-3867
Latin America: (525) 202-0155.



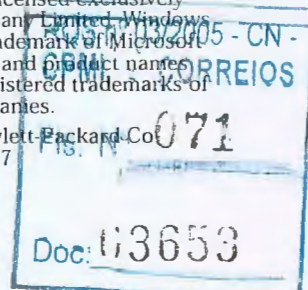
* All capacities and transfer rates quoted as typical use a 2:1 compression ratio; this may vary since compression is data dependent.

** Express Exchange is available in most countries. In those countries which do not currently support Express Exchange, support is provided through either the Low End Support Program or the local parts center. The warranty on an HP SureStore Tape internal drive purchased with an HP NetServer is upgraded to match the system warranty.

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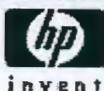


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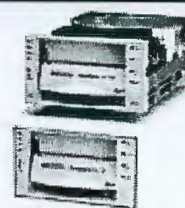


Information Storage

HP SureStore Tape

HP SureStore DLT 80

... with performance
... of large enterprises



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ASSISTANCE

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- [Ordering Information](#)

Related Information

[HP SureStore DLT
Warranty](#)

[A Practical Guide to
the LVDS Interface on
HP SureStore Tape
\(PDF file\)](#)

Overview

The latest addition to the HP SureStore DLT range delivers 80 GB* on a single tape, to stay ahead of the backup and restore requirements of enterprise managers facing increasing capacity demand and a shrinking window. Compatibility with all four of the top selling server brands is tested and assured.

As well as its additional capacity, the HP SureStore DLT 80 benefits from advances in reliability, an improved native transfer rate of 6 MB/second and flexible LVDS connectivity.

TapeAlert continuously monitors the drive and media and warns you of any potential backup problems, thereby helping to maintain the integrity of data throughout the backup process.

The HP SureStore DLT 80 is compatible with leading operating systems and software platforms. The drive can be supplied as an internal or external unit or can be rack-mounted for use with the HP SureStore TapeRack enclosure.

For extra peace of mind, the HP SureStore DLT 80 is fully supported by HP Customer Care and benefits from HP's Express Exchange warranty with free technical support.

Additional Features

- 80 GB* of unattended backup on a single tape at up to 43.2 GB* an hour transfer rate
- Tested compatibility with all major servers, software and operating systems
- Backup software with disaster recovery for network servers included
- HP SureStore Tape CD-ROM containing troubleshooting

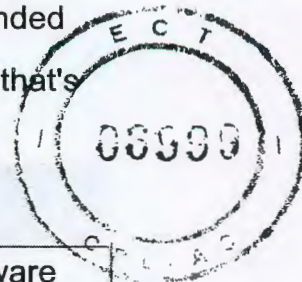
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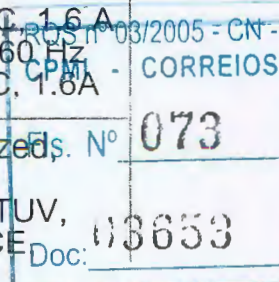


- HP SureStore Tape CD-ROM containing troubleshooting diagnostics, drivers and documentation
- Advanced error detection and correction techniques
- Flexible LVDS interface can also revert to single-ended
- HP DLT media for maximum quality and reliability
- Backed by HP Customer Care service and support that's easy to reach, easy to use

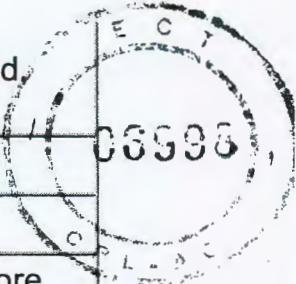


Technical Specifications

Capacity	40 GB native, 80 GB with hardware data compression*
Media	HP DLTtape IV data cartridge
Interface	DLT 80i/e: Single-ended, fast wide SCSI (SCSI-3) DLT 80r: SCSI-3, SCA-2 connector (combined power and SCSI-2) for HP SureStore TapeRack
Performance	
Sustained Transfer Rate	6 MB/s (21.6 GB/h) native, up to 12 MB/s (43.2 GB/h) with hardware data compression*
Search Speed	60 seconds average to locate a file in 80 GB of data
Reliability	
Head Life	50,000 tape motion hours (continuous operation)
Cartridge Life	1,000,000 passes
MTBF	250,000 hours
Physical Characteristics	
Dimensions (H x W x D)	DLT 80i: 86 x 148 x 244 mm (3.38 x 5.83 x 9.60 in) DLT 80e: 160 x 175 x 325 mm (6.3 x 6.9 x 12.8 in) DLT 80r: 108 x 165 x 302 mm (4.25 x 6.5 x 11.88 in)
Weight	DLT 80i: 2.9 kg (6.4 lbs) DLT 80e: 6.63 kg (14.56 lbs) DLT 80r: 4.6 kg (10.1 lbs)
Power Requirements	DLT 80i: 5V DC, 3.6A; 12 V DC, 1.6 A DLT 80e: 100-240V, 0.7A, 50-60 Hz DLT 80r: 5V DC, 3.6A; 12V DC, 1.6 A
Product Certifications	DLT 80i: UL and cUL Recognized, TUV, CE, C-Tick, RRL, BCIQ DLT 80e: UL and cUL Listed, TUV, FCC Class B, VCCI Class 2, CE



	C-Tick, RRL, BCIQ DLT 80r: UL and cUL Recognized, TUV, CE, C-Tick, RRL, BCIQ
Hardware Warranty	Three-year Express Exchange**
HP SureStore DLT 80 products include	
	User documentation, HP SureStore Tape CD-ROM (containing HP TapeAssure software diagnostic and drivers for Windows NT), Yosemite Technologies CD (containing TapeWare server backup software, supporting Windows NT Server, NetWare 4.x and 5.x and Red Hat Linux 5.2 and 6), warranty registration card, multi-language front panel labels, one HP DLTtape IV data cartridge, and one HP DLTtape cleaning cartridge
DLT 80i also includes:	HP NetServer L-series mounting tray, jumpers, Compaq rails, screws
DLT 80e also includes:	External SCSI cable (68-pin to 68-pin LVD/SE Ultra2, 1.5 meter), SCSI terminator (active, 68-pin LVD/SE SCSI multi-mode), power cable



Ordering Information

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Tape Drive Order Numbers	
C5725A	HP SureStore DLT 80i - 80 GB* internal DLT-5 drive
C5726A	HP SureStore DLT 80e - 80 GB* external DLT-5 drive
C5727A	HP SureStore DLT 80r - 80 GB* removable DLT-5 drive for use in HP SureStore TapeRack
Media and Accessories	
C5141F	HP DLTtape IV data cartridge
C5142A	HP DLTtape cleaning cartridge
C5679A	External SCSI cable (68-pin to 50-pin high density, latch, high byte terminated, 0.9 meter)
C5741A	External SCSI cable (68-pin to 68-pin LVD/SE Ultra2, 0.9 meter)
C5742A	External SCSI cable (68-pin to 68-pin LVD/SE Ultra2, 1.5 meter)
C5743A	External SCSI cable (68-pin to 68-pin LVD/SE Ultra2, 2.5 meter)
C7424A	Internal SCSI cable (4 connectors 68-way, terminated, 1 meter)
C5738A	SCSI terminator (external LVD/SE multimode)
C1578B	PCI Ultra-wide host bus adapter (Adaptec AHA-2940UW)
C7430A	PCI Ultra2-wide host bus adapter (Adaptec AHA-2940U2W) - recommended for optimum performance
C7423A	68-pin to 50-pin adapter (male)
C7434A	68-pin to 68-pin VHD SCSI adapter
C5732A	Dell rail kit for Dell PowerEdge servers 2300, 4100, 4200 and 6100

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* All capacities and transfer rates quoted as typical use a 2:1 compression ratio; this may vary since compression is data dependent.

** Express Exchange is available in most countries. In those countries which do not currently support Express Exchange, support is provided through either the Low End Support Program or the local parts center. (Read the Warranty Statement.)

‡ Please note Replica Single Server for HP SureStore Tape is not supported on Novell NetWare 5.x.

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HEWLETT®
PACKARD



HP D8895A

HP 55

15-inch Color Monitor
13.8-inch Viewable Image
User's Guide

Monitor Color de 15 polegadas
13.8 polegadas de imagem visível
Guia del Usuario

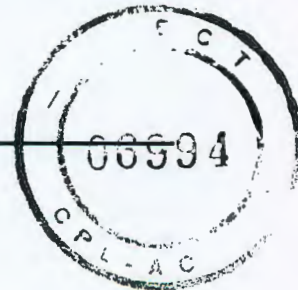
Monitor Colorido de 15 polegadas
Imagem Visível de 13.8 polegadas
Guia do Usuário



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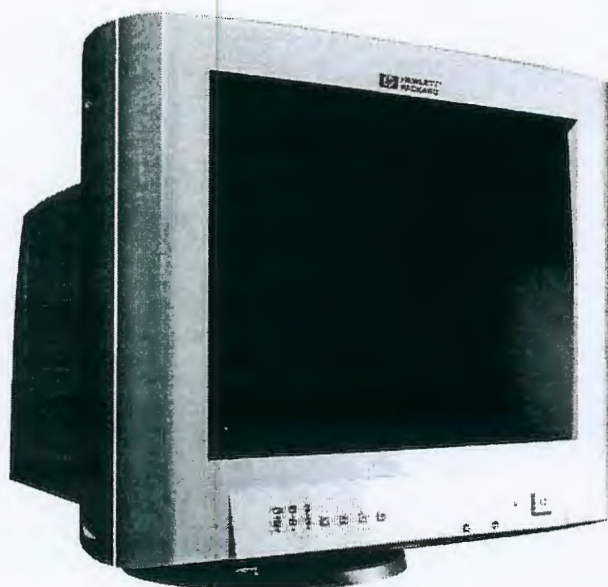
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Recursos Principais

- Monitor colorido multissíncrono de alta resolução
- 28 pontos por polegada para uma resolução gráfica excelente
- Proteção de tela antireflexiva e antiestática
- Modo de vídeo recomendado de 800×600 a 85 Hz

HP 55

HP D8895A

Monitor Colorido de 15 polegadas

Imagem Visível de 13,8 polegadas

Guia do Usuário

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Doc: <u>06933</u>



Instruções de Segurança Importantes

Antes de ligar o monitor novo, leia as instruções de segurança.

ADVERTÊNCIA Por razões de segurança, ligue sempre o equipamento a uma tomada ligada à terra. Utilize sempre um cabo de alimentação com em conformidade com as normas de segurança nacionais. Este equipamento pode ser desligado da corrente retirando o cabo da tomada de alimentação. Sendo assim, o equipamento deve ser colocado perto de uma tomada de alimentação facilmente acessível.

Para evitar choques eléctricos, não abra a tampa do monitor. As peças interiores não podem ser reparadas pelo utilizador. Estas peças devem ser reparadas apenas por pessoal de assistência técnica qualificado. Certifique-se de que o PC está desligado antes de ligar ou desligar um monitor.

Trabalhar com conforto Para optimizar o conforto e produtividade, é importante configurar correctamente a área de trabalho e utilizar o equipamento HP adequadamente. Foi a pensar nisso que desenvolvemos algumas recomendações de configuração e utilização com base em princípios de ergonomia estabelecidos.

Pode consultar a versão online das recomendações Trabalhar com Conforto já carregadas no disco rígido dos computadores HP ou visitar o web site da HP Trabalhar com Conforto em:

<http://www.hp.com/ergo/>

CUIDADO

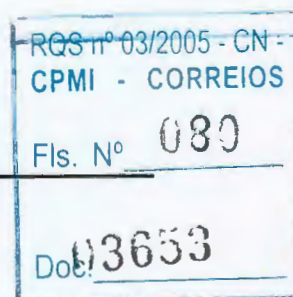
O monitor é bastante pesado (o peso está indicado nas especificações técnicas). Recomendamos que peça ajuda para o levantar ou deslocar.



O sinal luminoso em forma de raio com seta, dentro de um triângulo equilátero, alerta o utilizador para a presença de "tensão perigosa", não isolada, dentro da caixa, que pode ser suficiente para constituir risco de choque eléctrico.

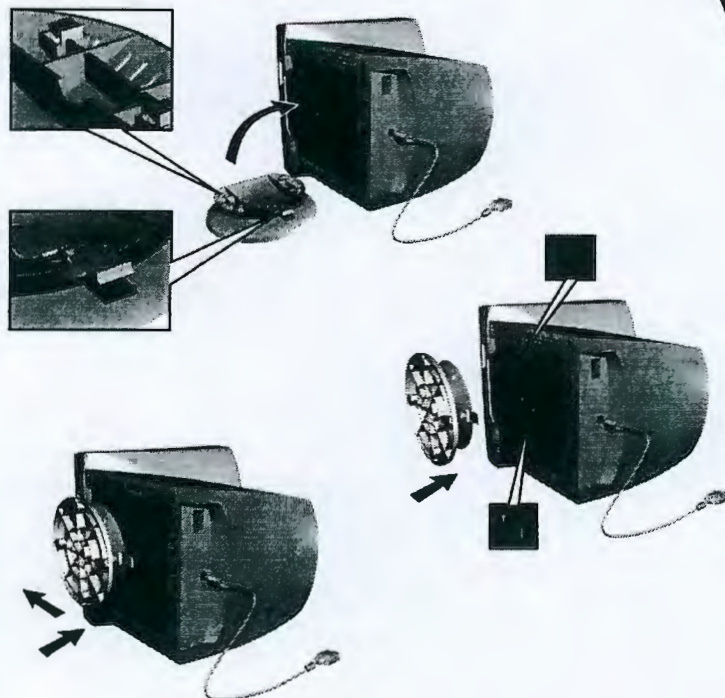


O ponto de exclamação dentro de um triângulo equilátero alerta o utilizador para a presença de instruções de funcionamento e assistência importantes na literatura que acompanha o produto



Como Configurar o Monitor

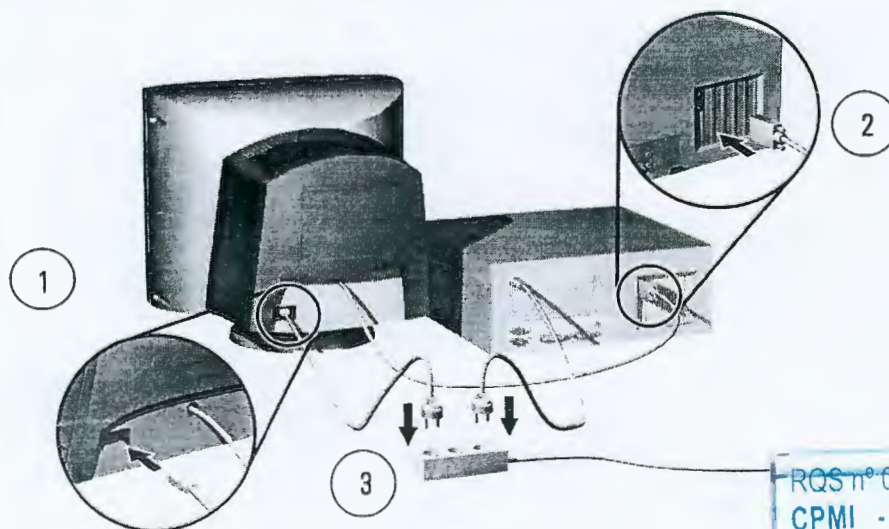
Como Colocar a Base Giratória



Como Conectar os Cabos

CUIDADO

Antes de conectar quaisquer cabos ou instalar o monitor HP, consulte as instruções de segurança no início deste manual. Consulte também o manual do usuário que acompanha o PC para garantir que o equipamento esteja instalado corretamente.



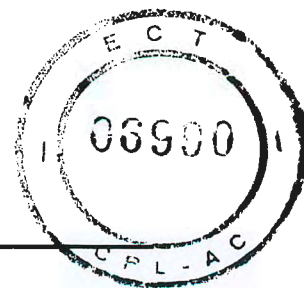
Português

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Modos de Vídeo Suportados

O monitor suporta os modos de vídeo exibidos na tabela abaixo.

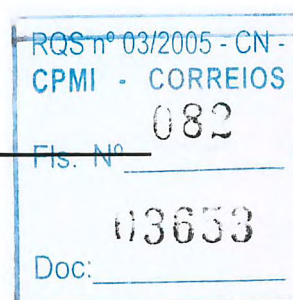
Resolução de Tela	Taxa de Atualização da Imagem
640×400	70 Hz
640×480	60 Hz, 85 Hz
720×400	70 Hz
800×600	60 Hz, 85 Hz
1024×768	60 Hz

CUIDADO

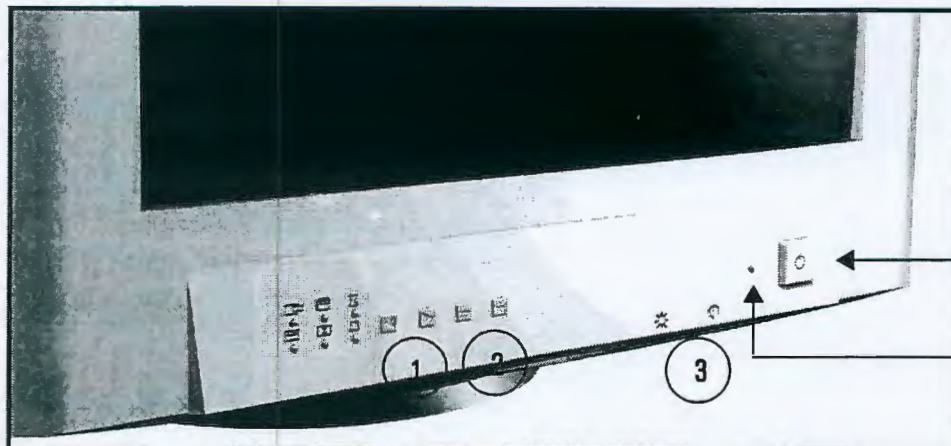
A seleção de um modo de vídeo no computador, com uma combinação de taxa de atualização de imagem/resolução de tela maior que 1024×768 a 60Hz, pode danificar o monitor.

NOTA

Quando o usuário restaurar um dos 7 modos de vídeo pré-ajustados de fábrica, pressione os botões – e + simultaneamente.



Como Utilizar o Monitor



Botão
LIGA/DESLI
GA

Indicador de
Status (LED)

1 Ajuste da imagem

Utilize o botão ◀ ou o botão ▶ para selecionar os ícones que se deseja ajustar e visualizar. (Para símbolo, consulte a tabela)

2 Botões - / +

Utilizados para definir valores digitais para cada um dos itens de comando selecionados na tela, pressionando-se o botão + para aumentar ou o botão - para diminuir.

3 ● Controle de Contraste

Ajusta o contraste do monitor.

☼ Controle de Brilho

Usado para ajustar o brilho da imagem.

NOTA

O monitor é desmagnetizado automaticamente a cada vez que for LIGADO. Isto garante a pureza da cor. Para manter a pureza da cor, é recomendável deligar o monitor a cada semana por, pelo menos, 30 minutos antes de ligá-lo novamente.

Utilize a tabela abaixo para determinar qual item desejar:

Controle de ajuste	Utilize para Ajustar...
 Posição- H	A posição horizontal da imagem exibida
 Tamanho-H	O tamanho horizontal da imagem exibida
 Posição-V	Para mover a imagem para cima e para baixo
 Tamanho-V	A posição vertical da imagem exibida
 Efeito Almofada	Se as bordas verticais parecerem curvar-se para dentro ou para fora
 Trapezoide	Se as bordas verticais não parecerem paralelas

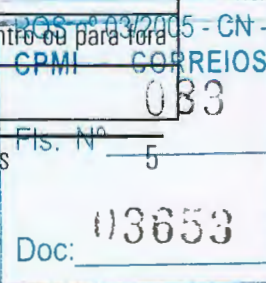
Português

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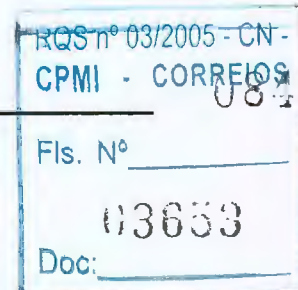
Especificações Técnicas

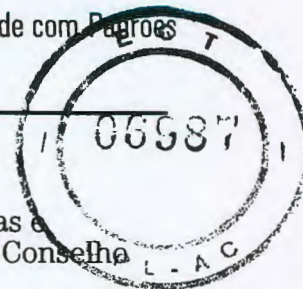
TUBO DE IMAGEM	Tamanho	15 polegadas imagem visível de 13,8 polegadas
	Pixels por polegada	0,28 mm
	Tela	Revestimento anti-reflexivo e antiestático
INTERFACE	Cabo de Vídeo Fixo com Conectores mini D-SUB de 15 pinos	
FREQUÊNCIA DE VARREDURA	Horizontal	30 a 54 kHz
	Vertical	50 a 90 Hz
RESOLUÇÃO MÁX. (H×V)	1024 × 768 (60 Hz)	
TEMPO DE AQUECIMENTO	30 minutos para alcançar um excelente nível de desempenho	
FREQUÊNCIA DE PIXEL	65 MHz	
TAMANHO DA IMAGEM	Tamanho padrão: 270(H) × 202(V)mm Tamanho máximo: 282(H) × 212(V)mm	
GERENCIAMENTO DE ENERGIA	Ligado 85W (máx.)	LED verde constante
	Modo standby 15W (máx.)	LED âmbar
	Modo suspenso 15W (máx.)	LED âmbar
	Desligado Ativo 8W (máx.)	LED âmbar
FONTE DE ALIMENTAÇÃO	CA de 90 a 264 V, 50/60Hz Corrente 2,0 A (máx.)	
AMBIENTE OPERACIONAL	Temperatura	0 °C a 40 °C
	Umidade	15% RH a 80% RH (sem condensação)
AMBIENTE DE ARMAZENAMENTO	Temperatura	-20 °C a 60 °C
DIMENSÕES DO GABINETE	360(W) × 382(H) × 396(D) mm (com a base)	
PESO	13,3 kg (Líquido)	
BASE GIRATÓRIA	Ângulo de Inclinação	- 5° a + 13°
	Ângulo Giratório	+ 45°/-45°

Informações Regulamentares

Aviso para MPR

O Monitor Colorido HP de HP 15,0 polegadas foi testado de acordo com a MPR 1990:8 para as propriedades de Emissão e cumpre as diretrizes conforme fornecidas pela MPR 1990:10 (2.01 - 2.04).





Compatibilidade com Padrões

- Diretrizes MPRII para limites superiores de emissões elétricas e eletrostáticas e emissões de campos magnéticos, a partir do Conselho Nacional Sueco para Medições e Testes.
- Sistema de gerenciamento de energia do monitor (padrão VESA¹) controlado por computadores HP adequadamente equipados para reduzir automaticamente o consumo de energia do monitor.
- Como parceiro da ENERGY STAR, a Hewlett-Packard determinou que este produto cumpre as Diretrizes da ENERGY STAR para eficiência de energia².
- Recurso Plug and Play (padrão VESA DDC1/2B, também compatível com os requisitos DDC2B) que permite ao monitor identificar a si mesmo em computadores HP adequadamente equipados.

Informações Ambientais

A HP possui um forte compromisso com o meio ambiente. O monitor HP foi projetado para respeitar o ambiente o máximo possível.

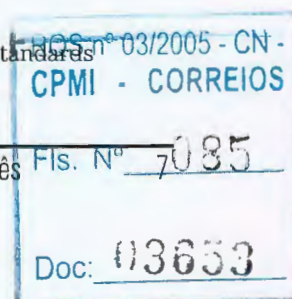
A HP também pode receber o seu monitor antigo para reciclagem quando este alcançar o final de sua vida útil.

A HP possui um programa de retorno do produto em vários países. O equipamento coletado é enviado para o centro de reciclagem da HP na Europa ou nos EUA. Todas as peças possíveis são reduplicadas. O restante é reciclado. Um cuidado especial é tomado com as baterias e outras substâncias potencialmente tóxicas, que são reduzidas a componentes não prejudiciais através de um processo químico especial. Se você quiser obter mais detalhes sobre o programa de retorno do produto HP, entre em contato com o seu revendedor ou com o Escritório de Vendas da HP mais próximo.

O tubo de raio catódico utilizado neste monitor não contém cádmio.

1. VESA é a Associação de Padrões Eletrônicos de Vídeo (Video Electronics Standards Association)
2. ENERGY STAR é uma marca de serviços registrada nos EUA da US EPA.

Português





Cuidados e Limpeza

Não coloque nenhum objeto na parte superior do monitor. Ao fazer isto, você estará bloqueando a ventilação e causando danos ao monitor devido aos superaquecimento.

Não derrame líquidos no monitor.

Para maximizar a vida útil da tela e evitar danos ao tubo de imagem (como fósforo queimado, devido a deixar a mesma imagem na tela por um período de tempo prolongado), é recomendável:

- Utilizar o sistema de gerenciamento de energia do monitor (nos computadores HP) ou um programa de proteção de tela.
- Evitar a configuração de contraste e brilho em seus níveis máximos por períodos de tempo prolongados.
- Se você não possui um sistema de gerenciamento de energia ou um programa de proteção de tela, desligue o monitor ou reduza o brilho e o contraste para os níveis mínimos quando este não estiver em uso.

O monitor possui um revestimento de tela anti-reflexivo e antiestático. Para evitar danos ao revestimento da tela do monitor, utilize um limpador de vidro de uso doméstico. Para limpar a tela:

- 1 Desligue o monitor e retire o plugue da tomada (puxe o plugue, não o cabo).
- 2 Umedeça um pano de algodão macio com a solução de limpeza e limpe a tela suavemente. Não pulverize o limpador na tela, pois ele pode pingar no monitor.
- 3 Seque com um pano de algodão macio e limpo.

Não utilize soluções de limpeza que contenham flúor, ácidos ou álcalis.

Suporte ao Cliente

Se você precisar de ajuda com seu equipamento, seu revendedor local está atualizado com as mais recentes informações sobre produtos e serviços da HP. Porém, se seu revendedor não for capaz de ajudá-lo, você poderá obter auxílio diretamente através do Centro de Informações da HP ou do Help Phone.

Antes de ligar tenha disponível a nota fiscal de compra, o termo de garantia, o modelo e o número de série do produto que se encontram na etiqueta na parte traseira do monitor.

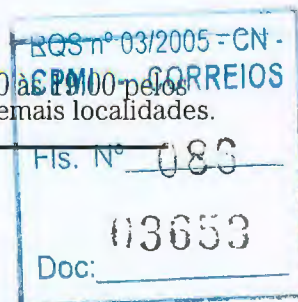
No Brasil

Centro de Informações da HP: de segunda à sexta-feira das 08:00 às 22:00 e aos sábados das 09:00 às 18:00 pelos telefones: (11) 822.5565 em São Paulo e grande São Paulo, ou 0800.157751 par as demais localidades.

Help Phone: de segunda à sexta-feira das 08:00 às 19:00, pelo telefone (11) 829.6612, de qualquer lugar do país. Observação: O Help Phone poderá ser utilizado dentro do período de garantia, sem ônus para o cliente até 90 dias após a primeira consulta. Fora dessas condições haverá cobrança de taxa de atendimento.

Na Argentina

Centro de Suporte ao Cliente da HP: de segunda à sexta-feira das 08:30 às 18:00 pelos telefones: (11) 4778.8380 em Buenos Aires, ou 0810.5555520 para as demais localidades.



Garantia de Hardware

PARTE I - Garantia Geral de Hardware HP

Geral

Esta Declaração de Garantia de Hardware do Monitor HP fornece a você, o cliente, direitos de garantia expressa da HP, o fabricante.

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AS LEIS DE SEU PAÍS PODEM OFERECER DIFERENTES DIREITOS DE GARANTIA. NESTE CASO, SEU REVENDEDOR AUTORIZADO HP OU O ESCRITÓRIO DE VENDAS E SERVIÇOS HP PODE FORNECER MAIS DETALHES.

Reparo ou substituição de garantia

Modelo	Período de Garantia	Serviço Fornecido
D8895A	1 ano	Serviço no local.

A Hewlett-Packard (HP) garante este produto de hardware monitor ou acessórios contra defeitos em materiais e mão-de-obra para o período de garantia aplicável declarado acima, iniciado a partir da data de entrega do produto ao cliente usuário final.

A HP não garante que o hardware HP opere sem interrupções e livre de erros.

Se, durante o período de garantia do produto, a HP não puder, dentro de um período de tempo razoável, consertar o seu produto para a condição que foi garantido, você será reembolsado (na quantia do preço de compra do produto) mediante o pronto retorno do produto a um representante autorizado HP ou outro designado pela HP. A não ser que declarado ou acordado por escrito com a HP, todos os componentes de hardware devem ser devolvidos para obter reembolso com toda a unidade de processamento do sistema.

O software da HP é coberto pela Garantia Limitada do Produto de Software HP localizada no manual do produto HP.

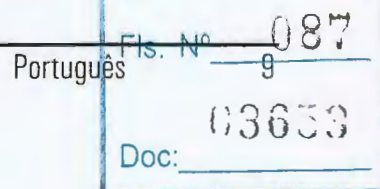
A não ser que seja afirmado o contrário e expressamente permitido pela lei, os produtos de hardware podem conter peças remanufaturadas (equivalentes às novas em desempenho) ou peças que foram sujeitas principalmente ao uso incidental. A HP pode consertar ou substituir os produtos de hardware (i) por produtos que sejam equivalentes em desempenho aos produtos que estão sendo consertados ou substituídos, mas que estiveram sujeitos a uso anterior ou (ii) por produtos que podem conter peças remanufaturadas equivalentes às novas em desempenho ou peças que foram sujeitas ao uso incidental.

Comprovante de Compra e Período de Garantia

A fim de receber serviços ou suporte para o produto de hardware no período de garantia, é necessário obter uma prova da data original de compra do produto, que pode ser solicitada para estabelecer a data de entrega do seu produto. Se a data de entrega não estiver disponível, a data de compra ou a data do fabricante (localizada no produto) será adotada como o início do período de garantia.

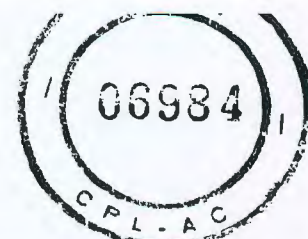
Limitação de Garantia

A garantia não se aplica a defeitos resultantes de: (a) calibração ou manutenção imprópria ou inadequada; (b) software, interfaces, peças ou suplementos não fornecidos pela HP; (c) conserto não-autorizado, manutenção, modificação ou mau uso; (d) operação fora das especificações operacionais publicadas para o produto; (e) manutenção ou preparação de local impróprio ou (f) como outras exclusões que podem ser expressamente definidas nesta Declaração de Garantia.



Guia do Usuário do Monitor Colorido HP de 15"

Garantia de Hardware



A HP NÃO OFERECE NENHUMA OUTRA GARANTIA EXPRESSA, ORAL OU ESCRITA, COM RESPEITO A ESTE PRODUTO.

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Doc: 03633

DECLARATION OF CONFORMITY
According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014

Manufacturer's Name: HEWLETTPACKARD France
Manufacturer's Address: 5, Avenue Raymond Chanas - EYBENS
38053 GRENOBLE CEDEX 09
FRANCE

declares that the product:

Product Name: HP 55 15-inch Color Monitor
Model Number: D8895A

conforms to the following product specifications:

- **SAFETY** - International: IEC 60950:1991 + A1 + A2 + A3 + A4
- Europe: EN 60950:1992 + A1 + A2 + A3 + A4
- **EMC** - CISPR 22:1993 + A1 + A2 / EN 55022:1994 + A1 + A2 Class B¹⁾
- EN 50082-1:1992
IEC 801-2:1992 / prEN 55024-2:1992 - 4kV CD, 8 kV AD
IEC 801-3:1984 - 3V/m
IEC 801-4:1988 / prEN 55024-4:1992 - 1 kV Power Lines
- IEC 555-2:1982 + A1:1985 / EN 60555-2:1987
- IEC 61000-3-3:1994 / EN 61000-3-3:1995
- FCC Title 47 CFR, Part 15 Class B²⁾
- ICES-003, Issue 2

Supplementary information: The product herewith complies with the requirements of the following Directives and carries the CE-marking accordingly:
EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC, both amended by the Directive 93/68/EEC.

¹⁾The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.

²⁾This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

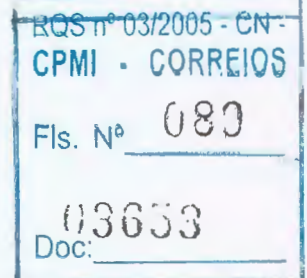
- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Grenoble, 5 October 1999


Jean Marc JULIA
Quality Manager

For Compliance Information ONLY, contact:

USA contact: Hewlett Packard Company, Corporate Product Regulations Manager, 3000 Hanover Street, Palo Alto, CA 94304.
(Phone (415) 857-1501)





Paper Not Bleached with Chlorine

Part Number: D8895-90030

Printed in Brazil 08/99



D8895-90030

Doc: 03653

Hewlett-Packard Brasil
Alameda Rio Negro, 750 - Alphaville
06454 - 000 - Barueri - SP

Tel (011) 726.8118/8116
Telex 1711351
Fax (011) 726.8127



HEWLETT
PACKARD

SERVIDOR RISC VISUALIZE J7000 : RISC1

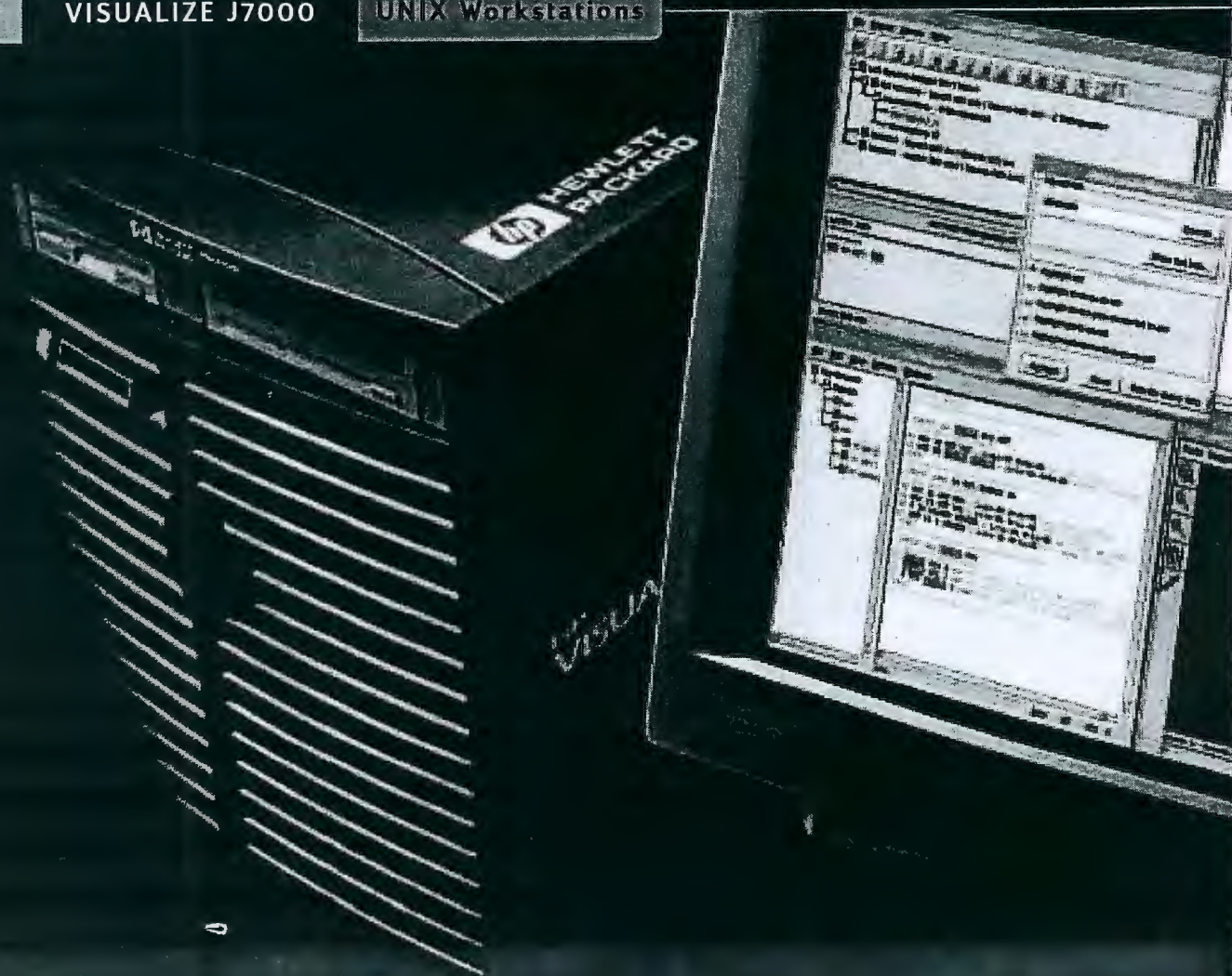


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HP

VISUALIZE J7000

UNIX Workstations



HP
VISUALIZE
WORKSTATIONS

Your Ultimate Design Machine - Big Memory
and Extreme Disk Performance

Doc. 03653

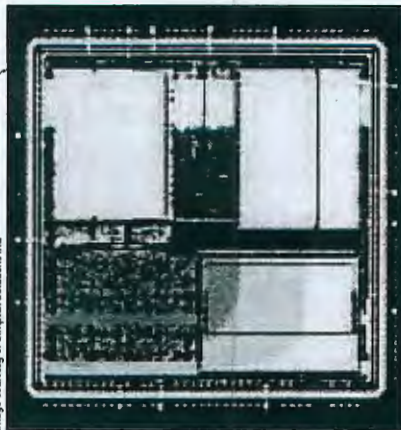


Image courtesy of Simple Solution Inc.

Big Memory, Extreme Disk Performance

The HP VISUALIZE J7000 Workstation is built to solve your toughest design problems. It cuts your design cycle time with the industry's fastest micro-processor, largest RAM capacity and fastest data transfer to I/O.

At the heart of this new design machine are four 64-bit PA-8500 processors running at 440MHz for maximum, four-way multiprocessing power. With its 140 million transistors and 1.5MB on-chip L1 cache, the PA-8500 processor offers the industry's largest on-chip memory level, minimizing memory latency and boosting performance.

For the largest designs, the J7000 supports up to 8GB of Synchronous DRAM. This gives you the memory capacity required for top performance on your RAM-hungry applications. It works in conjunction with 2GB/s I/O performance to break through today's design barriers.

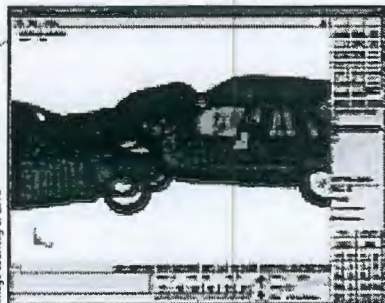
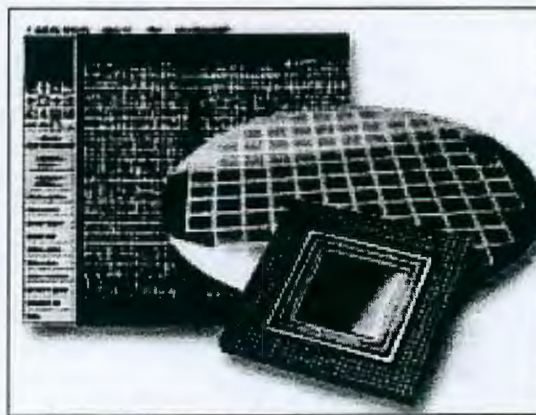


Image courtesy of LSTC

Designed for Your Toughest Work

The HP VISUALIZE J7000 Workstation is ideal for electronic or mechanical engineers who focus on large design, analysis and visualization problems. It's also an excellent solution for teams of engineers seeking faster data access times on PDM applications.

For electronic designers, the J7000 provides the combination of ultimate compute power and the largest memory capacity required to design complex chip sets in less time—without being forced to chop large designs into small pieces. The J7000 rises to the formidable challenges of system-on-a-chip (SOC) simulation, complex IC



Screen image courtesy of Avnet

The power to design and verify multi-million gate ICs

verification, logic synthesis and design rule checking. It also makes an excellent EDA team workstation when bundled with Platform Computing's Load Sharing Facility software.

For mechanical engineers, the J7000 provides the compute power needed for high-end engineering analysis work, including computational fluid dynamics and finite element analysis. It makes it possible to run complex analysis applications and visualize the results on your own desk.

The J7000 responds forcefully to your immediate high-performance computing needs. It supports powerful 64-bit applications that are available today. The J7000, with its 8GB RAM capacity, allows you to efficiently solve complex designs with data files larger than 4GB. It stands alone as the only workstation available today with this level of power.

Configuration Choice and Flexibility

Along with power and performance comes system flexibility. With the J7000, you have a choice of operating systems. It supports the rock-solid 64-bit HP UX-11 operating system as well as the robust HP-UX 10.20 operating system.

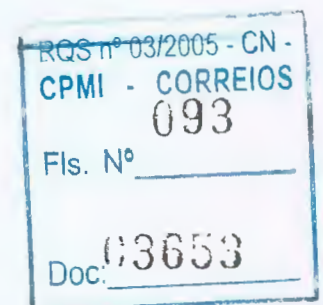
At the same time, the J7000 is ready to be configured to meet your individual needs. It gives you a choice of 2D and 3D graphics subsystems. It includes

eight industry-standard PCI slots, giving you the option of boosting capabilities with additional PCI I/O cards. And it can be deployed at the deskside or mounted in a rack. Regardless of how it is configured, your J7000 workstation will help you slash the amount of time required for your compute- and memory-intensive tasks.

Great Investment Protection

The HP VISUALIZE J7000 Workstation is open and expandable, so you can easily add more disk, RAM, graphics and I/O capacity to meet your current or future needs. What's more, the J7000 is binary compatible with your existing PA-RISC applications and data.

Looking ahead, today's HP-UX operating systems offer binary compatibility with future products based on the HP PA-RISC architecture and the IA-64 architecture. This level of compatibility is available from only one workstation supplier—Hewlett-Packard.



The Ultimate Design Machines

Like the other HP VISUALIZE systems, the J7000 Workstation is built for people who need to solve the largest design problems. The HP VISUALIZE Workstation family has it all: powerful processors, the industry's fastest graphics subsystems, increased disk, RAM and I/O capabilities, and UNIX® and Windows NT® interoperability. In short, HP VISUALIZE Workstations are your ultimate design machines.



feature advantage benefit

Performance

<u>4-way 440MHz PA-8500</u>	The hottest UNIX performance on the market	Delivers higher application performance at a lower price
<u>2GB/s I/O peak performance</u>	Fastest data transfer to I/O	Provides excellent data transfer performance
<u>Highly integrated microprocessor design</u>	1.5MB on-chip cache	Brings you higher performance at a lower cost
<u>8GB Synchronous DRAM</u>	Largest RAM capacity available in a workstation	Provides the memory demanded by designers of large complex chips requiring very large RAM
<u>64X64 operating system and microprocessor</u>	Excellent application performance	Delivers better performance on large processes, such as full chip simulation, logic synthesis and design rule checking.
<u>8 industry-standard PCI I/O slots</u>	Higher capability for graphics cards and other PCI I/O cards	Gives you more capability for complex applications
<u>72GB internal Hot Plug disk</u>	Large capacity for applications and design data	Supports faster disk access with no power-down to change disks

Graphics

<u>HP VISUALIZE-EG graphics subsystem</u>	Leadership 2D graphics performance for EDA work, including file servers and compute farm engines	Meets your 2D visualization needs with exceptional performance at an affordable price
<u>HP VISUALIZE-fx² Pro graphics subsystem with 2 HP PA-RISC geometry engines</u>	Delivers industry's best entry-level 3D graphics performance	Supports fast visualization at an affordable price
<u>HP VISUALIZE-fx⁶ Pro graphics subsystem with 6 HP PA-RISC geometry engines</u>	The world's fastest 3D graphics performance for MDA work	Supports faster visualization and interactive work with very large 3D models

Integration

<u>Growth to the IA-64 architecture</u>	HP-UX 11 is binary compatible with IA-64	Allows you to migrate your applications forward to new products
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Investment Protection

<u>Rack-mountable or deskside</u>	Flexible office or back room	Saves space when racked
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Fls. Nº 094
Doc: 03653

7000

J7000 technical specifications



Central Processor	
Type	PA-8500
Clock frequency	440MHz
Number of processors	4
Primary Cache (On Chip)	
Instruction cache	0.5MB
Data cache	1.0MB
Performance	
SPECint95	324
SPECfp95	458
Main Memory	
Bus bandwidth	1.3GB/s
RAM type	SDRAM
Capacity	512MB-8GB
Memory slots	16 slots in pairs
PCI Slots (8 total)	
PCI 2X	5 slots
PCI 4X	1 slot power only 2 slots
Internal Storage Devices	
Ultra2 SCSI LVD (80-pin SCA connector)	
4 drives maximum	
Hot pluggable (requires HP MirrorDisk/UX)	
Hard disk drive	9GB (10K rpm)
Hard disk drive	18GB (10K rpm)
Removable Media	
CD-ROM ATAPI interface	32X (internal)
3.5 in. PC Floppy drive	1.44MB (internal)
DDS-3 tape drive	12 - 24GB (internal)
External Storage	
NSE SCSI	
50-pin in high-density	1 port - up to 7 devices
Ultra2 SCSI LVD	
68-pin in high-density	1 port - up to 11 devices
Networking	
RJ45	10/100 Base-Tx Ethernet
LAN Data Rate	10/100 Mbits/sec
Other I/O	
Serial interface 9-pin DIN	2 ports
Parallel interface 25-pin DIN	1 port
USB (Universal Serial Bus) Series A	2 ports (keyboard and mouse only)
Audio	
Type	Integrated, CD-quality stereo
Inputs	Stereo line-in, MIC-in
Outputs	Stereo line-out, internal speaker, head phone

Environmental Specifications

Altitude	
Operating	0-3000m (0-10,000 ft)
Non-operating	0-4500m (0-15,000 ft)
Temperature	
Operating	5 to +40 degrees C
Non-operating	-40 to +70 degrees C
Humidity	
Operating	15 to 80% (non condensing)
Vibration	
Operating random	0.21 G rms, 5-500Hz
Swept sine survival	0.5 G peak, 5-500Hz
Random survival	2.09 G rms, 5-500Hz
Safety	
	UL 1950, CUL to CSA C22.2#950, and TUV GS Mark to EN60950/IEC950
Emissions	
	FCC and CISPR Class B and VCCI Class B

Physical Dimensions

Height	44.5cm (17.5 in)
Height with rack kit	48.8cm (19.2 in)
Width	34.5cm (13.6 in)
Width with rack kit	48.9cm (19.25 in)
Depth	53.3cm (21.0 in)
Depth with rack kit	80.0cm (31.5 in)

Net Weight

Minimum configuration	37 Kg (81 lbs)
Fully loaded	44 Kg (96 lbs)

Power Requirements

Input Current	
	20 Amps RMS max @ 100-115V ± 10%
	10 Amps RMS max @ 200-230V ± 10%
Line Frequency	
	50-60Hz
Maximum Power input	
	2000 Watts

VISUALIZE Graphics

	VISUALIZE-EG	VISUALIZE-fx Pro	VISUALIZE-fx Pro
Max Resolution	1600x1200	1280x1024	1600x1200
Image Planes/Overlay Planes	8/8DB Image 8 Overlay	24 Image 8 Overlay	24/24DB Image 8 Overlay
Z-Buffer	SW	24 bit HW	24 bit HW
Stencil Planes	SW	4 bit HW	4 bit HW
Alpha Planes	SW	SW	8/8DB HW
Texture Memory	SW	SW	Optional 16MB HW +32 x 32K virtual texture cache
Color Maps			
Image Planes	2 x 256	4 x 256	2 x 4096, 2 x 256
Overlay Planes	2 x 256	2 x 256	2 x 256

*1280 x 1024 resolution

The latest information about HP VISUALIZE Workstation products is available on the World Wide Web at www.hp.com/visualize.

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VISUALIZE
The Ultimate Design Machines

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Fls. Nº 095

Doc: 03653

SPECint_rate95**Hewlett-Packard****HP 9000 Model J5000**

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If you wish to print this information we highly recommend using the postscript reporting page.

SPECint_rate95 **579**

SPECint_rate_base95 **521**

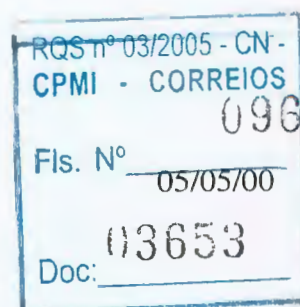
Benchmark # and Name	Base # Copies	Base Run Time	Base SPEC Ratio	Peak # Copies	Peak Run Time	Peak SPEC Ratio
099.go	2	151	550	2	135	615
124.m88ksim	2	54.9	623	2	50	690
126.gcc	2	65.3	469	2	62	491
129.compress	2	61.0	531	2	48	670
130.li	2	58.1	588	2	55	624
132.jpeg	2	92.6	467	2	87	495
134.perl	2	77.3	443	2	62	554
147.vortex	2	92.3	526	2	92	531
SPECint_rate_base95			521			
			SPECint_rate95			579

Tester Information:

SPEC License #:	3
Tested By:	HP Fort Collins, CO
Test Date:	Feb-99
Hardware Avail:	May-99
Software Avail:	May-99

Hardware Information:

<http://www.spec.org/osg/cpu95/results/res99q2/cpu95-19990524-03675.html>





Model Name:	HP 9000 Model J5000
CPU:	440 MHz PA-RISC 8500
FPU:	Integrated
Number of CPU(s):	2
Primary Cache:	1/2MBI+1MBD on-chip
Secondary Cache:	None
Other Cache:	None
Memory:	2 GB
Disk Subsystem:	1-9GB LVD SCSI Disk
Other Hardware:	None

Software Information:

Operating System:	HP-UX B.10.20
Compiler:	HP92453-01 A.10.32.20 HP C Compiler
File System:	HP-UX LVM with HFS
System State:	Multi-user

Notes:

Portability Flags (base & peak): All: -Ae

Linker Flag (base & peak): All: -Wl,-a,archive

Base Flags:

all: +Oall +I/+P

Peak Flags:

all: +O4 +Eslit +I/+P

099: +Olibcalls +Onolimit +Optrs_strongly_typed +Oentrysched +Ostaticprediction
 124: +ESfic +Onoparmsoverlap -D_MATH_INCLUDED +Optrs_strongly_typed +Oaggressive
 126: +Olibcalls +Onolimit -DSPEC +Odataprefetch +Ostaticprediction +Optrs_ansi
 129: +Olibcalls +Onofltacc +Onolimit +Optrs_strongly_typed +Odataprefetch +Owhole_p
 130: +ESfic +ESSfc +Olibcalls +Onolimit +Owhole_program_mode +Onoptrs_to_globals +O
 132: +ESfic +ESSfc +Olibcalls +Onolimit +Odataprefetch +Owhole_program_mode
 134: +ESfic +Olibcalls +Onolimit +Owhole_program_mode +Odataprefetch fastmem.o
 147: +Olibcalls +Onolimit +Optrs_strongly_typed +Oentrysched +Ostaticprediction

Note: The +I/+P indicates the use of profile based optimization.

Go To: [\[Home\]](#) [\[OSG\]](#) [\[CPU95\]](#) [\[Results\]](#)

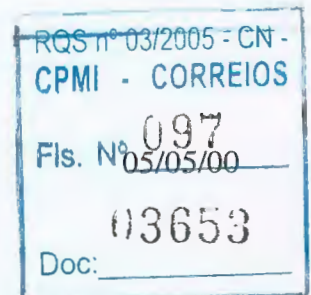
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Tue Jun 15 11:31:09 1999

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<http://www.spec.org/osg/cpu95/results/res99q2/cpu95-19990524-03675.html>





SPECfp_rate95

Hewlett-Packard

HP 9000 Model J5000

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SPECfp_rate95 744

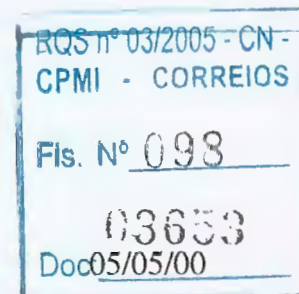
SPECfp_rate_base95 722

Benchmark # and Name	Base # Copies	Base Run Time	Base SPEC Ratio	Peak # Copies	Peak Run Time	Peak SPEC Ratio
101.tomcatv	2	73.5	906	2	74	905
102.swim	2	118	1315	2	117	1319
103.su2cor	2	50.3	501	2	50	504
104.hydro2d	2	140	308	2	140	309
107.mgrid	2	71.6	629	2	70	641
110.applu	2	87.5	452	2	87	457
125.turb3d	2	101	732	2	101	729
141.apsi	2	57.5	658	2	55	693
145.fpppp	2	122	1412	2	101	1718
146.wave5	2	49.7	1086	2	49	1104
SPECfp_rate_base95			722			
			SPECfp_rate95			744

Tester Information:

SPEC License #:	3
Tested By:	HP Fort Collins, CO
Test Date:	Feb-99
Hardware Avail:	May-99
Software Avail:	May-99

Hardware Information:





Model Name:	HP 9000 Model J5000
CPU:	440 MHz PA-RISC 8500
FPU:	Integrated
Number of CPU(s):	2
Primary Cache:	1/2MBI+1MBD on-chip
Secondary Cache:	None
Other Cache:	None
Memory:	2 GB
Disk Subsystem:	1-9GB LVD SCSI Disk
Other Hardware:	None

Software Information:

Operating System:	HP-UX B.10.20
Compiler:	HP FORTRAN B.10.20.07 B3907CA
File System:	HP-UX LVM with HFS
System State:	Multi-user

Notes:**Base Flags:**

all: +Oall +Odataprefetch -Wl,-a,archive

Peak Flags:

Linker: 145: -Wl,-a,archive; all others: -Wl,-a,archive,+FPD

101: +O3 +Onolimit +Odataprefetch +Oaggressive

102: +Oall +Odataprefetch +Onovectorize +Onofltacc +Onolooptransform +Onoloopblo

103: +Oall +Odataprefetch

104: +Oall +Onovectorize +Onofltacc +Odataprefetch

107: +O3 +Onolimit +Onofltacc +Oinline_budget=1000000 +Oloop_unroll=8 +Odatapref

110: +Oall +Onovectorize +Onofltacc +Odataprefetch

125: +Oall +Odataprefetch +Oaggressive

141: +O3 +Onolimit +Oaggressive +Onofltacc

145: +O4 +Olibcalls +Onofltacc +Onolimit +Ovectorize +Oinline_budget=1000000 +I/.

146: +Oall +Odataprefetch

Note: The +I/+P indicates the use of profile based optimization.

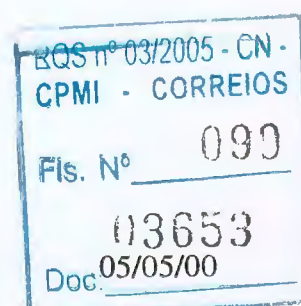
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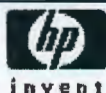


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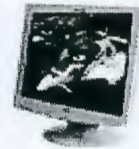
24" CRT



21" CRT



19" CRT



18" LDC

► Detailed Data Sheets:

- 24" CRT
- 21" CRT
- 19" CRT

HP 24" Display (A1295A) Wide Aspect Monitor – Images from HP's VISUALIZE Workstations can now be even larger



HP's 24" wide aspect monitor can display resolutions up to 1920x1200 pixels, which results in 75% more pixels than a traditional 1280x1024 resolution.

This monitor can display wide aspect formats (16:10 and 16:9) as well as traditional formats (4:3 and 5:4). This versatility combined with a luxurious screen size make this monitor ideal for viewing HP VISUALIZE workstation images.

- Large screen area makes viewing graphics much easier than with traditional resolutions
- Larger screen image means image details are more visible, helping to improve model design
- Wide aspect format allows two 8-1/2" x 11" pages to be displayed side by side on the same screen
- Ability to display multiple aspect ratios (wide and traditional) allows wider range of graphics hardware and software to be used
- High refresh rates of up to 90Hz reduce eyestrain and result in better productivity
- Adjustable controls allow complete customization of monitor via front panel controls and On Screen Display (OSD)
- Dual video input allows video to be switched between 2 workstations

RQS nº 03/2005 - CN -	
CPMI - CORREIOS	
Fls. Nº	100
	06/05/00
Doc:	03653



Supported Configuration	The A1295A monitor is supported in wide aspect format on the following HP VISUALIZE workstations: - PA-RISC HP-UX B-, C-, and J-Class with VISUALIZE <i>fx⁴</i>-Pro - VISUALIZE <i>fx⁶</i>-Pro and VISUALIZE <i>fx^e</i> - IA-32 Windows NTP- and X-Class with the following AGP graphics: VISUALIZE <i>fx²⁺</i>, <i>fx⁴⁺</i>, <i>fx⁶⁺</i>, ELSA Synergy II, 3DLabs Oxygen GVX1 - IA-32 Linux PL- and XL-Class with ELSA Synergy II or 3DLabs Oxygen GVX1 graphics
Supplied Accessories	- (1) Detachable 15-pin Dsub (male) to Dsub (male) video cable. 1.8 meters - (1) U.S. power cord (NEMA 5-15P). 125V / 10A. 1.8 meters - (1) Users Manual (English, French, German, Spanish, Italian, Japanese)
Monitor / Screen	Trinitron. Aperture Grill Tube (.25mm -.28mm stripe pitch). P22 Phosphor. Maximum active screen size 482mm (19 in) x 304mm (12 in). Anti-reflection and anti-static screen.
Scan Frequency	<i>Horizontal:</i> 30-96 kHz <i>Vertical:</i> 50-160 Hz
Synchronization Type	Analog RGB video input. Separate horizontal and vertical synchs. Composite horizontal and vertical synchs. Synch-on-green capability (nominal synch chip amplitude of -0.286 Vp-p ± 10%)
Resolutions / Timings	Maximum resolution: 1920x1200 (76Hz only) Minimum resolution: 640x480 (60Hz only) Maximum timing: 90Hz (1280x1024) Minimum timing: 60Hz (multiple resolutions) Factory default resolution: 1920x1200 at 76Hz.
Video Connection	Monitor has two video inputs: - One 15-pin Dsub connector receptacle, capable of DDC1 and DDC2Bi - One 5-receptacle BNC connector Video input can be toggled between two video inputs via a switch on the front of the monitor. One 15-pin Dsub-to-Dsub video cable is provided with the monitor. To use the second video input, a BNC to Dsub video cable must be ordered (HP product number A6019A).
Plug & Play	Supports Display Plug&Play guidelines according to VESA DDC1, DDC2B and DDCAB.
Connecting to Dsub graphics	This monitor includes a 15-pin Dsub-to-Dsub video cable for connecting to a Dsub graphics card. To connect the monitor's BNC video input to Dsub graphics, a BNC to Dsub cable will be needed (HP product number A6019A). HP's IA-32 NT and Linux workstations use Dsub graphics.
Connecting to EVC graphics	PA-RISC UNIX Workstations use EVC graphics cards (except VISUALIZE <i>fx^e</i> which uses a Dsub connector). To connect this monitor to an EVC graphics card, use the included Dsub cable and a Dsub to EVC adapter. A Dsub to EVC adapter is included with every PA-RISC UNIX workstation when purchased. Spare Dsub to EVC adapters can be ordered using HP product number A4168A. To connect the monitor's BNC video input to EVC graphics, a BNC to Dsub cable (A6019A) and Dsub to EVC adapter (A4168A) will be needed.
Controls	Front panel: power button, input select switch, reset. On Screen Display (OSD) settings: Picture size and position, brightness and contrast, shape/geometry, rotation, vertical and horizontal convergence, moiré cancellation, landing, reset to defaults, color temperature, red/green/blue intensity, demagnetize, menu language, lock buttons
Color Temperature	Preset temperatures: 5000K, 6500K, 9300K. Individual RGB gain/bias control can also be set.
Power	- AC 100-120V, 50/60 Hz., 2.2A - AC 200-240V, 50-60Hz., 1.4A - 200W maximum power consumption, less than 140W in standby mode, less than 15W in suspend mode, less than 8W in sleep mode, 0W when power off. - VESA, DPMS, NUTEK compliant - EPA Energy Star compliant
Physical Characteristics	- Color: HP Quartz gray - Weight: 41Kg (90 lbs.) - Height: 500mm (19.7 in.) - Width: 580mm (22.8 in.) - Depth: 548mm (21.6 in.)



HP 18.1" LCD #D5065W – The 18.1-inch flat panel monitor that makes all the difference

HP's L1800 18-inch LCD has been developed in collaboration with customers to meet their specific needs. The L1800 is a perfect product for engineers who benefit from the precision of an LCD display or who need high-end monitor performance in a limited space environment.



A high performance 'auto-setup' function automatically adjusts the screen image making installation of the HP L1800 LCD fast and easy. Once installed, the combination of a wide viewing angle, an excellent contrast ratio and brightness delivers spectacular image quality.

The native resolution for this display is 1280 x 1024. Additionally, for images of lower resolution than recommended, the scaling function automatically displays them as full screen images. The OSD (On-Screen Display) also brings maximum comfort to the user as its detailed and intuitive functioning enables the adjustment of all controls with surprising simplicity.

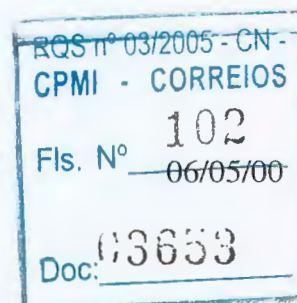
Two PCs or Workstations can be connected to the HP L1800 LCD simultaneously. Either the user can define which source the monitor uses, or with the push of the button, the monitor will choose the right video input.

The HP L1800 LCD has a built-in 'sleep-mode' that the you can set as desired, therefore reducing energy consumption and optimizing the life of the backlights.

A USB port integrated into the monitor stand enables the connection of up to four compatible peripheral devices for great expandability.

The HP L1800 LCD meets all ergonomic and environmental norms. It consumes up to 70% less energy, is certified TCO '99 and its flat panel shape is scrupulously designed to optimize space.

LCD panel specs	- Display type: 18" liquid crystal display (18.1 viewable; in-plane switching (IPS) thin film transistor (TFT) active matrix. - Contrast ratio (CR): 250:1 - Viewing angle: +/- 80 degrees @ 10:1 CR - Brightness (typical): 180 candelas per square meter (cd/m²)
Interface	- Dual video inputs with autoselection - Analog interface - Autoconfiguration function - True color (16.7 million colors)
Native resolution	1280x1024 @ 75Hz max Automatic scale-up, 1:1 mode and aspect ration
Mechanical specifications	- VESA mounting standards compliant, 75mm option. - Dimension (HxWxD): Without stand: 15.1 x 16.77 x 3.3 in (385 x 436 x 84 mm); with stand: 17.48 x 16.77 x 9.64 in (444 x 436 x 245 mm) - Weight: Without stand: 19.2lb (13.09kg); with stand: 20.02lb (9.1kg) - Tilt and swivel: - Tilt 5 degrees down, 25 degrees up - Swivel: +/- 30 degrees
Display Plug&Play/USB	PC98, DDC2a/b/ci



Power consumption (max)	<65W (<75W including USB) (VESA DPMS compliant)
Regulatory	MPRIII, EPA, TCO99 ⁽¹⁾
Warranty	3-year international exchange limited hardware warranty.



HP 19" DISPLAY - #D8910W



Supported Configuration

The D8910W monitor is supported on the following HP VISUALIZE workstations:

- PA-RISC HP-UX:
B-, C-, and J-Class with VISUALIZE-EG, fx²-Pro, fx⁴-Pro, fx⁶-Pro, fxe
- IA-32 Windows NT:
P- and X-Class with the following AGP graphics:
VISUALIZE fx²+, fx⁴+, fx⁶+, ELSA Synergy, Oxygen GVX
- IA-32 Linux:
PL- and XL-Class with ELSA Synergy or Oxygen GVX graphics

Features

Display type/description

19" FD Trinitron CRT (18.0" viewable)

Dot pitch

0.24mm-0.25mm phosphor dot pitch

Specifications

Horizontal scan rate 29-107 kHz

Display Plug & Play PC99, DDC1/2bi

Power supply

AC 90-264 V, 47-63Hz; 130 W maximum power consumption (less than 10 W in standby, less than 3 W in sleep)

Weight 55.7 lb (25.3 kg)

Dimensions (height x width x depth) 18.5 x 18.5 x 18.3
(471 x 470 x 464 mm)

Regulations

Low-frequency emissions

MPRIII, EPA, TCO99, Blue Angel

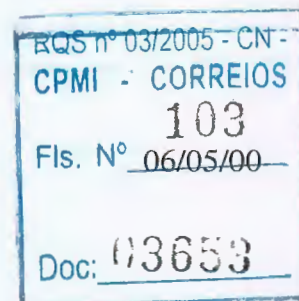
Warranty

3-year exchange international limited hardware warranty

Resolutions

Recommended 1280 x 1024 @ 85Hz

Maximum 1600 x 1200 @ 85Hz



HP 21" DISPLAY - #D2847W

**Supported Configuration**

The D2847W monitor is supported on the following HP VISUALIZE workstations:

- PA-RISC HP-UX:
 - B-, C-, and J-Class with VISUALIZE-EG, fx²-Pro, fx⁴-Pro, fx⁶-Pro, fxe
- IA-32 Windows NT:
 - P- and X-Class with the following AGP graphics:
 - VISUALIZE fx²+, fx⁴+, fx⁶+, ELSA Synergy, Oxygen GVX
- IA-32 Linux:
 - PL- and XL-Class with ELSA Synergy or Oxygen GVX graphics

Features

Display type/description	21" FD Trinitron CRT (19.8" viewable)
Dot pitch	0.24mm phosphor dot pitch

Specifications

Horizontal scan rate	29-121 kHz
Display Plug & Play	PC99, DDC1/2bi
Power supply	AC 90-264 V, 47-63Hz; 160 W maximum power consumption (less than 10 W in standby, less than 3 W in sleep)
Weight	68 lb (30.9 kg)
Dimensions (height x width x depth)	19.8 x 20.2 x 20.2 (502 x 512 x 512 mm)

Regulations

Low-frequency emissions	MPRIII, EPA, TCO99, Blue Angel
Warranty	3-year international exchange limited hardware warranty.

Resolutions

Recommended	1600 x 1200 @ 85Hz
Maximum	1800 x 1440 @ 80Hz

[UNIX Workstations](#) • [Linux Workstations](#) • [NT Workstations](#) • [HP Monitors](#)
[Immersive Environments](#) • [VISUALIZE Home](#)

RQS nº 03/2005 - CN -	
CPMI - CORREIOS	
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	06/05/00
Doc:	03653



SERVIDOR RISC VISUALIZE B2000 : RISC2



RQS nº 03/2005 - CN -	
CPMI - CORREIOS	
105	
Fls. Nº	
Doc:	03653



HP

VISUALIZE B2000

UNIX Workstations



HP
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WORKSTATIONS

Your Ultimate Performance Machine-
Ideal Combination of Price and Power

REC-1032045-EN
CPMI-000RE10S
Fls. N° 103
03653
Doc:

PA-RISC Performance at an Affordable Price

Introducing PA-RISC performance at a cost-conscious price. Engineers, designers, software developers, technicians, and resellers alike benefit from the high-speed performance, built-in functionality and amazing flexibility inherent in HP's newest B-Class workstation, the HP VISUALIZE B2000. You will find the B2000 to be a highly versatile computing platform that can function not only as a deskside workstation, but as a flexible server as well.

The B2000 features HP's award-winning¹ PA-8500 processor, running at a 400MHz clock rate. Incorporating numerous breakthroughs in PA-RISC processor design—the industry's highest total on-chip cache of 1.5MB, maximized bandwidths, state-of-the-art cooling technology—the B2000 is a completely optimized, purely balanced system.

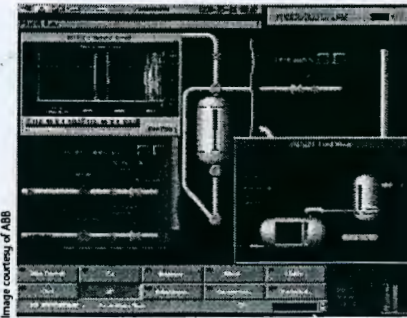
Packed with power, the B2000 comes fully equipped with the new HP VISUALIZE-*fxe* graphics accelerator that offers full-featured, 3D functionality. Ideal for designing small model components, PCBs and medium sized ASICs, software applications as well as managing customer care systems, the B2000 offers the best balance of graphics power, stability, price, and computing performance in today's workstation environment.

Your Complete Solution, Right Out of the Box

The B2000 is a bundled UNIX® solution that's ready for you to plug in, straight out of the box. This powerful workstation includes 256MB RAM (upgradable to 2GB) as well as two removable bays—a standard CD-ROM plus an optional floppy drive—enabling you to customize your desktop to suit your memory and storage device needs.

While the B2000 includes one 9GB SCSI LVD disk, there's room for another, bringing you to a total of 18GB of internal disk space to store the largest of applications and data files. And with the VISUALIZE-*fxe* Pro graphics accelerator integrated directly on-board, you'll have all four PCI slots available for additional networking and peripheral connectivity.

The B2000 rises to the challenge of your unique system requirements. This workstation ships with the HP-UX 10.20 operating system. With an easy upgrade to HP's time-tested, 64-bit 11.x O/S, your B2000 becomes a phenomenal Java machine for delivering next-generation browser technology. In addition, the B2000 is rack mountable for embedded solutions.



Universal 3D Functionality

The B2000 comes equipped with the new HP VISUALIZE-*fxe* graphics accelerator to offer universal 3D functionality across all workstation platforms. Now, everyone on your cross-functional team can visualize all the information they need, all the time.

The VISUALIZE-*fxe* supplies 24-bit imaging up to 1600 x 1024 resolution on a single display. Boasting 48 image planes for double buffered, true color display, the VISUALIZE-*fxe* gives you greater visual realism for your most complex designs. Team this with sophisticated shading, lighting, depth cueing, and accelerated texture capabilities, and the VISUALIZE-*fxe* enables you to visualize your work, in real time. And

with multiple VISUALIZE-*fxe* accelerators in your workstation, you can view large data sets on up to four monitors simultaneously, thereby improving productivity and collaboration.

The B2000 also comes preloaded with CoCreate's FirstSpace VRML Viewer, offering enterprise-wide viewing of complex 3D models without requiring additional CAD hardware or software.

A Sound, Secure Investment

Once out of the box, the HP VISUALIZE B2000 workstation provides you immediate, best-in-class performance at an affordable price. The B2000 is also designed to grow with your future needs. It's open and expandable, so you can customize your workstation with the disk, RAM, graphics and I/O capability you need today and well into the next millennium.

HP has a well-defined growth plan to take you to future generations of PA-RISC and IA-64 architecture. Teaming with Intel as well as key software vendors, HP is already working on tomorrow's technologies that will bring you even higher levels of processing power and graphics performance.

But more than just delivering exceptional workstations, HP is your total solutions partner. Let our legacy of superior printers, servers, mass storage, networking, and consulting services help bring your inventions to life.



¹ The HP PA-8500 was voted "1999 Editor's Choice for Best RISC Processor" by *Microprocessor Report*.

Premium Performance at a Non-Premium Price

Like the other HP VISUALIZE systems, the B2000 workstation offers PA-RISC performance and 3D graphic functionality, all at an affordable price. The HP VISUALIZE Workstation family has it all—powerful processors, some of the industry's fastest graphics accelerators, and increased disk, RAM, and I/O capabilities. In short, the B2000 is a robust and stable UNIX® workstation, designed to grow with your future needs.



2000

feature advantage benefit

Performance

PA-8500 RISC processor running at 400 MHz

Gives you the power of the chip that won the "Best RISC Processor" award (Microprocessor Report's Editor's Choice)

Puts more compute and visualization power behind EDA, MDA and other applications

1.5MB on-chip cache

Minimizes system latency with the industry's largest on-chip cache

Enhances system performance with greater application speed and throughput

Maximum main memory up to 2GB Synchronous DRAM

Supports interactive work with complex 2D and entry 3D models

Delivers higher application performance with less disk access

4 industry-standard PCI slots

Provides higher capability for graphics cards and other PCI I/O cards

Provides more capability for complex applications

HP VISUALIZE-*fxe* graphics accelerator integrated on the system motherboard

Provides full-featured, 3D capability across all HP workstation platforms

Enables universal access to all types of data across diverse, cross-functional teams

Integration

Rack mountable

Supports on-side configuration as well as upright, desktop placement

Saves space, particularly for customers needing to maximize real estate

Investment Protection

Expansive mini-tower with 4 industry-standard PCI slots

Provides more capacity for PCI I/O cards

Gives you the flexibility to expand your system

Binary compatibility with future PA-RISC and IA-64 processors

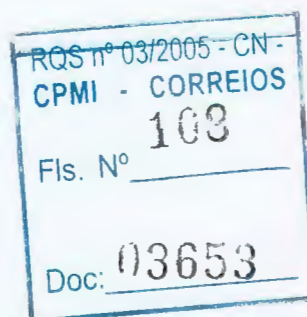
Ensures smooth transition to HP's next-generation high-performance systems

Protects your investment in applications, data and systems

Full-featured base configuration

Offers a robust, common feature-set that's fully functioning

Provides for a long, low maintenance life in embedded systems, OEM, and customer care platforms





2000

B2000 technical specifications



Central Processor

Type	PA-8500
Clock frequency	400MHz
Number of processors	1

Primary Cache (On Chip)

Instruction cache	0.5MB
Data cache	1.0MB

Performance

SPECint95	31.8
SPECfp95	52.4
SPECint_rate95	286
SPECfp_rate95	472

Main Memory

Bus bandwidth	1.9GB/s
RAM type	120MHz SDRAM
Capacity	256MB-2GB
Memory slots	4 slots

PCI Slots (4 total)

PCI 1X (half card)	2 slots
PCI 2X (full size)	2 slots

Internal Storage Devices

Ultra2 SCSI LVD (80-pin SCA connector)

2 drives maximum

Hard disk drive 9GB (7200 rpm)

Removable Media

CD-ROM ATAPI interface	48X (internal)
3.5 in. PC floppy drive	1.44MB (internal)

External Storage

NSE SCSI	available via PCI card
50-pin high-density	
Ultra2 SCSI LVD	available via PCI card
68-pin in high-density	

Networking Interface

RJ45	10/100 Base-Tx Ethernet
LAN Data Rate	10/100 Mbits/sec

Other I/O

Serial interface 9-pin DIN	2 ports
Parallel interface 25-pin DIN	1 port
USB (Universal Serial Bus) Series A	2 ports (keyboard and mouse only)

Audio

Type	Integrated, CD-quality stereo
Inputs	Stereo line-in, MIC-in
Outputs	Stereo line-out, internal speaker, head phone

Monitor Resolution with fx graphics

18.1" (18.1" viewable)	1280x1024 res. LCD Flat Panel display
19" (18" viewable)	1280x1024 res. Flat FD Trinitron CRT display
21" (19.8" viewable)	1280x1024 res. Flat FD Trinitron CRT display
24" (22.5" viewable)	1600x1024 res. Wide Aspect Trinitron CRT display

Operating System

HP-UX 10.20 ACE9912
HP-UX TL00 ACE9911

Environmental Specifications

Altitude	
Operating	0-3000m (0-10,000 ft)
Non-operating	0-4500m (0-15,000 ft)
Temperature	
Operating	5 to +35 degrees C
Non-operating	-40 to +70 degrees C
Humidity	
Operating	15 to 80% (non condensing)
Vibration	
Operating random	0.21 G rms, 5-500Hz
Swept sine survival	0.5 G pear, 5-500Hz
Random survival	2.09 G rms, 5-500Hz
Safety	UL 1950, CUL to CSA C22.2-950, and TUV GS Mark to EN60950/IEC950 FCC and CISPR Class B And VCCI Class B
Emissions	

Physical Dimensions

Height	44.5cm (17.5 in)
Height with rack kit*	6 EIA units
Width	22.9cm (9.0 in)
Width with rack kit*	45.1cm (17.75 in) between columns
Depth	49.5cm (19.5 in)
Depth with rack kit*	66.5cm (25.8 in)
*system racks on its side	

Net Weight

Minimum configuration	18.6Kg (41.0 lbs)
Fully loaded	21.4Kg (47.6 lbs)

Power Requirements

Input current	8 Amps RMS max @ 100-120V 3.5 Amps RMS max @ 220-240V
Line frequency	50-60Hz
Maximum power input	620 Watts max @ 120 VAC, 60Hz

VISUALIZE Graphics

Graphics Boards	3 Max
Max Resolution	1600x1200
Image Planes/Overlay	24/24 Double-buffered Image*
Planes	8 Overlay
Z-Buffer	24-bit HW
Stencil Planes	4-bit HW
Alpha Planes	SW
Texture Memory	Std. 35MB

Color Maps

Image Planes	2 Image
Overlay Planes	2 Overlay

* 24/24DB assumes 1280 x 1024 resolution

VISUALIZE Graphics

Performance	
Pro CDRS	5.99
Design Review	6.52
Data Explorer	14.01
Advanced Visualizer	14.44
Lightscape	1.99

The latest information about HP VISUALIZE Workstation products is available on the World Wide Web at <http://www.hp.com/visualize>.

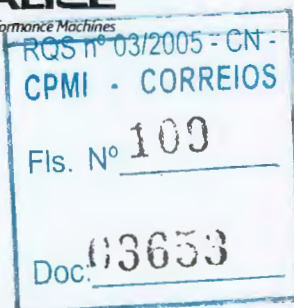
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Cover screen image courtesy of Mentor Graphics.



SPECint95

Hewlett-Packard**HP 9000 Model B2000**

This result has been submitted to SPEC, see the [disclaimer](#) before studying any results.

If you wish to print this information we highly recommend using the [postscript reporting page](#).

SPECint95	31.8
SPECint_base95	29.0

Benchmark # and Name	Reference Time	Base Run Time	Base SPEC Ratio	Peak Run Time	Peak SPEC Ratio
099.go	4600	148	31.1	148	31.1
124.m88ksim	1900	62.7	30.3	59	31.9
126.gcc	1700	66.7	25.5	64	26.4
129.compress	1800	65.3	27.6	53	34.3
130.li	1900	64.2	29.6	59	32.1
132.ijpeg	2400	100	24.0	94	25.6
134.perl	1900	72.2	26.3	61	31.4
147.vortex	2700	67.1	40.3	60	45.2
SPECint_base95			29.0		
SPECint95					31.8

Tester Information:

SPEC License #:	3
Tested By:	HP Fort Collins
Test Date:	Dec-1999
Hardware Avail:	Jan-2000
Software Avail:	Jan-2000

Hardware Information:

Model Name:	HP 9000 Model B2000
CPU:	440 Mhz PA-RISC 8500
FPU:	Integrated
Number of CPU(s):	1
Primary Cache:	512KBI+1MBD on-chip
Secondary Cache:	None
Other Cache:	None





Memory:	1GB
Disk Subsystem:	1-18GB LVD SCSI Disk
Other Hardware:	None

Software Information:

Operating System:	HP-UX B.11.00
Compiler:	HP92453-01 A.11.01.00 HP C Compiler
File System:	HP-UX LVM with HFS
System State:	Multi-user

Notes:

Portability flag: -Ae

Base flags:

All: fastmem.o +Oall +I/+P +Ostaticprediction

Peak flags:

All: +ESfsc +ESlit +I/+P +Ostaticprediction

Linker Flag: -Wl,-aarchive

099: +O4 +Oentrysched +Olibcalls +Onolimit +Onoloopunroll +Optrs_strongly_typed :

124: +Oall +Onoparmsoverlap +Optrs_strongly_typed

126: +O4 +Odataprefetch +Olibcalls +Onolimit +Optrs_ansi -DSPEC fastmem.o

129: +Oall +Odataprefetch +Optrs_strongly_typed +Owhole_program_mode

130: +ESsfc +Oall +Oinline_budget=400 +Onoptrs_to_globals +Owhole_program_mode -

132: +ESsfc +Oall +Odataprefetch +Optrs_strongly_typed +Owhole_program_mode

134: +ESsfc +O4 -Ac +Oinline_budget=70 +Olibcalls +Onolimit +Owhole_program_mode

147: +Oall +Oinline_budget=800 +Optrs_strongly_typed -lm fastmem.o

Note: +I/+P indicates use of profile-based optimization

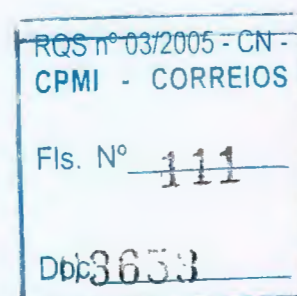
Go To: [\[Home\]](#) [\[OSG\]](#) [\[CPU95\]](#) [\[Results\]](#)

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webmaster@spec.org

Tue Apr 11 13:58:51 2000

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SPECfp95

Hewlett-Packard**HP 9000 Model B2000**

This result has been submitted to SPEC, see the disclaimer before studying any results.

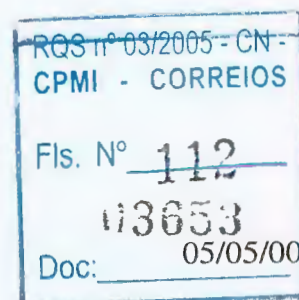
If you wish to print this information we highly recommend using the postscript reporting page.

SPECfp95 **52.4**
SPECfp_base95 **49.7**

Benchmark # and Name	Reference Time	Base Run Time	Base SPEC Ratio	Peak Run Time	Peak SPEC Ratio
101.tomcatv	3700	41.4	89.3	41	89.4
102.swim	8600	65.2	132	63	137
103.su2cor	1400	46.4	30.2	45	30.8
104.hydro2d	2400	92.5	25.9	89	27.0
107.mgrid	2500	64.7	38.7	65	38.6
110.applu	2200	62.1	35.4	57	38.4
125.turb3d	4100	103	39.7	104	39.6
141.apsi	2100	54.1	38.8	49	43.1
145.fpppp	9600	124	77.5	110	87.2
146.wave5	3000	49.4	60.8	43	69.7
SPECfp_base95			49.7		
			SPECfp95		52.4

Tester Information:

SPEC License #:	3
Tested By:	HP TCD
Test Date:	Dec-1999
Hardware Avail:	Jan-2000
Software Avail:	Jan-2000

Hardware Information:

Model Name:	HP 9000 Model B2000
CPU:	440 Mhz PA-RISC 8500
FPU:	Integrated
Number of CPU(s):	1
Primary Cache:	512KBI+1MBD on-chip
Secondary Cache:	None
Other Cache:	None
Memory:	1GB
Disk Subsystem:	1-18GB LVD SCSI Disk
Other Hardware:	None
Operating System:	HP-UX B.11.00
Compiler:	HP-UX f77 971027 (162928) B.11.00.01
Compiler:	HP-UX f90 19981203 (200508) B.11.01.06
File System:	HP-UX LVM with HFS
System State:	Multi-user

**Notes:**

Base Flags:

All: +Oall +Odataprefetch

Linker Flag: All: -Wl,-aarchive

Peak Flags:

101: f77 +Oall +Odataprefetch

102: f90 +Oall +Ocacheypadcommon +Odataprefetch +Onofltacc +Onoloopblock +Onolooptr

103: f77 +O3 +Ocacheypadcommon +Odataprefetch +Ofastaccess +Oinline_budget=5 +Onofl

104: f77 +O3 +Ocacheypadcommon +Odataprefetch +Onofltacc +Onolimit

107: f77 +Oall +Odataprefetch

110: f77 +O3 +Ocacheypadcommon +Odataprefetch +Onofltacc +Onoinline +I/+P

125: f77 +Oall +Odataprefetch

141: f77 +O3 +Ocacheypadcommon +Odataprefetch +Onofltacc +Onolimit

145: f77 +Oall +Oinline_budget=600

146: f90 +Oall +Odataprefetch

Linker Flag: All: -Wl,-aarchive

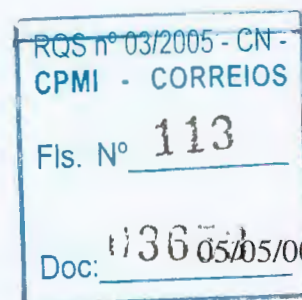
Go To: [[Home](#)] [[OSG](#)] [[CPU95](#)] [[Results](#)]

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webmaster@spec.org

Tue Apr 11 13:58:51 2000

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SERVIDORES RISC N4000 : RISC3 E RISC4



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Fls. N° <u>114</u>
Doc: <u>13653</u>



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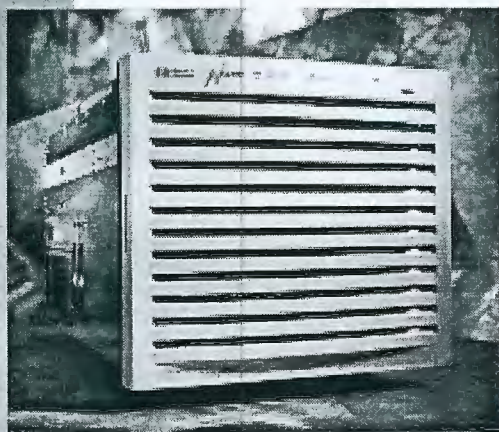
HP N-Class HP 9000 Servers

Simply More . . . Power, Control, and Confidence

Today's business professionals are coping with more demands and fewer resources. The solution isn't just more IT, but simply more—of the right technology.

The HP 9000 N-Class Enterprise Servers deliver simply more power, control, and confidence in a smaller, faster, more reliable, and more affordable system than any other midrange UNIX® server.

All this makes the N-Class the ideal platform for today's demanding business applications—e-commerce and emerging e-services, advanced Web hosting, messaging, supply chain management, ERP, data warehousing, and technical computing.



Fit for Today and the Future

The N-Class is the world's first IA-64 ready server. Its state-of-the-art IA-64 system bus is designed to support generations of PA-RISC and IA-64 processors. When you are ready to grow, it's easy to make in-chassis upgrades to HP PA-RISC or future IA-64 processors. We created the IA-64 architecture jointly with Intel® to offer more flexibility in the future. So whichever path you choose, you can be confident your investment is sound.

More Power. Twice the performance and up to half the cost of competitive systems.

More Control. Built-in Web management and Internet tools.

More Confidence. Superior high availability, investment protection, and instant capacity upgrades.

With a flexible architecture, unmatched performance density, and unsurpassed affordability, the HP 9000 N-Class sets a new standard that will instantly change your expectations of a midrange UNIX server.

The HP 9000 N-Class delivers

- High-end performance at a midrange price
- Growth path to next-generation PA-RISC and IA-64 technologies
- Superior I/O bandwidth without trade-offs in performance or memory capacity
- Midrange application performance leadership across the board
- Unprecedented rackability, delivering four servers per standard two-meter rack
- Built-in Web Internet management tools
- End-to-end high availability at an affordable price
- Industry-tested and customer-proven 64-bit HP-UX 11 operating environment
- Instant capacity upgrades with Instant Capacity on Demand (ICOD)
- Ideal platform for:
 - e-commerce, Internet
 - Web hosting, messaging
 - supply chain management/ERP, data warehousing, and technical computing

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Fls. Nº 115

Doc: 03653



Simply More Power, Control, and Confidence

The HP 9000 Family

The N-Class is part of the business-critical proven HP 9000 Enterprise Server family, designed to meet a broad range of enterprise, service provider, and technical computing needs.



- **A-Class**—low-cost, hyper-rack optimized entry-level servers
- **R-Class and D-Class**—entry-level, SMP enterprise workgroup servers
- **L-Class**—scalable, rack-optimized entry-level servers
- **K-Class**—the industry's most popular midrange UNIX servers
- **N-Class**—setting the new standard for midrange computing
- **V-Class**—high-end e-serviceCenter and data center servers

These servers deliver industry-leading performance, scalability, and high availability. Most utilize high-performance, 64-bit PA-RISC technology and the highly regarded 64-bit HP-UX operating environment. And all offer a smooth application transition to the next-generation IA-64 architecture.



The HP 9000 Enterprise Servers deliver industry-leading performance, scalability, and high availability, backed by superior solutions capabilities and HP's global infrastructure.



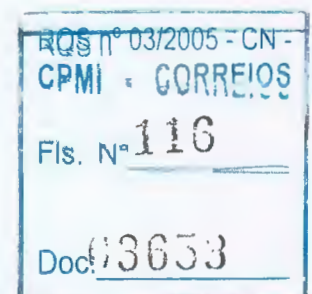
Table 1. HP 9000 N-Class Enterprise Server Performance

	360MHz			440MHz			550MHz ¹		
	1-way	4-way	8-way	1-way	4-way	8-way	1-way	4-way	8-way
SPECweb96	2,800 ²	9,200 ²	16,000 ²	3,865	13,051	24,139	4,600	15,000	28,000
SPECint_rate95	215	830	1,650	306	1,209	2,408	376	1,479	2,939
SPECfp_rate95	355	1,055	1,720	462	1,495	2,075	528	1,682	2,336
OLTP ³	0.32	1	1.73	0.36	1.14	2	0.42	1.25	2.20
TPC-C (tpmC @ \$/tpmC)	N/A	N/A	N/A	N/A	N/A	49,308 @ 56.67	N/A	N/A	N/A

¹ All 550MHz performance figures are estimates.

² Performance estimates.

³ HP relative OLTP performance as compared to K580 6-way.



Simply More Power, Control, and Confidence



Table 2. Features and Benefits

Power	
1-8 high-speed 64-bit 360MHz, 440MHz, or 550MHz PA-8500 and PA-8600 CPUs with 1.5MB on-chip cache per CPU	The world's fastest microprocessor, based on HP's Precision Architecture (PA-RISC), delivers superior performance over other midrange systems, with plenty of headroom for growth
Up to 32GB SDRAM memory with advanced ECC protection	Huge memory capacity for handling complex applications; very fast and reliable processing power for frequently accessed data
12 PCI I/O slots, with up to 5.8GB/s of aggregate I/O bandwidth and an independent I/O channel per PCI slot with full parity checking	Reliable, expandable I/O connections that allow the system to scale both CPUs and I/O without compromise or trade-off; easily handles I/O-intensive applications without risk of becoming "I/O bound"
Core I/O including 100Base-T LAN with auto speed sensing and Ultra2 LVD SCSI	Advanced I/O technology built in for easy, ready-to-go networking capabilities
4 servers per standard 2-meter rack	Superior rackability that optimizes use of floor space and delivers unprecedented performance density
Unchallenged performance density, delivering 4x the performance per rack versus competitive midrange systems	More performance per rack to meet service provider and enterprise application needs while maximizing use of data center floor space
7.6GB/s memory bus and 3.8GB/s system bus	Massive bus bandwidth provides a well balanced architecture without bottlenecks
Integrated floating point processor	Accelerated compute-intensive application performance
Control	
Built-in HP WebQoS (Web Quality of Service) Peak	Stabilizes Web traffic for less end-user wait time
Built-in HP SecureWeb Console	Control of servers over the intranet from any location worldwide
Built-in extended fault detection system	Separate support processor and bus for extended fault management of power, cooling, and system board outages; integrated with Event Monitoring Service (EMS) for instant problem notification
Built-in HP Ignite/UX	Easily and quickly launch UNIX installations or upgrades to multiple distributed servers simultaneously from a central location on the corporate intranet
Optional preloading of HP-UX operating environment and layered software products, plus factory integration of CPUs, memory, disk drives, and I/O cards	Expert integration and configuration for a quick, worry-free start
Confidence	
Pay-as-you-grow Instant Capacity on Demand	Instantly turn on more computing power to respond dynamically to changing business demands and new revenue opportunities Instant capacity upgrades with no charge for extra CPUs until they're used No performance compromises and minimized downtime for upgrade and repair
Hot-swap, redundant power supplies with optional third power supply for N+1 protection; redundant AC power inputs; hot-swap, N+1 cooling system; hot-plug ¹ PCI I/O subsystem	Single-system high availability features to maximize uptime
Independent, dedicated twin-turbo I/O channels (10 twin-turbo, 2 turbo)	Increased reliability and network stability even under heavy loads
Low-profile, hot-plug Ultra2 SCSI disk drive bays, with one internal Ultra SCSI channel per disk	Internal high-uptime storage to protect critical data and provide mirroring capabilities
Support for 64-bit HP-UX 11, with over 15,000 ported applications	Top-rated UNIX with industry-proven 64-bit capability, plus a high degree of integration with the Internet, Microsoft® Windows NT®, and other operating environments and network management systems
In-chassis board upgrades to future PA-RISC and IA-64 technology	Flexible, cost-effective growth path for maximum investment protection
Support for HP MC/ServiceGuard high availability cluster solution; monitors up to 16 clustered servers and proactively shifts workloads to maximize mission-critical application availability	Leading UNIX clustering solution featuring automatic application failover and rolling upgrade features minimizing both planned and unplanned downtime
Inclusion in Mission Critical Server Suites solution providing 99.95% uptime commitments for HP servers, middleware, HP or EMC storage, Cisco network devices, and the Oracle® database	Unique guarantee of full-solution availability including hardware, operating system, storage, networking, and database in order to sustain business 24x7x365
World-class support, including alliances with SAP, Oracle, Cisco, and Microsoft	Reduce risk with proactive and reactive services

¹ Enabled with next release of HP-UX 11.

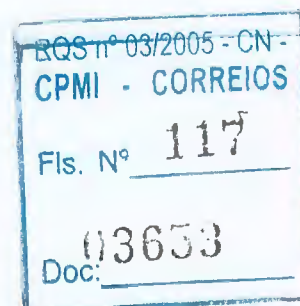




Table 3. Configuration Options

	N4000 @ 360MHz	N4000 @ 440MHz	N4000 @ 550MHz
HP PA-RISC Processor	360MHz PA-8500	440MHz PA-8500	550MHz PA-8600
SMP Configuration	1 to 8 CPU	1 to 8 CPU	1 to 8 CPU
Supported HP-UX Versions	11 (64-bit)	11 (64-bit)	11 (64-bit)
Minimum/Maximum Memory	512MB/32GB	512MB/32GB	512MB/32GB
On-Chip Cache (Data/Instr) per CPU	1MB/512KB	1MB/512KB	1MB/512KB
Total I/O Slots	12	12	12
Internal Hot-Plug Disk Drives	2	2	2
Maximum Internal Disk Capacity	36GB (72GB mid '00)	36GB (72GB mid '00)	36GB (72GB mid '00)
Maximum External Storage Capacity	71TB	71TB	71TB
Standard I/O Features	Ultra2 SCSI, 10/100Base-T LAN, Fibre Channel, 3x RS-232 ports for console and UPS connections, integrated Web Console		
Supported I/O Connectivity	Ultra2 SCSI LVD (single and dual port); FWD SCSI (single and dual port); 10/100Base-TX (single and quad port); 100Base-FX; Gigabit Ethernet; FDDI; HyperFabric; Token Ring; ATM 622 and 155Mbps; X.25, SNAplus, Frame Relay, SDLC (dual and quad); Serial Multiplexer (8- and 64-port); Fibre Channel, High Performance Peripheral Interface (HiPPI), Ultra2 SCSI RAID Controller, Dual Ultra2 SCSI/Dual 100Base-T Combo		

Table 4. Environmental Specifications

Electromagnetic Interference	Complies with FCC Rules and Regulations, part 15, as a Class A digital device. Manufacturer's Declaration to EN55022 Level A, VCCI Registered, Class I, Korea RLL
AC Input Power	200V-240V 50/60Hz
Maximum Current Requirements	13.8 Amps at 220V
Maximum Power Dissipation	3000 Watts
Physical Dimensions	Depth: 812 mm (35 in) Width: 482 mm (19 in) Height: 445 mm (17.5 in)/10 EIA units Weight: 90 kg (200 lb)
Operating Temperature	+5° - 35° C (41° - 95° F)
Non-Operating Temperature	-40° - 65° C (-40° - 149° F)
Maximum Rate of Temperature Change	20° C/hour
Operating Relative Humidity	15% to 80%, noncondensing, max. wet bulb = 26° C
Non-Operating Relative Humidity	5% to 90%, noncondensing
Operating Altitude	To 3.0 km (10,000 ft) above sea level
Non-Operating Altitude	To 4.5 km (15,000 ft) above sea level

For More Information

HP technical documentation is available online at www.eproducts.hp.com. In addition, configuration tools and pricing information allow registered users to place orders online. For registration, please contact your Hewlett-Packard sales representative.

Contact any of our worldwide sales offices or HP Channel Partners (in the U.S., call 1-800-637-7740) or visit our HP 9000 N-Class Enterprise Servers Web site at www.hp.com/go/n-class.

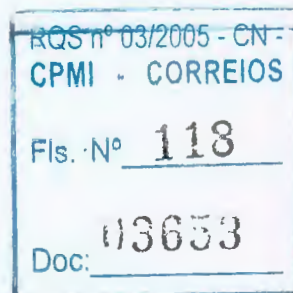
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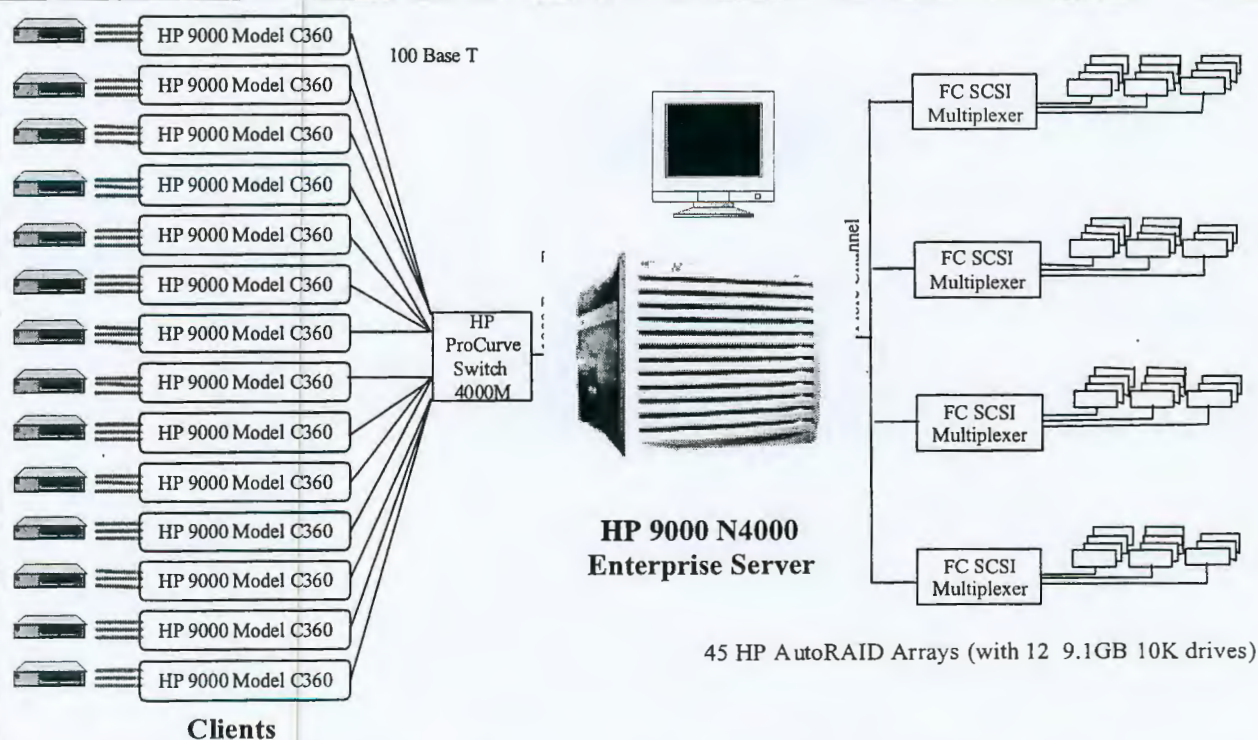
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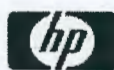


06953

	HP 9000 N4000 Enterprise Server Client/Server with 14 C360 front-ends			TPC-C Revision 3.4
				Report Date: April 12, 1999
Total System Cost	TPC Throughput	Price/Performance		Availability Date
\$2,794,055	49,308.00 tpmC	\$56.67/tpmC		July 31, 1999
Processors	Database Manager	Operating System	Other Software	Number of Users
8 PA-RISC 8500 440MHz	Sybase Adaptive Server Enterprise 11.9.3 EBF 8338	HP-UX 11.0 64-bit Extension Pack 9903	TUXEDO 6.4	40,040



System Components	Server (HP 9000 N4000 Enterprise Server)		Each Client (14 C360)	
	Qty	Type	Qty	Type
Processors	8	440MHz PA-RISC 8500	1	367MHz PA-RISC 8500
Cache Memory	each	0.5 MB I-cache, 1 MB D-cache	each	0.5 MB I-cache/1 MB D-cache
Memory	16	GB	1	1.5 GB
Disk Controllers	4	HP-PCI Fibre Channel	1	Ultra Wide SCSI
	4	FC SCSI Multiplexer		
Disk Drives	45	HP AutoRaid Arrays with 12-9.1 GB 10K drives	1	4 GB disk
Total Storage	3,787	GB		
Tape Drives	1	DDS Storage System		
Terminals	1	Console Terminal		


**HEWLETT
PACKARD**

HP 9000 N4000 Enterprise Server

TPC-C Rev 3.4

Report Date: April 12, 1999

06952

Description	Part Number	Brand	Price Key	Unit Price	Qty	5 Year Price	Maint. Price
Server Hardware							
HP 9000 N4000 Enterprise Server	A3639A		1	16,730	1	16,730	15,490
Add'l 440 MHz PA-RISC 8500 CPUs	A5500A		1	16,800	8	134,400	24,662
Memory Carrier	A4882A		1	3,500	4	14,000	
1 GB Memory	A4923A		1	6,881	16	110,096	
Processor Support Module	A5168A		1	1,260	4	5,040	
9 GB Internal Disk	A5505A		1	980	1	980	
Rack Installation Kit	A5170A		1	280	1	280	
PCI Fibre Channel Adapter	A3740A, Opt. 0D1		1	1,890	4	7,560	
PCI 1000BT Lan Adapter	A4926A, Opt. 0D1		1	1,467	1	1,467	
4GB DDS-2 DAT Drive	A3183A, Opt. 0DZ		1	1,205	1	1,205	
HP-UX 11.0 Sys Media, CD-ROM	B3920EA, Opt. AAF		1	380	1	380	
PCI 64-port Mux Card	J3593A, Opt. 0D1		1	1,091	1	1,091	
16 port RS232 DB25 port module	J2485A		1	642	1	642	
25 ft cable	J3595A		1	110	1	110	
5.5 kVA HP UPS Rackmount	A3589A, Opt. 002		1	7,000	8	56,000	2,688
1.25m Field Integrated Cabinet	A4900A		1	1,183	1	1,183	
Cabinet Depth Extension Kit	A5541AZ		1	0	1	0	
Cabinet Rear Door	A5211AZ		1	224	1	224	
1.6m Field Integrated Cabinet	C2786A		1	1,264	4	5,054	
2.0m Field Integrated Cabinet	C2787A		1	1,460	8	11,680	
FC SCSI Multiplexor	A3511A		1	7,280	4	29,120	25,825
16 Bit FW SCSI Adapter	A3511A, Opt. 003		1	907	12	10,878	
Auto Raid Array Model 12	A3700AZ		1	3,500	45	157,500	236,250
Two 96 MB controllers with Auto Raid	Opt. 203		1	9,200	45	414,000	
Twelve 9.1 GB disk modules (kickers)	Opt. 172		1	15,100	45	679,500	
16M Fibre Channel Cable	A3661B, Opt. AFY		1	112	4	448	
0.9m 68-pin high dense male connections	Opt. 801		1	88	33	2,904	
2.5m HDTS68 to HPTS68 Cable	C2924A		1	102	12	1,224	
Subtotal						1,663,696	304,915
Server Software							
Sybase Enterprise Adaptive Server	Runtime		2		1	150,000	128,316
Development			2		1	9,600	
Open Client			2		1	797	
Discount			2		1	(8,020)	
Subtotal						152,377	128,316
Client Hardware							
Hewlett Packard Model C360 Workstation	A4988A		1	9,100	14	127,400	53,224
256 MB ECC memory module	A4517A		1	1,432	84	120,246	
Console	C1064GX		1	377	1	377	
4 GB ultra SCSI disk	A4569A		1	700	14	9,800	
Subtotal						257,823	53,224
Client Software							
HP C/ANSI C Compiler	B3901BA, Option AH0		1	1,150	1	1,150	1,757
BEA Tuxedo 6.4		Bea Sys.	3	3,000	14	42,000	31,500
Subtotal						43,150	33,257
User Connectivity							
(8+1) port 10Mbps Ethernet Hub, 502 spares	DEH2924	SW House	4	27.55	5,514	151,911	
HP ProCurve Switch 4000M	J4121A		1	2,771	1	2,771	588
HP ProCurve Switch Gigabit-SX Module	J4113A		1	1,049	1	1,049	
HP ProCurve Switch 10/100Base-T Module	J4111A		1	489	2	979	
Subtotal						156,710	588
Other discounts*						0	0
Total						2,273,755	520,300

Notes: 1=Sun Data, 2=Sybase

3=BEA Systems, 4=Software House International

Audited by Tom Sawyer, Performance Metrics, Inc.

Five Year Cost of Ownership:

\$2,794,055

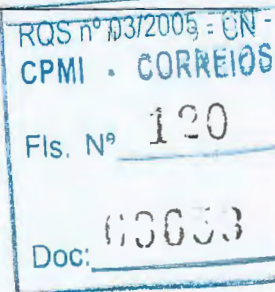
tpmC Rating:

49,308.00

\$/tpmC:

\$56.67

Prices used in TPC benchmarks reflect actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.





Numerical Quantities Summary for HP 9000 N4000 Enterprise Server

MQTH, Computed Maximum Qualified Throughput

49,308.00 tpmC

Response Times (in seconds)

	90th %-ile	Maximum	Average
New-Order	1.98s	16.55s	0.78s
Payment	1.88s	16.52s	0.71s
Order-Status	2.00s	11.13s	0.82s
Delivery (interactive portion)	0.08s	0.12s	0.07s
Delivery (deferred portion)	2.17s	11.86s	0.99s
Stock-Level	2.88s	11.49s	1.26s
Menu	0.10s	0.51s	0.001s

Transaction Mix, in percent of total transactions

New-Order	44.80%
Payment	43.05%
Order-Status	4.06%
Delivery	4.05%
Stock-Level	4.04%

Keying/Think Times

	Keying Time			Think Time		
	Min	Avg	Max	Min	Avg	Max
New-Order	18.01s	18.03s	18.07s	0.01s	12.14s	185.32s
Payment	3s	3.02s	3.06s	0.01s	12.07s	184.59s
Order-Status	2.01s	2.02s	2.06s	0.01s	10.12s	115.57s
Delivery (interactive)	2.01s	2.02s	2.06s	0.01s	5.06s	57.69s
Stock-Level	2.01s	2.02s	2.06s	0.01s	5.04s	63.28s

Test Duration

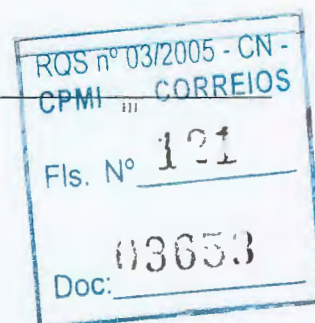
Ramp up time	30.6 minutes
Measurement interval	30 minutes
Transactions during measurement interval	3,301,982
Ramp down time	3.7 minutes

Checkpointing

Number of checkpoints in measurement interval	1
Checkpoint Interval	30 minutes

Reproducibility Run

Throughput	49,276.23 tpmC
Relative to MQTH	-0.06%




HP HP-UX 11 Internet Operating System
11 reasons to go to 11

1. 64-bit power—runs larger applications and processes large data sets faster
2. Industry's leading performance—with V-Class and N-Class servers
3. Broadest application portfolio
4. Easy upgrades—9.x or 10.x applications can be used unmodified (also runs 32-bit and 64-bit side by side)
5. Widely supported—compatible with the full line of HP 9000 Enterprise servers
6. Super scalability—simplifies the move from 1- to 128-way computing within the same system
7. Improved resilience—maximizes uptime
8. Top security—secures applications ranging from communications to business transactions
9. Ready for e-services—supports HP's strategy for Chapter 2 of the Internet
10. Ready for IA-64—binary compatibility smoothes transition to the next-generation IA-64 architecture
11. The OS with a future—backed by the resources and expertise of HP

HP-UX 11 Is Internet-Critical and E-services ready

Hewlett-Packard's HP-UX 11 operating environment serves as the foundation for mission-critical applications and IT services over the Internet, while significantly reducing the complexity, deployment time, and risk for companies eager to bring their business onto the web.

Robust systems manageability

Internet-ready computing capabilities of HP-UX 11 start with HP WebQoS. This software allows service providers to manage the browsing experience of their visitors by monitoring traffic congestion, site usage, and server latency during periods of heavy browsing, enabling site operators to take proactive steps to maintain desired response times. Systems management capabilities are contained in HP-UX 11's Service Control framework. Ignite/UX enables centralized distribution of HP-UX 11 updates to an entire enterprise, while Software Distributor/UX provides the same capability for HP-UX 11-based applications. Both tools are web-based for anytime, anywhere administration. HP's Event Monitoring Service monitors and reports system failures in real time for faster diagnosis and recovery.

Strong security

New security features that ship with HP-UX 11 include Common Data Security Architecture (CDSA) and Praesidium IPSec/9000 software. CDSA makes it simple for software providers and corporate users with international licenses to comply with strict government encryption regulations. CDSA enables

users to configure their CDSA-compliant applications quickly and effortlessly to the encryption standards of any country. Praesidium IPSec/9000 enables secure end-to-end communication over the Internet.

High availability is critical to web-based commerce

For high availability, HP-UX 11 includes dynamic processor resilience and dynamic memory resilience. The operating environment recognizes imminent processor and memory failures prior to system breakdowns and is able to shut down the vulnerable components and transfer their workloads to fully functional system resources.

Enhanced web infrastructure

HP-UX 11 includes enterprise licenses for two of the industry's most popular web servers, Netscape® FastTrack and Zeus Lite. In addition, the new HP-UX 11 includes Netscape LDAP lite directory services.

For organizations developing their own e-commerce, intranet, and e-services applications, HP-UX 11 includes the Java Developer Kit and Runtime Environment.

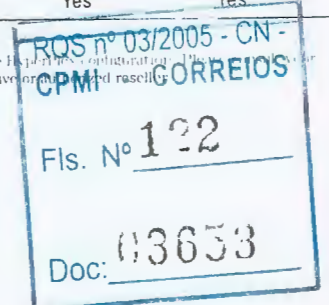
**HP-UX 11
Support for HP 9000 Servers**

	PA-7x00 (32-bit)	PA-8x00 (64-bit)
A-Class	Yes	
D-Class	Yes	Yes
K-Class	Yes	Yes
L-Class		Yes
N-Class		Yes
R-Class	Yes	Yes
T-Class	Yes	Yes
V-Class		Yes
HyperPlex	Yes*	Yes*

*Depends on the hardware configuration. Please contact your HP representative for more information.

HP-UX 11

Internet critical. E-services ready.




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Hewlett-Packard's HP-UX 11 operating environment serves as the foundation for mission-critical applications and IT services over the Internet, while significantly reducing the complexity, deployment time, and risk for companies eager to bring their business onto the web.

Robust systems manageability

Internet-ready computing capabilities of HP-UX 11 start with HP WebQoS. This software allows service providers to manage the browsing experience of their visitors by monitoring traffic congestion, site usage, and server latency during periods of heavy browsing, enabling site operators to take proactive steps to maintain desired response times. Systems management capabilities are contained in HP-UX 11's Service Control framework. Ignite/UX enables centralized distribution of HP-UX 11 updates to an entire enterprise, while Software Distributor/UX provides the same capability for HP-UX 11-based applications. Both tools are web-based for anytime, anywhere administration. HP's Event Monitoring Service monitors and reports system failures in real time for faster diagnosis and recovery.

Strong security

New security features that ship with HP-UX 11 include Common Data Security Architecture (CDSA) and Praesidium IPSec/9000 software. CDSA makes it simple for software providers and corporate users with international licenses to comply with strict government encryption regulations. CDSA enables

users to configure their CDSA-compliant applications quickly and effortlessly to the encryption standards of any country. Praesidium IPSec/9000 enables secure end-to-end communication over the Internet.

High availability is critical to web-based commerce

For high availability, HP-UX 11 includes dynamic processor resilience and dynamic memory resilience. The operating environment recognizes imminent processor and memory failures prior to system breakdowns and is able to shut down the vulnerable components and transfer their workloads to fully functional system resources.

Enhanced web infrastructure

HP-UX 11 includes enterprise licenses for two of the industry's most popular web servers, Netscape® FastTrack and Zeus Lite. In addition, the new HP-UX 11 includes Netscape LDAP lite directory services.

For organizations developing their own e-commerce, intranet, and e-services applications, HP-UX 11 includes the Java Developer Kit and Runtime Environment.

**HP-UX 11
Support for HP 9000 Servers**

	PA-7x00 (32-bit)	PA-8x00 (64-bit)
A-Class	Yes	
D-Class	Yes	Yes
K-Class	Yes	Yes
L-Class		Yes
N-Class		Yes
R-Class	Yes	Yes
T-Class	Yes	Yes
V-Class	Yes	Yes
HyperPlex	Yes*	Yes*

*Depends on the HyperPlex configuration. Please consult your HP representative or authorized reseller.

HP-UX 11

Internet critical. E-services ready.

Doc: 03053

Key Features and Benefits



Features

Benefits

Performance and scalability

Very large memory (up to 4TB for the 64-bit version of HP-UX 11)*

Enables the processing of large applications and data sets; ideal for large OLTP and data warehousing applications

Very large 64-bit files and file systems (1.3TB local and networked)

Enhances scalability and eliminates the need for partitioning

Symmetric multiprocessing (SMP), up to 32-way; up to 128-way in a Scalable Computing Architecture configuration

Provides excellent scaling of application performance across multiple processors using a single instance of the operating system

Performance Optimized Page Sizing (POPS)

Enables specification of memory page size for faster application performance

Memory windows

Allows multiple instances of large application on a single server; ideal for systems consolidation

Kernel threads

Increases performance through more granular control of process execution

Network File System PV3

Permits very large file size and file system size and enables faster file system transfer over a network

NIS+

Enhanced reliability, improved performance, tighter security, and better management

64-bit journaled file system is the first 64-bit version available in the industry

Guarantees file system integrity through a fast recovery process in the event of a system failure

Compilers optimized for 64-bit application development

Provides a complete 64- and 32-bit application development environment

Enhanced web infrastructure

Java™ Runtime Environment

Leverages kernel threads for improved performance

Java Just-in-Time compiler

Delivers near-linear performance boost for Java applications

Zeus Web Server Lite

Extensive manageability and security functionality web server

Netscape LDAP directory services lite

De facto industry-standard for directory services

IPv6

Increases IP address size from 32 to 128 bits

Manageability and reduced total cost of ownership: Service Control Core

HP WebQoS for service-level management

Unique HP software that prioritizes and optimizes web traffic to provide a consistently exceptional experience for your web customers and partners

Enhancements to SAM

Faster performance and better management of the high-availability (HA) and security aspects of the HP-UX environments

Ignite/UX

Fast replication of the OS across the network

Software Distributor/UX

Leverages your intranet for fast distribution of applications, via push or pull

Event Monitoring Service (EMS)

Monitors and reports system failures in real time for faster diagnosis and recovery

System Configuration Repository

Incrementally captures system configuration parameters to facilitate trouble-shooting

Resilience

Dynamic Processor Resilience (DPR)

Deallocates failing CPUs in an SMP configuration, reducing unplanned downtime

Dynamic Memory Resilience (DMR)

Deallocates failing RAM, reducing downtime and data corruption—particularly important to very large memory configurations

Fast memory dump for minimal system downtime

Enables selective snapshot of HP-UX kernel, to assist in speeding system recovery

Security

C2 security compliance

Provides very strong baseline security for commercial systems

Praesidium IPsec/9000

Provides encryption without having to modify an application

Common Data Security Architecture (CDSA)

Industry-standard framework that provides security services required for business-critical e-services applications

Investment protection

Binary Compatibility

Older applications can move forward to current and future versions of HP-UX, without modification, protecting customers' software investments

*Architectural maximum; currently limited by system configuration to 32GB

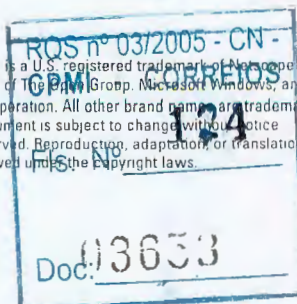
HP-UX 11
Internet critical. E-services ready.

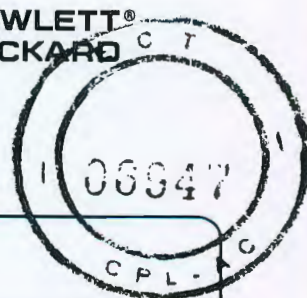
For more information

For further information about HP-UX 11, please visit our website at www.hp.com/go/hp-ux. To learn more about other HP products and solutions, go to www.hp.com.

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PCs Empresariais

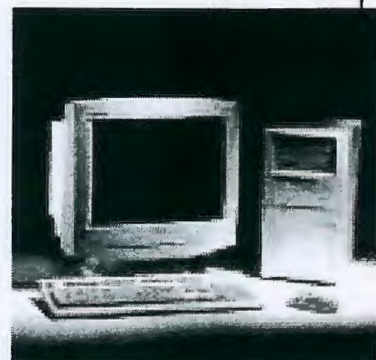
A Mais Nova Tecnologia. Os Melhores Preços.

Guia de Referência Rápida

Se você está procurando a mais avançada tecnologia para PCs empresariais, com tantos recursos quanto o seu orçamento permite, o PC HP Brio é a escolha certa. Com esses PCs, você tem a garantia de conseguir os preços mais baixos e a tecnologia mais avançada. Seja qual for a sua necessidade, desde um PC básico para geração de relatórios e planilhas eletrônicas até um sistema de alta performance para aplicativos de vídeo e gráficos, que exigem uma grande quantidade de recursos, existe um PC HP Brio para satisfazê-la.

Público-alvo

Clientes Empresariais sensíveis ao preço, que querem a mais avançada tecnologia e a maior quantidade de recursos que seu orçamento permite - geralmente, empresas de pequeno e médio portes, organizações educacionais e governamentais, e companhias de grande porte em países emergentes.



PCs HP Brio: Recursos e Benefícios

Termos-chave e Benefícios	Recursos
Absolutamente os Melhores Preços	- O PC empresarial de menor custo da HP garante que você terá o melhor PC como retorno ao seu investimento. - O mais completo conjunto de opções de recursos e preços - de modelos básicos a sistemas de alta performance para usuários pesados.
Tecnologia de Ponta	- Um conjunto completo de processadores de alto desempenho - Pentium®III ou Celeron® da Intel®. - Barramentos de sistema velozes de até 100 MHz para desempenho excepcional de processador, gráficos e memória. - SDRAM de 100 MHz de alta velocidade para os aplicativos mais pesados. - Gráficos 2D/3D de alto desempenho, incluindo a controladora gráfica 2D/3D Matrox MGA G200 AGP 2X, com 8 MB de memória para os gráficos corporativos mais avançados. - Solução de alta qualidade de áudio PCI baseada em tecnologia CrystalClear integrada em todos os modelos. - Velozes discos rígidos Ultra ATA/33 para armazenamento otimizado e rápido acesso a dados. - Os sistemas operacionais Microsoft® mais recentes, incluindo o Windows 98 pré-instalado, suporta Windows NT e pronto para o Windows 2000.
Design Inovador	Novo! - Formato de microtorre compacto toma a metade do espaço de uma minitorre tradicional e reduz significativamente o ruído - assim, ela pode ser usada sobre uma mesa ou debaixo dela. - Muito espaço para expansão para futuras necessidades, com um formato 4x4 e som e vídeo embutidos na placa-mãe. Novo! - Mouse com dispositivo especial para rolamento de páginas da HP, projetado para facilitar o uso da Internet. - O inédito HP Brio Center proporciona acesso fácil e online a resolução de problemas, informações de suporte e documentação do PC. - Ferramentas de suporte embutidas para maximizar sua produtividade, incluindo software anti-vírus pré-instalado; HP DiagTools para diagnosticar problemas de hardware; CD HP Brio Assist para recuperação rápida de sistema e diagnóstico de hardware; software de suporte remoto¹ para resolver rapidamente problemas a partir de qualquer lugar através de um modem.

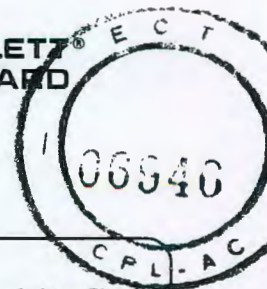
¹ Em modelos seleccionados.

HP
Brio
BUSINESS PCs

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Pis. Nº 105
Doc: 03653



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PACKARD



Especificações

Recursos e Gráficos do Sistema HP Brio

- Microtorre com 4 slots e 4 baías, permitindo uma fácil expansão
- Processador Pentium III de 450 MHz
 - 440 ZX AGPset¹ classe BX da Intel
 - Cache Nível 2 de 512KB integrado ao processador
- Processador Intel Celeron 500 MHz
 - Chipset SiS 620 com barramento de sistema de 66 MHz ou 100 MHz
 - Cache Nível 2 de 128 KB integrado ao processador
- 32 MB, 64 MB ou 128 MB de memória SDRAM DIMM, expansíveis para 512 MB
- Drive de disco rígido SMART II Ultra ATA/33 de 4,3 GB, 8,4 GB ou 13,0 GB
- Gráfico AGP integrado
 - SiS Super AGPset com até 4 MB de memória, expansível para 8 MB
 - *Novo!* Gráficos 2D/3D MGA G200 AGP 2X com 8 MB de memória
 - Suporte para resoluções de até 1600 x 1200, com 256 cores, com frequência de refresh de 85 Hz

- Áudio PCI CrystalClear™ de 18 bits, integrado e compatível com DirectX
- Uma porta paralela, uma porta serial, duas portas USB (Universal Serial Bus), porta para joystick/MIDI, plug de entrada estéreo, plug de saída estéreo, plug de entrada de microfone mono; porta Ethernet RJ-45²

Recursos de Gerenciamento do HP Brio

- Compatível com DMI 2.0 e Wired For Management 2.0
- Alerta de falha de disco rígido SMART II; proteção e alerta contra vírus (local e remoto); proteção de senha de dois níveis
- Suporte para gerenciamento de energia ACPI, suporte para Advanced Power Management 1.2

¹O Intel AGPset 440 ZX é baseado na arquitetura de núcleo 440 BX AGPset

²Em modelos selecionados

Configurações e Modelos¹

Nome/Processador	RAM	Disco Rígido	Armazenamento de Massa	Áudio	Gráficos	RAM de Vídeo	Interface LAN	Modem	Sistema Operacional ²	Software	Nº do Produto ³
Modelos Microtorre											
Celeron 466 MHz	32 MB	4,3 GB UATA	-	Integrado	SiS Super AGPset	4 MB	- ³	-	W98	-	D8414A
Pentium III 500 MHz	64 MB	8,4 GB UATA	-	Integrado	Matrox MGA G200 AGP 2X	8 MB	- ³	-	W98	-	D9071A

¹Disponibilidade de modelos pode variar de país para país. Por favor, consulte seu revendedor para mais detalhes.

²W98 = Windows 98.

³Disponível como acessório opcional.

Garantia

- Garantia mundial limitada de 3 anos (primeiro ano no local com cobertura de peças mais mão-de-obra; segundo e terceiro anos com retorno ao fabricante, para cobertura de peças, com mão-de-obra à parte)
- Grupo completo de opções flexíveis de garantia

**WINDOWS® 2000
READY PCs**



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Demais localidades: 0800-157-751
<http://www.hp.com.br>

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HP

SureStore E

Disk System SC10

The low-cost, easy maintenance, protected disk storage solution for today's ISP/e-commerce, technical, or UNIX® file/print applications.

It's a clear, irreversible trend: the growth in size and importance of data as a mission-critical tool for business success. With the appearance of new database applications from Oracle® and Informix, the greater processing power afforded by multiple processor systems, and even the migration of multimedia into mainstream office tools, the need for large amounts of storage (*capacity*) throughout the enterprise has never been more acute. At the same time, any storage solution in today's fast-paced, quickly evolving business climate must be able to deliver data quickly (*performance*), must be ready for use in high availability installations (*reliability*), and must be able to be reconfigured quickly and easily (*scalability*). Plus, even a storage solution needs superior *support*.

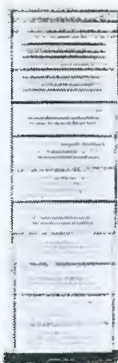
The new HP SureStore E Disk System SC10 measures up in all arenas. This protected disk storage solution from Hewlett-Packard can pack up to 2 terabytes of physical storage into a standard rack. Plus, it features the excellent performance afforded by Ultra2 SCSI, along with scalability and ease of reconfiguration. Naturally, it's backed by HP's award-winning support, too. With its hot-swappable hardware and extensive software monitoring tools, the SC10 is particularly suited for use in mirrored protected storage, where unplanned downtime cannot be tolerated. And with all these features, the SC10 is actually HP's *best dollar per performance measure SCSI storage solution*.

The SC10 provides robust protection against data loss and system downtime. And, like other HP SureStore E products, this disk system is designed and built for use enterprise-wide. It's another important element in HP's pledge to deliver "stress-free storage...guaranteed."

*Want High Availability?
Or Remote Manageability?
Or Performance?
Now you can have it all!*

Features and Benefits

- **Hot-swappable redundant components**—Minimal service interruption
- **Remote monitoring**—Easier administration
- **HP reliability and support**—More "stress-free" storage
- **10K-rpm drive**—Enhanced I/O performance
- **Ultra2 SCSI**—Top-notch scalability and performance
- **Low \$/MB cost**—Excellent return on investment
- **High racking density**—Improved use of data center floor space
- **Modular construction**—Simpler reconfiguration
- **Expandable storage**—Better handling of changing capacity needs



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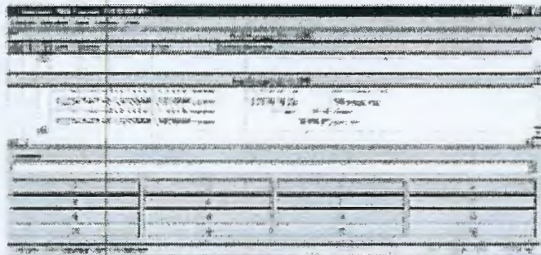
Guards against Data Loss and System Downtime

Full Redundancy Means More Availability

The SC10 is designed to achieve the heights of data availability. For instance, components such as power supplies, fans, bus control cards, and even disk storage modules are fully redundant. What's more, they're easily accessed for replacement or reconfiguration by your maintenance staff. And these components are all "hot-swappable," so they can be replaced while the system is operating, with no system downtime for repair.

Remote Monitoring Provides Operations Support

The SC10 features on-board SCSI Enclosure Services (SES) and is tightly integrated with software monitoring tools such as the HP Event Monitoring Service. These tools allow placing the SC10 in a "lights out" environment, keeping you continually apprised of the storage system's complete operational status. SES reports the status of disks and other components, so you never have to scour the data center looking for failure lights on the hardware itself. You can even put HP's own engineers on your team, thanks to a service option that lets HP use SES to monitor your storage solution and recommend corrective action.



SCSI Enclosure Services Allows "Lights Out" Operation

Backed by HP Reliability—and HP Engineers

Hewlett-Packard products are renowned throughout the computer industry for their high reliability, and each is backed by an unequalled support staff. There's an added plus with the SC10 because of the HP remote monitoring available with the use of SCSI Enclosure Services. It all adds up to data that's safely protected and extremely available, 24 hours a day, 7 days a week.

Faster Disk Rotation Produces Better Performance

Disk drives in the SC10 rotate at 10,000 rpm. Because these faster-spinning drives offer higher I/O rates and better throughput, they deliver better response times in applications that need fast access to data, such as OLTP and data warehousing.

Ultra2 SCSI Delivers Data More Quickly

Key to the success of the SC10 is its support for the Ultra2 SCSI interface. Ultra2 SCSI actually packs *more scalable performance* into each channel than do other SCSI interfaces. This performance edge translates into more data through each channel for the same time period. And that means faster backups and better OLTP performance.

Table 1. Speed and Scalability with Ultra2 SCSI

	Ultra2 SCSI	Ultra SCSI	Fast Wide Differential SCSI
Throughput	80 MB/s	40 MB/s	20 MB/s
Scalability	15 devices	15 devices	15 devices

Protected Storage Saves Your Data Center Dollars

Bring the benefits of protected storage to your data center, and balance the budget, too! Even with all its other capability, the SC10 is HP's *lowest cost-per-megabyte* non-RAID storage solution. Add in the advantages of higher throughput and operations support, and the result is a truly compelling set of figures on anyone's spreadsheet.

Racking Density Puts More Data in Every Footprint

The SC10 offers extremely good racking density. Whether the standard in your data center is a 1.6-meter rack or a 2-meter model, you'll find the SC10 is the most efficient way to fill it with data storage. And remember: future expansion is easy!

Modular Construction Offers Physical Scalability

With the SC10, scalability is a module swap away. The entire disk system is constructed to allow fast, easy reconfiguration as your storage needs change. Add drives, change capacity—it's all at your fingertips.

Change Is Certain—and Easy

The modern IT enterprise is characterized by change: growth, expansion, and transformation—sometimes on a monthly basis. Faced with the certainty of changing requirements, more and more IT managers look to the SC10 for its expandability. Because the SC10 is scalable from 18 gigabytes up to terabyte-size systems, you can choose the storage solution that fits your requirements now—and then easily change it as your future needs change.



Guards against Data Loss and System Downtime



Table 2. Disk System SC10 Technical Specifications

Product Number	A5272A—Field-rackable version A5272AZ—Factory-racked version
Performance/Throughput	
Host Interface Type	Ultra2 SCSI low voltage differential 80 MB/s
Enclosure Capacity	10 HH disk drives, or 10 LP disk drives, for up to 180 GB per enclosure.
High Availability Features	Hot-swappable drives, fans, power supplies Redundant, hot-swappable bus control cards SES (SCSI Enclosure Services)
Dimensions	
Rackmount Enclosure	Height: 150 mm (3-1/2 EIA units) Width: 448 mm Depth: 728 mm Weight: 100 lbs. (45.35 kg)
Drive	
Capacity	9.1 GB, 18.2 GB, formatted
Rotational Velocity	10,000 rpm
Transfer Rate	Up to 15 MB/s
Average Seek Time	8.0–10.0 ms
AC Power	
Input Requirements	100–240 Vac, single-phase input, 50–60 Hz
Input Power	650 W
Power Factor	PFC-compliant to EN61000-3-2
Inrush Current	10 A max per supply @ 240 Vac
AC Inlet	C 22 appliance coupler
AC Protection	Internally fused, 8 A
Operating Environment	
Temperature	50–100.4°F (10–38°C)
Temperature Gradient	10°C/hr
Relative Humidity	20–80% (noncondensing)
Elevation	8,000 ft (2,438.4 m)
Shock	3 G t 11ms 1/2 sin pulse
Vibration	0.25 G at 5–500 Hz
Safety and Emissions	FCC Class A, VDE Class A, UL 1950, CSA C22-2-950, ENG950
Quality	Manufactured at an ISO 9000-certified facility
Standard Accessories	Rack rail kits for HP standard rack and HP Rack System/E

Q What's the maximum storage with the SC10?

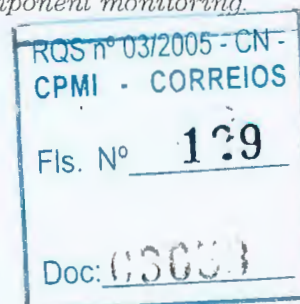
Pack 2 TB of data into a 2-meter rack!

Q What's the advantage of Ultra2 SCSI?

Speed (80 MB/s) and scalability.

Q What features are available for remote monitoring?

SES (SCSI Enclosure Services) integrated to the HP Event Monitoring Service for remote enclosure component monitoring.





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Hungary: +36 1 252 7300

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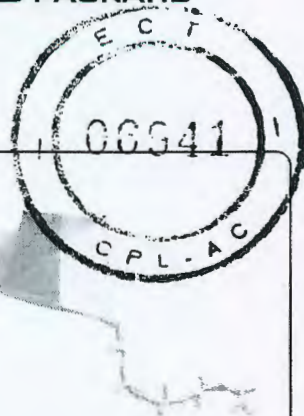
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HP's SMART Family: Removable, Standalone Storage Products and Enclosure

Hewlett-Packard provides modular storage expansion capability and greater flexibility, improves racking integration, and ensures data security with HP's SMART Family of Removable Storage Modules and Storage Enclosures. Based on an innovative architectural design, HP's SMART Family of Storage Enclosures offer a flexibility to integrate multiple removable modules into standard 19-inch cabinets complementing the entire system rack solution. In addition, all of the storage modules are available as a desktop solution as well. Hewlett-Packard is committed to providing the best-in-class storage solutions backed up by world-class service and support.

HP's SMART Family of Storage Enclosures and Removable Modules is designed to minimize rack space and provide several choices of solutions from desktop to rackmount.

HP's SMART Full-Height Rack Kit

The four-bay, 5.25-inch-high (3U-EIA units) version can mount either two full-height devices, one full-height and two half-height devices, or four half-height devices. It's a totally flexible solution for such a small form factor.

Easy Plug

Each device is easily plugged into the 68-pin blind-mate connector. To remove it, just quiesce the system, power-off the device, and pull the device out of the enclosure.

Modular Design

Mix and match the different technologies in one enclosure, fast wide differential or wide single-ended—both connect to the same blind-mate 68-pin SCSI connector.

Operating Environments

All removable media devices are supported in HP-UX and most are supported in MPE/iX environments (see Table 1, Supported Configurations, for more details).

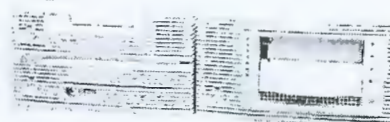
- **S**imple to install, use, and configure
- **M**odular design for configuration flexibility
- **A**vailability of data in HP-UX and MPE/iX environments
- **R**eliable products, high-quality service and support
- **T**echnology leaders—best performance and quality

Storage solutions for:

- HP 9000 Enterprise Servers
- HP 9000 Workstations
- HP 3000 Commercial Servers

SMART family portfolio includes:

- DLT 7000 and DLT 4000 Tape Drives
- DDS-2 and DDS-3 Tape Drives
- DDS-3 Tape Drive Autoloader
- 4-GB, 9-GB, and 18-GB WSE, LVD, and FWD Disk Drives
- DVD-ROM Drive
- 3U Full-Height Rack Kit



Full-height rack kit with DLT 4000, DVD-ROM, and DDS-3 DAT.



HP SMART Storage

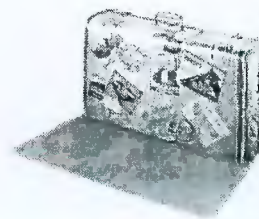


Table 1. SMART Family Products—Supported Configurations

Description	Part Number • Desktop/Racked • Field Racked	HP 9000 Series 800 Servers (HP-UX)		HP 9000 Series 700 Servers (HP-UX)		HP 3000 Servers (MPE/iX)	
		O/S	Systems	O/S	Systems	O/S	Systems
4G WSE Disk (NSE*)	C6388B C6389A	9.04+	E-, F-, G-, H-, I-Class	9.05+	712, 715, 725	5.0+	C10 and N10
		10.01+	D-, K-, T-Class	for NSE*	735, 745, 747		
		11.0+	V-Class	10.20 for WSE	B-, C-, J-Class		
4G FWD Disk	C6390A C6391A	10.01+	D-, K-, T-, Class	9.05+	725, 735, 755, B-, C-, J-Class	5.0+	C10 (5.5+) and N10
		11.0+	V-Class				
9G WSE Disk (NSE*) (Before 4/1/99)	C6394B C6395A	9.04+	E-, F-, G-, H-, I-Class	10.01+	B-, C-, J-Class	5.5+	N10
		10.01+	D-, K-, T-Class	for NSE*			
		11.0+	V-Class	10.20 for WSE			
9G FWD Disk (Before 4/1/99)	C6396A C6397A	10.01+	D-, K-, T-Class	10.01+	725, 735, 755, B-, C-, J-Class	5.5+	N10
		11.0+	V-Class				
9G WSE/LVD Disk (NSE*) (After 4/1/99)	C6402A C6403A	10.01+	D-, G-, H-, I-, K-, T-Class	10.01+	B-, C-, J-Class	5.5+	N10
		10.20+	A-, R-Class	for NSE*			
		11.0+	N-, V-Class	10.20 for WSE			
9G FWD Disk (After 4/1/99)	C6404A C6405A	10.01+	D-, K-, T-Class	10.01+	725, 735, 755, B-, C-, J-Class	5.5+	N10
		11.0+	V-Class				
18G WSE/LVD Disk (NSE*) (After 4/1/99)	C6398A C6399A	10.01+	D-, G-, H-, I-, K-, T-Class	10.01+	B-, C-, J-Class	5.5+	N10
		10.20+	A-, R-Class	for NSE*			
		11.0+	N-, V-Class	10.20 for WSE			
18G FWD Disk (After 4/1/99)	C6400A C6401A	10.01+	D-, K-, T-Class	10.01+	B-, C-, J-Class	5.5+	N10
		11.0+	N-, V-Class				
DVD-ROM (NSE) (After 3/1/99)	C4314A C4315A	10.01+	D-, K-, T-Class	10.01+	B-, C-, J-Class	5.5+	N10 (After 4/1/99)
		10.20+	A-, R-Class				
		11.0+	N-, V-Class				
DDS-2 Tape (NSE)	C6362A C6363A	9.04+	E-, F-, G-, H-, I-Class	9.05+	715, 745, 748, 755, B-, C-, J-Class	5.0+	C10 and N10
		10.01+	D-, K-, T-Class				
		11.0+	N-, V-Class				
DDS-3 Tape (NSE)	C6364A C6365A	9.04+	E-, F-, G-, H-, I-Class	10.01+	715, 745, 748, 755, B-, C-, J-Class	5.5+	C10 and N10
		10.01+	D-, K-, T-Class				
		11.0+	N-, V-Class				
DDS-3 Autoloader (NSE)	C6366A C6367A	9.04+	E-, F-, G-, H-, I-Class	10.01+	715, 725, 735, 755, B-, C-, J-Class	5.5+	N10
		10.01+	D-, K-, T-Class				
		11.0+	N-, V-Class				
DLT 4000 (NSE)	C6380A C6381A		N/S		N/S	5.5+	N10
DLT 4000 (FND)	C6382A C6383A	10.01+	D-, E-, K-, T-Class	10.01+	725/100, B-, C-, J-Class	5.5+	N10
		11.0+	N-, V-Class				
DLT 7000 (FWD)	C6374A C6375A	10.01+	D-, E-, K-, T-Class	10.01+	J-Class	5.5+	N10
		11.0+	N-, V-Class				
SCSI Converter	C4316A	11.0+	V-Class		N/S		N/S

Notes:

NSE*: For Series 700 Servers only.

N/S = Not Supported.

Packaging—Suitable for all 19-inch HP systems or peripheral racks.

I/O bus—Single 68-pin blind-mate SCSI controller.

Power cables—One power cable required per device ("Y" power cable option is available for powering two devices from a single PDU outlet in a rack).

NSE or FWD Terminator required.

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HP SMART Storage

Small Form Factor

Single-bay standalone disk mechanisms—either wide single-ended (WSE) or fast wide differential (FWD)—can be mounted into the half-height (2 EIA units) bay of a full-height storage rack kit. This provides an easy way to add a number of disks and tape drives to a 19-inch system or peripheral rack cabinet, especially where available rack space is limited.

Factory-Installed Solutions

HP's SMART Half-Height Storage modules such as a DVD-ROM and DDS-2 and DDS-3 tape drive mechanisms are available factory-installed in an HP 19-inch cabinet (see Table 2).

HP's SMART Storage Full-Height Enclosure for DLT 7000, DLT 4000, or DDS-3 Autoloader are available factory-installed into a 19-inch cabinet.

Field-Installed Solutions

DVD-ROM, DDS-2 and DDS-3 tape drive mechanisms, DDS-3 Autoloader, DLT 7000, DLT 4000, and 4- and 9-GB disks are also available as field-installable solutions.

Desktop Devices

DDS-2 and DDS-3; DDS-3 Autoloader; DVD-ROM; 4-, 9-, and 18-GB fast wide disks; 4-, 9-, and 18-GB WSE SCSI disk drives; as well as DLT 7000 and DLT 4000 come in a traditional HP desktop design.



Desktop modules ship with a vertical stand.



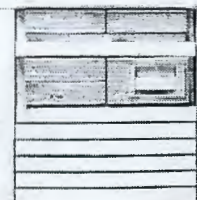
Product Composition

Full-height rack kit (C4318SZ) consists of:

- A rackmountable enclosure assembly capable of securely holding either one, two, or four standalone devices.

All devices in HP's SMART Family of Storage Enclosures use SCSI interface. The 50-pin and 68-pin external connections are half-pitch micro D (sometimes called SCSI-2 and SCSI-3, respectively) and support both screw- and latch-type SCSI cabling. The internal ribbon cabling is .2 meters in length.

The external connection to a rack kit uses 68-pin, regardless of device. Conversion from this 68-pin rack connection to a device (e.g., 50-pin) is done by the rack's internal ribbon cabling. This allows the use of a single blind-mate connector, regardless of the mechanism bus width (narrow or wide).



Full-height rack kit (C4318SZ) in a 1.1-meter cabinet.

Table 2. Factory-Installed Solutions: Rack Kit Factory-Installed into 19" Cabinet

Part Number	Option	Description	Peripheral Device
C4318SZ	102	DDS-2 DAT factory-installed	See C6363A
	103	DDS-3 DAT factory-installed	See C6365A
	104	DDS-3 Autoloader factory-installed	See C6367A
	105	DLT 7000 factory-installed	See C6375A
	106	DLT 4000 factory-installed HP-UX	See C6383A
	107	DLT 4000 factory-installed MPE/iX	See C6381A
	108	DVD-ROM factory-installed	See G4315A

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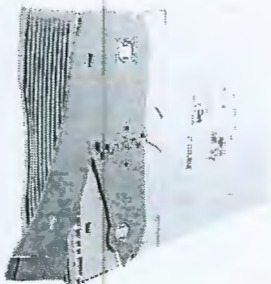
HP SMART Storage

Plugging and Ejection

The rack-ready modules contain an ejection-lever assembly instead of the rubber feet found on the desktop version.

The ejection lever has three main purposes:

- To assist in installing the module into the rack enclosure
- To lock the module in place
- To eject the module



Rack-ready devices contain an ejection-lever assembly to assist in inserting the module into the rack enclosure and locking the module in place.

Cooling

Cooling of racked units is supplied by the internal fan of each unit. All rack kits are designed to be unobtrusive to individual air inlet or exhaust points.

Power Distribution

On the back of a full-height enclosure is one IEC 320 connector for each device, which can be connected either to separate rack power distribution units (PDUs) or in pairs to a single rack PDU via the use of an optional "Y" AC power cord.



SMART desktop stacked.

Table 3. Specification of Different SCSI Bus Types

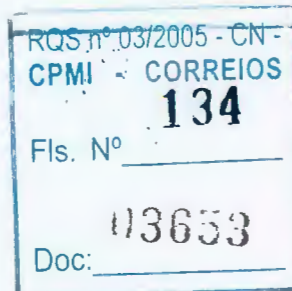
Common SCSI Name	Fastest Bus Speed	Bus Width	Signaling Method	Data Transfer Rate	Supported Bus Length	Supported Devices	No. of Pins
NSE (Narrow Single-Ended)	SCSI-1 (5MHz)	Narrow (8-bit)	Single-Ended	5MB/s	6 meters	7	50
WSE (Wide Single-Ended)	SCSI-2 (10MHz)	Wide (16-bit)	Single-Ended	20MB/s	3 meters	7	68
UWSE (Ultra Wide Single-Ended)	SCSI-3 (20MHz)	Wide (16-bit)	Single-Ended	40MB/s	1.5 meters	2	68
FND (Fast Narrow Differential)	SCSI-2 (10MHz)	Narrow (8-bit)	Differential (High Voltage)	10MB/s	25 meters	7	50/68
FWD (Fast Wide Differential)	SCSI-2 (10MHz)	Wide (16-bit)	Differential (High Voltage)	20MB/s	25 meters	15	68
LVD (Low Voltage Differential)	SCSI-3 (40MHz)	Wide (16-bit)	Differential (Low Voltage)	80MB/s	12 meters	15	68

Notes:

LVD devices can revert to single-ended operation automatically.

Do not mix LVD and FND/FWD devices on the same bus.

"Wide" devices can be used in "narrow" applications.



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Table 4. SMART Family Desktop Products and Cable Information

Desktop Devices

The desktop modules contain two 50-pin or two 68-pin connections. One of the connections is for the cable going to the system. The second connection is used for either daisy chaining modules together or for termination.

	Pin Connections			Part Numbers	
	System	Device	Terminator	Cables	Terminator
NSE—Narrow Single-Ended	50	50	50	C2908A or C2955A or C2957A	C2904A
WSE—Wide Single-Ended	68	68	68	C2978A or C2979A	C2972A
WSE—(NSE Mode)	50	68	68	C2906A or C2961A	C2972A
FWD—Fast Wide Differential	68	68	68	C2911A or C2924A or C2981A	C2905A
FND—Fast Narrow Differential	68 (FWD)	50	50	C2906A or C2961A	Included with module
LVD—Low Voltage Differential	68	68	68	C2978A or C2979A VHDC1: C2361A or C2362A or C2363A or C2365A	C2364A

C4316A: External NSE to FWD converter (for V-Class)

	Desktop Device Part Number	Cable C2955A 50-50-pin 0.5-meter	Cable C2908A 50-50-pin 1.0-meter	Cable C2957A 50-50-pin 2.0-meter	Cable C2906A 68-50-pin 2-meter	Terminator C2904A 50-pin	Terminator
NSE							
DDS-2 NSE	C6362A	•	•	•		•	
DDS-3 NSE	C6364A	•	•	•		•	
DDS-3 Autoloader NSE	C6366A	•	•	•		•	
DLT 4000 NSE	C6380A	•	•	•		•	
DVD-ROM NSE	C4314A	•	•	•		•	
		C2978A 68-68-pin 0.5-meter	C2979A 68-68-pin 1.5-meter	C2961A 68-50-pin 1-meter		C2972A 68-pin	C2364A 68-pin (LVD)
WSE/NSE							
4GB Disk WSE	C6388B	•	•	•	•	•	
9GB Disk WSE	C6394B	•	•	•	•	•	
9GB Disk WSE (Ultra)/LVD	C6402A	•	•	•	•		•
18GB Disk WSE (Ultra)/LVD	C6398A	•	•	•	•		•
FND							
DLT 4000 FND	C6382A			•	•	Included	
		C2911A 68-68-pin 0.9-meter	C2924A 68-68-pin 2.5-meter	C2981A 68-68-pin 0.5-meter		C2905A 68-pin	
FWD							
4GB Disk FWD	C6390A	•	•	•		•	
9GB Disk FWD	C6396A	•	•	•		•	
9GB Disk FWD	C6404A	•	•	•		•	
18GB Disk FWD	C6400A	•	•	•		•	
DLT 7000 FWD	C6374A	•	•	•		•	
Cables and Terminator for N-Class							
C2361A	1.0 meter	VHDC1	68-pin to HD 68-pin cable				
C2362A	2.5 meters	VHDC1	68-pin to HD 68-pin cable				
C2365A	5.0 meters	VHDC1	68-pin to HD 68-pin cable				
C2363A	10.0 meters	VHDC1	68-pin to HD 68-pin cable				
C2364A		LVD	68-pin terminator				

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Table 5. SMART Family Rack-Ready Products and Cable Information

Rack-Ready Devices

The rack-ready devices have a single connector. The device slides into the rack enclosure. Each bay of the rack enclosure has two 68-pin connections. The first connection is used to connect a device to a rack. The second connection is used for either daisy chaining devices together or for termination.

Cables

Single Module

	Cables	Terminator	Daisy Chaining
NSE	C2961A or C2906A	C2972A	C2981A or C2911A
WSE	C2979A or C2978A	C2972A	C2978A or C2979A
WSE (NSE Mode)	C2961A or C2906A	C2972A	C2981A or C2911A
FWD	C2981A or C2911A	C2905A	C2981A or C2911A
FND	C2981A or C2911A	Included with module	C2981A or C2911A
LVD	C2978A or C2979A	C2364A	C2978A or C2979A

Cables and Terminator for N-Class

C2361A	1.0 meter	VHDC1	68-pin to HD 68-pin cable
C2362A	2.5 meters	VHDC1	68-pin to HD 68-pin cable
C2365A	5.0 meters	VHDC1	68-pin to HD 68-pin cable
C2363A	10.0 meters	VHDC1	68-pin to HD 68-pin cable
C2364A		LVD	68-pin terminator

C4316A: External NSE to FWD converter (for V-Class)

	Rack Ready Device Part Number	Cable	Cable	Cable	Cable	Terminator	Terminator
		C2981A 68-68-pin 0.5-meter	C2911A 68-68-pin 0.9-meter	C2961A 68-50-pin 1-meter	C2906A 68-50-pin 2-meter	C2972A 68-pin	
NSE							
DDS-2 NSE	C6363A	•	•	•	•	•	
DDS-3 NSE	C6365A	•	•	•	•	•	
DDS-3 Autoloader NSE	C6367A	•	•	•	•	•	
DLT 4000 NSE	C6381A	•	•	•	•	•	
DVD-ROM NSE	C4315A	•	•	•	•	•	
		C2978A 68-68-pin 0.5-meter	C2979A 68-68-pin 1.5-meter	C2961A 68-50-pin 1-meter	C2906A 68-50-pin 2-meter	C2972A 68-pin	C2364A 68-pin (LVD)
WSE/NSE							
4GB Disk WSE	C6389A	•	•	•	•	•	
9GB Disk WSE	C6395A	•	•	•	•	•	
9GB Disk WSE (Ultra)/LVD	C6403A	•	•	•	•		•
18GB Disk WSE (Ultra)/LVD	C6399A	•	•	•	•		•
		C2981A 68-68-pin 0.5-meter	C2911A 68-68-pin 0.9-meter	C2924A 68-68-pin 2.5-meter		C2905A 68-pin	
FWD							
4GB Disk FWD	C6391A	•	•	•		•	
9GB Disk FWD	C6397A	•	•	•		•	
9GB Disk FWD	C6405A	•	•	•		•	
18GB Disk FWD	C6401A	•	•	•		•	
DLT 7000 FWD	C6375A	•	•	•		•	
FND							
DLT 4000 FND	C6383A	•	•	•		Terminator Included	

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Table 6. Specifications of Tape Drive Devices

	Transfer Rate (MB/sec.)	Cart. Capacity (Native)	Avg. Access Time	Data Bit Error Rate	Note
DDS-2	0.5 MB/sec	4 GB	40 sec	10 ⁻¹⁴	
DDS-3	1.0 MB/sec	12 GB	40 sec	10 ⁻¹⁴	
DDS-3 Autoloader	1.0 MB/sec	12 GB	40 sec	10 ⁻¹⁴	6-cassette autoloader
DLT 4000	1.5 MB/sec	20 GB	68 sec	10 ⁻¹⁷	
DLT 7000	5.0 MB/sec	35 GB	68 sec	10 ⁻¹⁷	

Notes:

DLT 4000 offers 20 GB native capacity per cartridge and native throughput of 1.5 MB/sec. DLT 7000 offers 35 GB native capacity per cartridge and native throughput of 5.0 MB/sec. Both throughput and capacity can be doubled with a 2:1 compression ratio. Actual achievable compression ratio (and throughput) are dependent on the files being stored and will vary between applications.

Answers to some frequently asked questions about DLT:

DLT 7000 drive can read a DLT tape media written by DLT 4000.

The DLT tape media does NOT need to be formatted before use. The drive will label what device was used to write to it.

The DLT 7000 drive can overwrite a tape written on by a DLT 4000 drive by using an overwrite command or by using a bulk eraser before writing to it.

The DLT 7000 drive cannot append write to a tape written on by a DLT 4000 drive.

The DLT 7000 drive will not write in DLT 4000 format.

Table 7. C4314A Desktop and C4315A Rack-Ready DVD-ROM Drive Specifications

Physical Dimensions	62 mm (2.44 in) H × 215 mm (8.47 in) W × 273 mm (10.75 in) D
Weight	3.17 kg (7.0 lbs)
Data Interface	Narrow Single-Ended (NSE)
A/C Input Characteristics	Auto-ranging 90–264 VAC @ 47–63 Hz via IEC 320 connector
A/C Current Draw (90 VAC – 264 VAC)	Typical: 0.21 A – 0.40 A Max: 0.30 A – 0.58 A
AC Power Cord Length (included)	50 Hz 1.98 m; 60 Hz 6.5 ft
Typical Heat Dissipation	3.8–31.6 W, 13.1–108 BTU/hr
Audio Out	3.5 mm rear stereo, Front 3.5 mm Headset, Front Headset Volume
Mechanism	DVD-ROM
Random Access Time	120 ms typical (DVD); 90 ms typical (CD-ROM)
Cache	512 KB
Data Transfer Rate	Up to 8,100 KB/s substream (DVD); 4,800 KB/s sustained (CD-ROM)
Standards Supported	DVD formats: DVD-ROM (read only), DVD-5 (single side, single layer) 4.7 GB; DVD-9 (single-side, dual layer) 8.5 GB; DVD-Video (read only), DVD-R (write once), DVD-RW (rewritable). CD-ROM formats: Photo CD (single and multisession), CD Extra or CD Plus (both audio and data), Video CD, CD-R (recordable once), CD-RW (rewritable), CD-ROM XA Modes 1 and 2 (concurrent audio and video), CD-DA (audio only).
Load Mechanism	Slot
MTBF (Mechanism)	100,000 hours
Warranty	2 years

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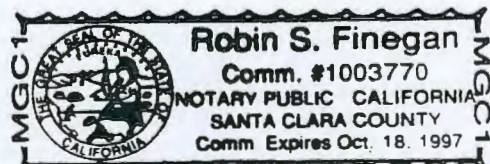
1501 Page Mill Road
Palo Alto, California
94304
United States of America

Subscribed and sworn (or affirmed) to before me this
9th day of June 1994

Robin S. Finegan, Notary Public

Certificates total 13 pages.

Item#	Certificate#	Registrar	Pages
1	FM 25955	BSI	1 through 3
2	FM 13627	BSI	4 through 5
3	FM 10073	BSI	6 through 7
4	FM 14994	BSI	8 through 10
5	FM 21565	BSI	11 through 12
6	1992/575	AFAQ	13





SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Certificate of Registration

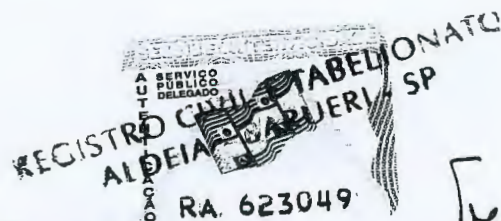
Number FM 25955

The Director, BSI Quality Assurance, hereby grants to

HEWLETT PACKARD COMPANY
NETWORKED COMPUTER MANUFACTURING OPERATIONS
8000 FOOTHILLS BOULEVARD
ROSEVILLE
CALIFORNIA 95747
UNITED STATES OF AMERICA



(hereinafter called the Firm) the right to display the BSI Registered Firm Symbol and be listed in the BSI Register of Firms of Assessed Capability in respect of the Quality System specified below and the Scope of Registration particularly described in the hereto, bearing the same number as this Certificate. This Certificate of Registration has been issued in recognition that the Firm and BSI are subject to the Terms and Conditions given in the Regulations governing "The System" of which this Certificate forms a part. The Quality System specification for which this Certificate has been issued is
ISO 9002 : 1987 / EN 29002 : 1987 / BS 5750 : PART 2 : 1987



Signed for and on behalf of BSI Quality Assurance

[Signature]
Director

Date 18 OCTOBER 1993



Issued by: BSI Quality Assurance
PO Box 375 Milton Keynes MK14 6LL

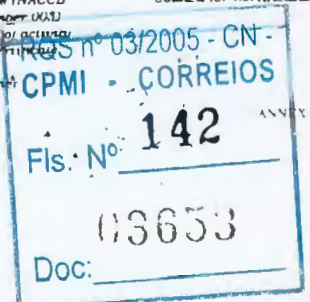


This mark indicates that BSI's
accredited scope (NACCB
Certificate number 0001)
covers the range of activities
given in this Certificate



Accredited by the Dutch
Council for Certification

This Certificate of Registration is the property of the British Standards Institution, incorporated by Royal Charter
REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY



Item 1
Page 1 of 13



Appendix

NUMBER ONE

PAGE 1

to Certificate Number FM 25955

This appendix declares the scope of registration of the Certificate granted to:

HEWLETT PACKARD COMPANY
NETWORKED COMPUTER MANUFACTURING OPERATIONS
8000 FOOTHILLS BOULEVARD
ROSEVILLE
CALIFORNIA 95747
UNITED STATES OF AMERICA

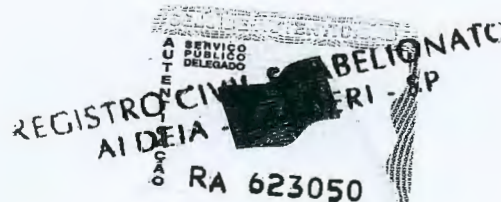


... registration

... AND DISTRIBUTION OF COMPUTER SYSTEMS AND TERMINALS, EXCLUDING ... LISTED IN APPENDIX A OF QUALITY MANUAL.

The activities of this scope are included within the following Standard Industrial Classification code, for which BSI QA has been accredited by NACCB and RvC.

SIC 3302 : ELECTRONIC DATA PROCESSING EQUIPMENT



Signed on behalf of BSI Quality Assurance

For Director

Date 18 OCTOBER 1993



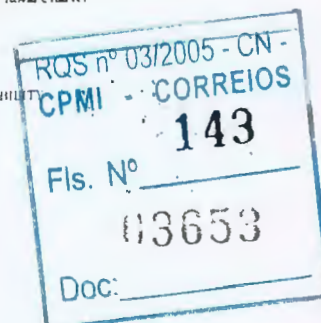
BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

Item 1
Page 2 of 13

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated by Royal Charter.

ETIS Issue

REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY





Appendix

INDEX

PAGE 1

to Certificate Number FM 25955

This appendix lists all appendices to the Certificate granted to:

HEWLETT PACKARD COMPANY
NETWORKED COMPUTER MANUFACTURING OPERATIONS
8000 FOOTHILLS BOULEVARD
ROSEVILLE
CALIFORNIA 95747
UNITED STATES OF AMERICA



Appendix No	Page No	Specification	Current Issue Date	Previous Issue Date
ONE	1	SIC 3302	18 OCTOBER 1993	N/A



Signed on behalf of BSI Quality Assurance

For Director

Date

18 OCTOBER 1993



BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

Item 1

Page 3 of 13

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated by Royal Charter.

REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY





SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Certificate of Registration

Number **FM 13627**

The Director, BSI Quality Assurance, hereby grants to

HEWLETT-PACKARD COMPANY
EXETER COMPUTER MANUFACTURING OPERATION
100 DOMAIN DRIVE
EXETER
EXETER HAMPSHIRE 03833
UK



(hereinafter called the Firm) the right and licence to be listed in the BSI Register of Firms of Assessed Capability in respect of the goods or services particularly described in the Appendix hereto, bearing the same number as this Certificate. Goods shall be produced by the Firm at, or services offered at or from, only the address(es) given above. The Quality Management System controlling the supply of the goods or services described in the Appendix is in accordance with

1987 / EN 29002 : 1987 / BS 5750 : PART 2 : 1987

This Certificate of Registration is granted subject to the Regulations governing the registration referred to above.



Signed for and on behalf of BSI Quality Assurance

[Signature]

Director

Date **25 OCTOBER 1991**

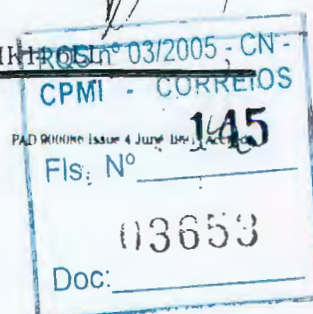
Item 2
Page 4 of 13



Issued by:

BSI Quality Assurance PO Box 375 Milton Keynes MK14 6YU

This Certificate of Registration is the property of BSI Quality Assurance





Appendix

NUMBER ONE

PAGE 1

to Certificate Number FM 13627

This appendix declares the scope of registration of the certificate granted to:

HEWLETT-PACKARD COMPANY
EXETER COMPUTER MANUFACTURING OPERATION
100 DOMAIN DRIVE
EXETER
NEW HAMPSHIRE 03833
USA



Scope of registration

MANUFACTURE AND RE-MANUFACTURE OF EQUIPMENT, INCLUDING COMPUTER WORKSTATIONS, MEETING OR INTENDED TO MEET, IEC 950 AND/OR ASSOCIATED STANDARDS.

of this scope are included within the following Standard Industrial Classification code, for which BSI QA is accredited by NACCB.

SIC 3301 OFFICE MACHINERY
SIC 3302 ELECTRONIC DATA PROCESSING EQUIPMENT

This appendix supersedes appendix number one page 1 of 25 October 1991.



on behalf of BSI Quality Assurance

R J Tizzard
R J TIZZARD

For Director

Date

7 JUNE 1993

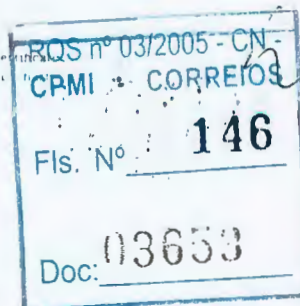
Item 2

page 5 of 13

QUALITY ASSURANCE

BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, and should be returned to the Institution when the Certificate is no longer valid.





SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Certificate of Registration

Number **FM 10073**

BSI Quality Assurance hereby grants to

**HEWLETT PACKARD LIMITED
COMPUTER PERIPHERALS (BRISTOL)
FILTON ROAD
STOKE GIFFORD
BRISTOL BS12 6QZ**



(hereinafter called the Firm) the right and licence to be listed in the BSI Register of Assessed Capability in respect of the goods or services particularly the Appendix hereto, bearing the same number as this Certificate. Produced by the Firm at, or services shall be offered at or from, only the address(es) given above, all in accordance with

BS 5750 : Part 2 : 1987 / ISO 9002-1987 / EN 29002-1987.

The Certificate of Registration is granted subject to the Regulations governing the Registration referred to above.



Signed on behalf of BSI Quality Assurance

Date

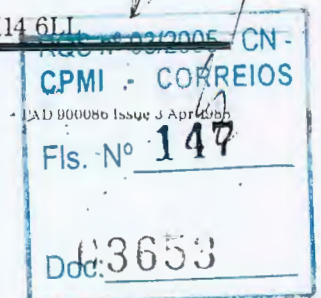
29 MAY 1990

Director

Item 3
Page 6 of 13



BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL





SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Appendix /1

to Certificate Number FM 10073



Issued to:

HEWLETT PACKARD LIMITED
COMPUTER PERIPHERALS (BRISTOL)
FILTON ROAD
STOKE GIFFORD
BRISTOL
BS12 6QZ

Goods or services in respect of which the Firm is Registered.

Manufacture of mass storage computer peripherals including tape and disk drives.

STANDARD INDUSTRIAL CLASSIFICATION

The activities of the above scope are included within the following SIC code:-

SIC 3302 : Electronic data processing equipment.



Signed on behalf of BSI Quality Assurance

 Director

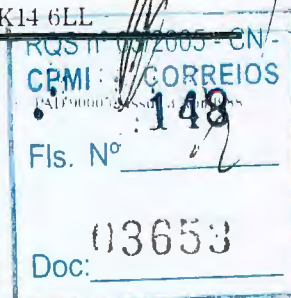
Date

29 May 1990

Item 3
Page 7 of 13



BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL





SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Certificate of Registration

Number FM 14994



The Director, BSI Quality Assurance, hereby grants to

HEWLETT PACKARD
ASIA PACIFIC PERSONAL COMPUTER DIVISION
72 BENDEMEER ROAD
01-01/07-01 HIAP HUAT HOUSE
SINGAPORE 1233

(hereinafter called the Firm) the right and licence to be listed in the BSI Register of Firms of Assessed Capability in respect of the goods or services particularly described in the Appendix hereto, bearing the same number as this Certificate. Goods shall be produced by the Firm at, or services offered at or from, only the above. The Quality Management System controlling the supply of goods described in the Appendix is in accordance with

BSI EN 29002 : 1987 / BS 5750 : PART 2 : 1987

This Certificate of Registration is granted subject to the Regulations governing the Registration referred to above.



Signed for and on behalf of BSI Quality Assurance

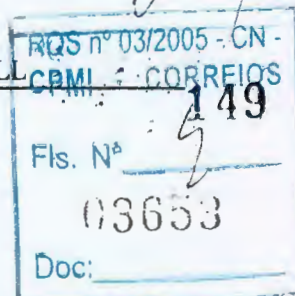
Director

Date 16 JUNE 1992



Issued by:

BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL



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Page 8 of 13



Appendix

NUMBER ONE

PAGE 1

to Certificate Number FM 14994

This appendix declares the scope of registration of the Certificate granted to:

HEWLETT PACKARD
ASIA PACIFIC PERSONAL COMPUTER DIVISION
72 BENDEMEER ROAD
#01-01/07-01 HIAP HUAT HOUSE
SINGAPORE 1233



Registration

OF PERSONAL COMPUTERS, NETWORK PRODUCTS AND HANDHELD PRODUCTS
AND OF KEYBOARDS.
SUBCONTRACTED MANUFACTURE OF KEYBOARDS AND REPLICATION OF OPERATING SYSTEM SOFTWARE.

The activities of this scope are included within the following Standard Industrial Classification code, for which BSI QA has been accredited by NACCB and RvC.

ELECTRONIC DATA PROCESSING EQUIPMENT

This appendix supersedes APPENDIX ONE DATED 16 SEPTEMBER 1993.



Signed on behalf of BSI Quality Assurance

For Director

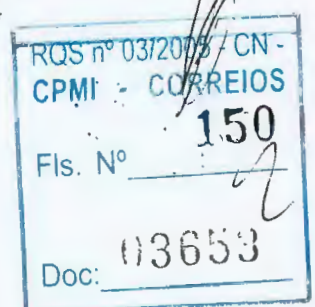
Date 07 OCTOBER 1993



BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated by Royal Charter.

REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY



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Appendix

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PAGE 1

to Certificate Number FM 14994



This appendix lists all appendices to the Certificate granted to:

HEWLETT PACKARD
ASIA PACIFIC PERSONAL COMPUTER DIVISION
72 BENDEMEER ROAD
#01-01/07-01 HIAP HUAT HOUSE
SINGAPORE 1233

Appendix No	Page No	Specification	Current Issue Date	Previous Issue Date
ONE	ONE	SIC 3302	16 SEPTEMBER 1993	16 JUNE 1992
ONE	ONE	SIC 3302	07 OCTOBER 1993	16 SEPTEMBER 1993

Supersedes APPENDIX ONE DATED 16 SEPTEMBER 1993.



Signed on behalf of BSI Quality Assurance

For Director

Date 07 OCTOBER 1993

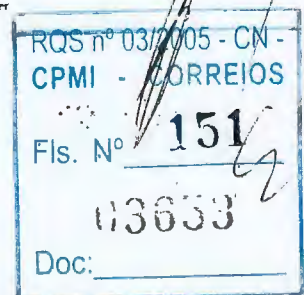


ANCE BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated by Royal Charter

File Issue 1

REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY



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SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY

Certificate of Registration

Number FM 21565



The Director, BSI Quality Assurance, hereby grants to

HEWLETT-PACKARD SINGAPORE (PTE) LIMITED
ASIA PERIPHERALS DIVISION
20 GUL WAY
SINGAPORE 2262
SINGAPORE

(hereinafter called the Firm) the right to display the BSI Registered Firm Symbol and be entered in the BSI Register of Firms of Assessed Capability in respect of the Quality System specified below and the Scope of Registration particularly described in the Appendix hereto, bearing the same number as this Certificate. This Certificate of Registration has been issued in recognition that the Firm and BSI are subject to the Terms and Conditions given in the Regulations governing "The System" of which this Certificate forms a part. The Quality System specification for which this Certificate has been issued is ISO 9002 : 1987 / EN 29002 : 1987 / BS 5750 : PART 2 : 1987



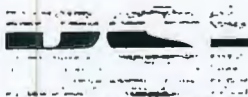
Certificate supersedes Certificate number FM 21565 of 21 OCTOBER 1992.

Signed for and on behalf of BSI Quality Assurance

Director

Date 7 DECEMBER 1992

Item 5
3c 11 of 13



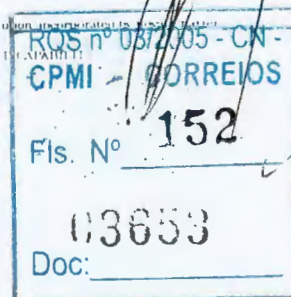
Issued by:

QUALITY ASSURANCE

BSI Quality Assurance PO Box 375 Milton Keynes MK14 6GL

This Certificate of Registration is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated in England.

REGULATIONS OF THE SYSTEM FOR THE REGISTRATION OF FIRMS OF ASSESSED CAPABILITY





Appendix

NUMBER ONE

PAGE 1

to Certificate Number FM 21565

This appendix declares the scope of registration of the Certificate granted to:

HEWLETT-PACKARD SINGAPORE (PTE) LIMITED
ASIA PERIPHERAL DIVISION
SINGAPORE 2262



MANUFACTURE OF THERMAL INKJET PRINTERS

The activities of this scope are included within the following Standard
Serial Classification code, for which BSI QA has been accredited by NACCB

TELECOMMUNICATIONS DATA PROCESSING EQUIPMENT

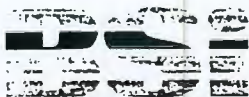
This Appendix supersedes Appendix FM 21565 of 21 OCTOBER 1992.



BSI Quality Assurance

For Director

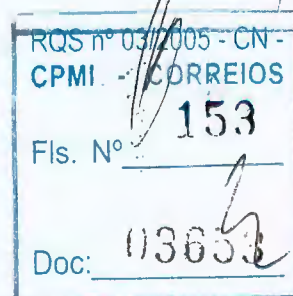
Date 7 DECEMBER 1992



QUALITY ASSURANCE

BSI Quality Assurance PO Box 375 Milton Keynes MK14 6LL

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated by Royal Charter.



15
2 of 13



ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **563** livro n.º **0021** fls. **0278**

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica DECLARAÇÃO que traduzo para o vernáculo

Estado da California
Condado de Santa Clara
Estados Unidos da America

Eu, William Troy Cowan, o Gerente do Programa ISO 9000 para a empresa Hewlett Packard, juro (ou declaro) por meio desta que as reproduções anexas, conforme listadas abaixo são fotocópias verdadeiras, corretas e completas dos documentos originais em posse da Hewlett Packard Company e registrados pelos oficiais de registro indicados das empresas também abaixo elencadas.

Assinatura ilegível
1501 Page Mill Road
Palo Alto, California
94304 Estados Unidos da America

Subscrito e juramentado (ou afirmado) perante mim neste dia 9 de junho de 1994

Assinatura ilegível
Tabelião Público

Certificados - total 13 páginas

Ítem	Certificado	Oficial Registro	Páginas
1	FM 25955	BSI	1 A 3
2	FM 13627	BSI	4 A 5
3	FM 10073	BSI	6 A 7
4	FM 14994	BSI	8 A 10
5	FM 21565	BSI	11 A 12
6	1992/575	AFAQ	13

Aposto Carimbo de Robin S. Finegan

Comissionamento No. 1003770

Tabelião Público - California

Condado de Santa Clara

Comissionamento expira a 18 de outubro de 1997

O Consulado do Brasil em São Francisco reconhece como verdadeira a assinatura de Robin S. Finegan, Tabelião Público do Condado de Santa Clara, estado da California, Estados Unidos da América.

São Francisco, 20 de julho de 1994

Assinatura ilegível

Noemia Wainer

SERVIÇO
PÚBLICO
DELEGADO

REGISTRO CIVIL E TABELIÃO
ALDEIA - BARCELONA - SP
622544

RQS 408/2000-01
CPMI - CORREIOS

Fls. Nº 154

Doc: 03053



ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2563**

livro n.º **0021** fls. **0279**

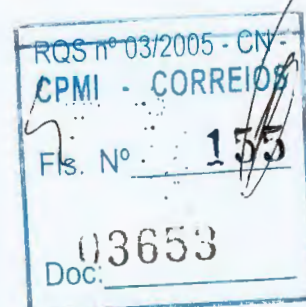
Vice-Consul

Nada mais havia no documento acima, que devolvo juntamente com esta tradução datilografada em 02 páginas, a qual conferi e achei conforme. Assino e dou fé.

São Paulo, 19 de dezembro de 1994

Ana Ruth Kleinberger Strum

ANA RUTH KLEINBERGER STRUM
Tradutora Juramentada
JUCESP N.º 352





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292



Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2561** - livro n.º **0021** - fls. **0275**

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica : CERTIFICADO DE REGISTRO que traduzo para o vernáculo

BSI - Empresa Registrada
CERTIFICADO DE REGISTRO
Sistema para Registro de Firmas de Capacidade Avaliada
Número : FM 21565

O Diretor da BSI Quality Assurance por meio desta outorga a
:
HEWLETT-PACKARD SINGAPORE (PTE) LIMITED
ASIA PERIPHERALS DIVISION
20 GUL WAY
SINGAPORES 2262
SINGAPURA

(doravante denominada a Empresa) o direito de mostrar o Símbolo de Empresa Registrada na BSI e ser listada no Registro BSI de Empresas de Capacidade Avaliada com relação à norma do Sistema de Qualidade abaixo especificada e o Escopo do Registro especificamente descrito no Anexo deste, com os mesmos números deste Certificado. Este Certificado de Registro foi emitido em reconhecimento ao fato de que a Empresa e BSI estão sujeitas aos Termos e Condições apresentados nos Regulamentos regendo "O Sistema" do qual este Certificado é parte. A especificação do Sistema de Qualidade para o qual este Certificado foi emitido é :

ISO 9002 : 1987 / EN 29002 : 1987 / BS 5750 : PARTE 2 : 1987

Este certificado substitue o certificado de No. FM 21565 de 21 de outubro de 1992.

Assinado por e em nome de BSI Quality Assurance, Assinatura ilegível, Diretor

Data : 7 de dezembro de 1992

BSI Quality Assurance
Emitido por : BSI Quality Assurance
P.O.Box 375 Milton Keynes MK14 6LL

REGISTRO CIVIL E NOTARIO
ALDEIA BARROCKI - SP

Este Certificado é propriedade da BSI Quality Assurance, parte da Instituição de Normas Britânicas, incorporadas no Carta Régia.





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão

2561-

livro n.º **0021-** fls. **0276**

BSI - Firma Registrada

Sistema para o Registro de Empresas de Capacidade Avaliada

Anexo Número 1 Página 1
ao Certificado número FM 21565

Este anexo declara o escopo do registro do certificado outorgado a :

HEWLETT-PACKARD SINGAPORE (PTE) LIMITED
ASIA PERIPHERALS DIVISION
SINGAPORES 2262

MANUFATURA DE IMPRESSORAS TÉRMICAS A JATO DE TINTA

As atividades deste escopo estão incluídas dentro do seguinte código de Normas de Classificação Industrial, para o qual a BSI QA é acreditada pela NACCB e RvC.

SIC 3302 EQUIPAMENTO ELETRÔNICO DE PROCESSAMENTO DE DADOS

Assinado em nome de BSI Quality Assurance
Assinatura ilegível, pelo Diretor

Data : 07 de dezembro de 1992

BSI Quality Assurance
P O Box 375 Milton Keynes MK14 6LL

Este Anexo é parte integrante do Certificado de Empresa Registrada e deveria ser lido apenas em conjunto com o Certificado.

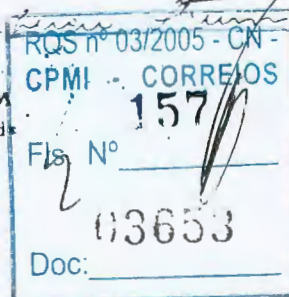
Este Anexo é propriedade da BSI Quality Assurance, parte da Instituição de Normas Britânicas, incorporadas por Carta Régia.

Nada mais havia no documento acima, que devolvo juntamente com esta tradução datilografada em 02 páginas, a qual verifiquei e achei conforme. Assino e dou fé.

São Paulo, 19 de dezembro de 1994



ANA RUTH K. STRUM
Tradutora Juramentada
JUCESP N.º 352





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão 2559

livro n.º 0021 fls. 0270

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica : CERTIFICADO DE REGISTRO que traduzo para o vernáculo

BSI - Empresa Registrada
CERTIFICADO DE REGISTRO
Sistema para Registro de Firmas de Capacidade Avaliada
Número : FM 10073

O Diretor da BSI Quality Assurance por meio desta outorga a :

HEWLETT-PACKARD LIMITED
COMPUTER PERIPHERALS (BRISTOL)
FILTON ROAD
STOKE GIFFORD
BRISTOL BS12 6QZ

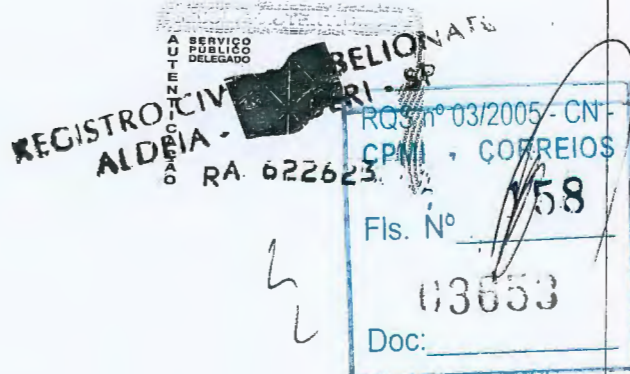
(doravante denominada a Empresa) o direito e a licença de estar listado com o Registro BSI de Empresas de capacidade avaliada com relação aos bens e serviços particularmente descritos no Anexo a este, e tendo os mesmos números deste Certificado. Os bens serão produzidos pela Empresa em, ou serviços serão oferecidos em ou de, apenas nos endereços acima fornecidos, de acordo com :

BS 5750 : PARTE 2 : 1987 / ISO 9002-1987 / EN-29002-1987

Este Certificado de Registro é outorgado sujeito aos Regumentos que regem o Registro acima mencionado.

Assinado em nome da BSI Quality Assurance, assinatura ilegível, Diretor.
29 de maio de 1990

BSI Quality Assurance
POBox 375 Milton Keynes MK14 6LL





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2559** - livro n.º **0021** - fols. **0271** -

BSI - Firma Registrada
Sistema para o Registro de Empresas de Capacidade Avaliada

Anexo Número 1 Pagina 1
ao Certificado número FM 10073

Este anexo declara o escopo do registro do Certificado outorgado a :

HEWLETT-PACKARD LIMITED
COMPUTER PERIPHERALS (BRISTOL)
FILTON ROAD
STOKE GIFFORD
BRISTOL BS12 6QZ

Bens ou serviços com relação os quais a empresa está registrada :
Manufatura e armazenagem em massa de periféricos de computador incluindo fita e dosk-drive.

CLASSIFICAÇÃO INDUSTRIAL PADRÃO

As atividades do escopo acima estão incluídas no seguinte código SIC :

SIC 3302 EQUIPAMENTO PARA PROCESSAMENTO ELETRÔNICO DE DADOS

Assinado em nome de BSI Quality Assurance
Assinatura ilegível, pelo Diretor

Data : 24 de maio de 1993

BSI Quality Assurance
P O Box 375 Milton Keynes MK14 6LL

Nada mais havia no documento acima, que devolvo juntamente com esta tradução datilografada em 02 páginas, a qual conferi e achei conforme. Assino e dou fé.

São Paulo, 19 de dezembro de 1994

REGISTRO CIVIL E TABELIONATO
 AID 8624
 TRANSLADURA JURAMENTADA
 IUCESP N.º 552
 SPANA RUTH K. STRUM
 Tradutora Juramentada
 BARRERI - SP
 AUTENTICACAO
 SERVICIO PUBLICO DELEGADO

RQS nº 03/2005 - CN-
CPMI - CORREIOS
Fls. Nº 159
Doc: 03653



ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP
Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352
Idioma: Inglês
C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão — **2446** —

livro n.º **0020** — fls. **0218**

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica DECLARAÇÃO que traduzo para o vernáculo

Estado da California
Condado de Santa Clara
Estados Unidos da America

Eu, William Troy Cowan, o Gerente do Programa ISO 9000 para a empresa Hewlett Packard, juro (ou declaro) por meio desta que as reproduções anexas, conforme listadas abaixo são fotocópias verdadeiras, corretas e completas dos documentos originais em posse da Hewlett Packard Company e registrados pelos oficiais de registro indicados das empresas também abaixo elencadas.

Assinatura ilegível
1501 Page Mill Road
Palo Alto, California
94304 Estados Unidos da America

Subscrito e juramentado (ou afirmado) perante mim neste dia 20 de outubro de 1994
Assinatura ilegível
Tabelião Público

Item	Certificado	Oficial Registro	Páginas
1	9150.HEWP	CISQ	1
2	FM 25258	BSI	3

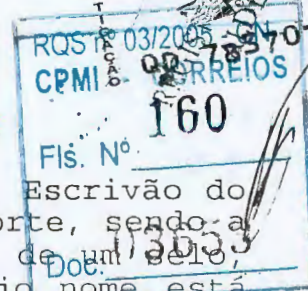
Aposto carimbo da Corte Suprema do Condado de Santa Clara, California

Aposto Carimbo de Robin S. Finegan
Comissionamento No. 1003770
Tabelião Público - California
Condado de Santa Clara
Comissionamento expira a 18 de outubro de 1997

Estado da California
Condado de Santa Clara

NO. 066662

Eu, Steven V. Love, Escrivão da Suprema Corte, Escrivão do Condado e Escrivão ex-ofício da em e para tal Corte, sendo a mesma uma Corte de Registros, dispondo por lei de um selo, atesto por meio desta que ROBIN S. FINEGAN cujo nome está subscrito ao certificado de prova, reconhecimento ou





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292



Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2446** - livro n.º **0020** - fls. **0219**

declaração juramentada do instrumento anexo, era à época de tomar tal prova, reconhecimento ou declaração juramentada Tabelião Público em e para tal Condado, devidamente nomeado, comissionado e juramentado e autorizado pelas leis de tal Estado, a administrar juramentos, e a tomar os reconhecimentos e provas de escrituras públicas ou de transmissão de propriedade de terras, edifícios e heranças em tal Estado e, outros instrumentos a serem registrados aqui e para atestar os mesmos; que plena fé e crédito sejam e devam ser dados a seus atos oficiais; e mais certifico que comparei a assinatura do certificado original com aquela depositada neste gabinete por tal pessoa e acredito piamente que a assinatura no certificado anexo é sua assinatura genuína e, que tal certificado é necessário ser selado, mas a pessoa que assina tal certificado por lei não precisa arquivar neste gabinete a impressão de seu selo oficial.

Em testemunho do que, apus aqui minha assinatura e afixei o selo de tal Corte em San Jose em tal Condado e Estado em 21 de outubro de 1994

Escrivão do Condado, Stephen V. Love

Por : Assinatura ilegível

I. Hassan

Suprema Corte , Condado de Santa Clara

O Consulado do Brasil em San Francisco, reconhece como verdadeira a assinatura de Robin S. Finegan, tabelião da Corte do Condado de Santa Clara, estado da California.

São Francisco, 24 de outubro de 1994

Assinatura ilegível

Carlos Alberto Lamback

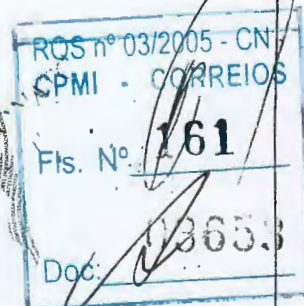
Consul Adjunto

Nada mais havia no documento acima, que devolvo juntamente com esta tradução datilografada em 02 páginas, que conferi e achei conforme. Assino e dou fé.

São Paulo, 14 de novembro de 1994

Ana Ruth Kleinberger Strum

ANA RUTH K. STRUM
Tradutora Juramentada
JUCESP N.º 352





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP
Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292



Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2444**

livro n.º **0020** - fls. **0214**

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica : CERTIFICADO DE REGISTRO que traduzo para o vernáculo

CISQ MEMBRO DA E Q NET

CISQ é um sistema supra setorial de certificação independente dos Sistemas de Qualidade empresariais, administrado de forma coordenada por entidades de certificação setoriais

CERTIFICAÇÃO ITALIANA DE SISTEMAS DE QUALIDADE DE EMPRESAS

Certificado No. 9150.HEWP

Atesta-se por meio deste que o Sistema de Qualidade operado por : HEWLETT PACKARD ITALIANA S.p.a.
Via G. di Vittoria, 9
20063 Cernusco S/N (MI)

Unidade Operacional

Divisão de Hard Copy de Bergamo

Via XXV Aprile 15 - 24030 Almenno S. Bartolomeo (BG)

Está em conformidade com a norma UNI-EN 29001 (ISO 9002)

Para os seguintes produtos, processos, serviços :
Manufatura de cartões eletrônicos e impressoras laser

Este certificado deverá satisfazer os requisitos estabelecidos pelo IMQ para a certificação de Sistema de Qualidade de Fornecedores.

Emitido a : 29 de setembro de 1993

IMQ : Assinatura ilegível

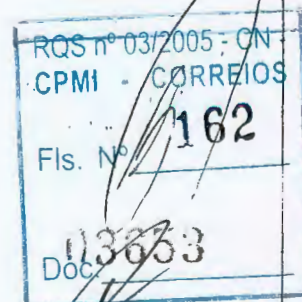
Nada mais havia no documento acima, que devolvo juntamente com esta tradução datilografada em 01 página, que conferi e achei conforme. Assino e dou fé.

São Paulo, 14 de novembro de 1994

Ana Ruth Kleinberger Strum

ANA RUTH KLEINBERGER STRUM
Tradutora juramentada
JUCESP N.º 352

REGISTRO DE DELEGADO
TABELIONATO
ARUERA - SP
QT 361094





(2)

ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão

5476

livro n.º

00511

fls.

0335

Certifico e dou fé, para os devidos fins, que nesta data me foi apresentado um documento em idioma inglês, com a seguinte característica - CERTIFICADO ISO 9002 - que traduzo para o vernáculo.

Logotipo da NSAI

(Autoridade Nacional de Padrões da Irlanda)

Certificado de Registro de um Sistema de Qualidade

em relação ao padrão

I.S. EN ISO 9002:1994

A Autoridade Nacional de Padrões da Irlanda certifica que a

Hewlett-Packard

Divisão de LaserJets Empresariais

Divisão de LaserJets Pessoais

11311 Chinden Blvd.

Boise, ID 83707 - E. U. A.

foi avaliada quanto ao cumprimento das disposições do padrão acima, em relação ao escopo de operações descrito a seguir, e é por meio deste documento incluída no Registro NSAI de Produtos Homologados e Companhias Registradas.

Âmbito do Registro

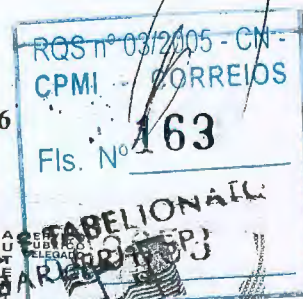
Fabricação de placas de circuito impresso para integração em impressoras laserjet e integração de impressoras laserjet a cores.

Assinatura: Thomas J. Quinn

Data do registro: 26 de novembro de 1993

Com alterações introduzidas em 21 de fevereiro de 1997

Registro N.º M1096



REGISTRO CIVIL - TABELIONAR
ALDEIA - BARRO D'ANTAS

RA 022853



ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão

5476

livro n.º **00511** fls. **0336**

I.S. EN ISO 9002

Os requisitos técnicos do padrão mencionado acima são idênticos aos dos padrões nacionais que implementam a série ISO 9000 sem alteração em todo o mundo, incluindo os dos países da União Européia e do EFTA.

A validade deste certificado é mantida através de permanentes inspeções de verificação.

Logotipo da Hewlett Packard

Estado de Idaho

Condado de Ada

Estados Unidos da América

14 de abril de 1997

Eu, Donald G. Moore, Gerente do Programa ISO 9000 da Hewlett-Packard Company - Boise, pelo presente instrumento juro ou afirmo que as reproduções anexas, listadas abaixo, são fotocópias genuínas, corretas e completas dos documentos originais em poder da Hewlett-Packard Company e registrados pela autoridade emitente citada abaixo.

Autoridade Emitente: Autoridade Nacional de Padrões da Irlanda (NSAI)

Número de registro: M1096

Data de emissão: 26 de novembro de 1993

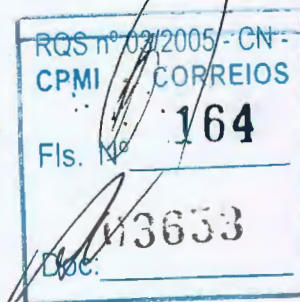
O certificado tem ao todo uma página.

(Ass.):

Donald G. Moore

(Assinatura feita diante do Tabelião Público)

AUTENTICAÇÃO
A SERVIÇO PÚBLICO
DELEGADO
REGISTRO DE TABELIONATO
ALDEIA BARUERI - SP
O RA 622854





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **5476**

livro n.º **0051** fls. **0337**

Hewlett-Packard Company - Boise
11311 Chinden Blvd.
Boise, Idaho 83714
Estados Unidos da América

(Ass.): Julie A. Post
Tabeliã Pública
Estado de Idaho
Minha nomeação expira em 10 de maio de 1999

Estado de Idaho
Departamento de Estado

CERTIFICADO DE TABELIÃO PÚBLICO

EU, PETE T. CENARUSSA, Secretário de Estado do Estado de Idaho, certifico pela presente que JULIE A. POST de Kuna foi nomeada como Tabeliã Pública para o Estado de Idaho em 10 de maio de 1993 e tem sido nomeada ininterruptamente desde aquela data. A atual nomeação expira em 10 de maio de 1999.

CERTIFICO, ALÉM DISSO, que JULIE A. POST, Tabeliã Pública no e para o Estado de Idaho, está devidamente autorizada pelas leis do Estado de Idaho a receber reconhecimentos e a administrar juramentos.

EM TESTEMUNHO DO QUE eu assinei este documento e nele afixei o Grande Selo do Estado de Idaho.

Data: 15 de abril de 1997

(Ass.) Pete T. Cenarussa
Secretário de Estado

(Ass.) (ilegível)





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP
Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292

Matriculada na JUCESP sob n.º 352
Idioma: Inglês
C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **5476** livro n.º **0054** fls. **0338**

CONSULADO-GERAL DO BRASIL EM LOS ANGELES

Reconheço verdadeira a assinatura de PETE T. CENARUSSA, Secretário de Estado do Estado de Idaho, Estados Unidos da América.

E, para constar onde convier, mandei passar o presente, que assinei e fiz selar com o Selo deste Consulado-Geral. É dispensada, no Brasil, a legalização do presente documento, de acordo com o Decreto Nº 84.451, de 31/01/1980.

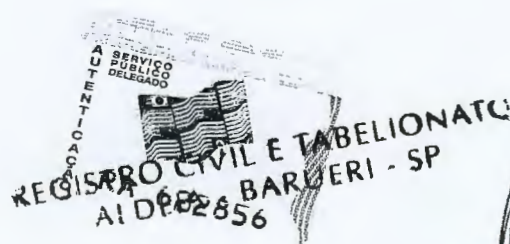
A legalização deste documento não implica a aceitação ou aprovação de seu conteúdo.

Los Angeles, 17 de abril de 1997

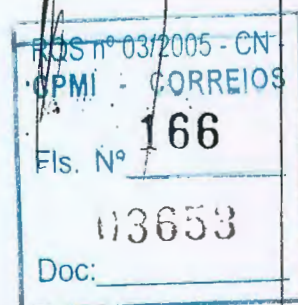
(Ass.): **Ana Maria Azevedo**
Vice-Cônsul

Nada mais havia no documento traduzido, que devolvo juntamente com esta tradução datilografada em 04 páginas que conferi e achei conforme. Assino e dou fé.

São Paulo, 5 de maio de 1997



ANA RUTH KLEINBERGER STRUM
Tradutora Juramentada
JUCESP Nº 352



Ana Ruth Kleinberger Strum



ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292



Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão - 2445

livro n.º 0020 - fls. 0216

BSI - Firma Registrada
Sistema para o Registro de Empresas de Capacidade Avaliada

Anexo Número 1 Página 1
ao Certificado número FM 25258

Este anexo declara o escopo do registro do certificado
outorgado a :

HEWLETT-PACKARD DE MEXICO
MONTEMORELOS 299 FRACC. LOMA BONITA
GUADALAJARA
JALISCO
45060 MEXICO

Escopo de Registro

MANUFATURA DE COMPUTADORES PESSOAIS E IMPRESSORAS MATRICIAIS
E DE IMPACTO DE LINHA ; DISTRIBUIÇÃO DE COMPUTADORES
PESSOAIS E PRODUTOS E ACESSÓRIOS PERIFÉRICOS ; O PESSOAL,
FINANÇAS, CONTABILIDADE , DEPARTAMENTOS DE ADMINISTRAÇÃO DE
INSTALAÇÕES E TECNOLOGIA DE INFORMAÇÃO.

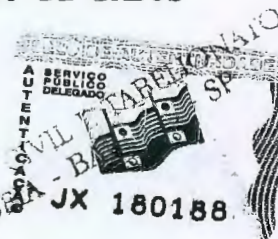
As atividades deste escopo estão incluídas dentro do
seguinte código de Normas de Classificação Industrial, para
o qual a BSI QA é acreditada pela NACCB.

SIC 3303 : EQUIPAMENTO ELETRÔNICO DE PROCESSAMENTO DE DADOS

Assinado em nome de BSI Quality Assurance
Assinatura ilegível, A. L Reynolds, pelo Diretor

Data : 5 de agosto de 1993

BSI Quality Assurance
P O Box 375 Milton Keynes MK14 6LL

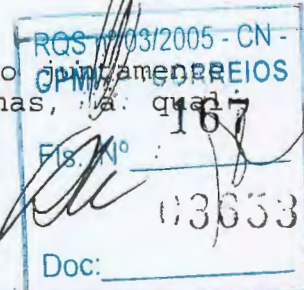


Este Anexo é parte integrante do Certificado de Empresa
Registrada e deveria ser lido apenas em conjunto com o
Certificado.

Este Anexo é propriedade da BSI Quality Assurance, parte da
Instituição de Normas Britânicas, incorporadas por Carta
Régia.

Nada mais havia no documento acima, que devolvo
com esta tradução datilografada em 02 páginas, a qual
conferi e achei conforme. Assino e dou fé.
São Paulo, 14 de novembro de 1994

ANA RUTH K. STRUM
Tradutora Juramentada





ANA RUTH KLEINBERGER STRUM

TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL

Alameda Santos, 1.470 - cj. 402-404 - 01418-000 - SP

Fones: 288-6585 - 284-1390 - 284-3979 - Telefax: 288-8292



Matriculada na JUCESP sob n.º 352

Idioma: Inglês

C.P.F.-M.F. n.º 297.536.198/4

N.º da tradução ou versão **2445**

livro n.º **020** - fls. **0215**

Certifico e dou fé para os devidos fins que nesta data me foi apresentado um documento em idioma inglês com a seguinte característica : CERTIFICADO DE REGISTRO que traduzo para o vernáculo

BSI - Empresa Registrada
CERTIFICADO DE REGISTRO
Sistema para Registro de Firmas de Capacidade Avaliada
Número : FM 25258

O Diretor da BSI Quality Assurance por meio desta outorga a

:
HEWLETT-PACKARD DE MEXICO
MONTEMORELOS 299 FRACC. LOMA BONITA
GUADALAJARA
JALISCO
45060 MEXICO

(doravante denominada a Empresa) o direito de mostrar o Símbolo de Empresa Registrada na BSI e ser listada no Registro BSI de Empresas de Capacidade Avaliada com relação à norma do Sistema de Qualidade abaixo especificada e o Escopo do Registro especificamente descrito no Anexo deste, com os mesmos números deste Certificado. Este Certificado de Registro foi emitido em reconhecimento ao fato de que a Empresa e BSI estão sujeitas aos Termos e Condições apresentados nos Regulamentos regendo "O Sistema" do qual este Certificado é parte. A especificação do Sistema de Qualidade para o qual este Certificado foi emitido é :

ISO 9002 : 1987 / EN 29002 : 1987 / BS 5750 : PARTE 2 : 1987

Assinado por e em nome de BSI Quality Assurance, Assinatura ilegível, Diretor

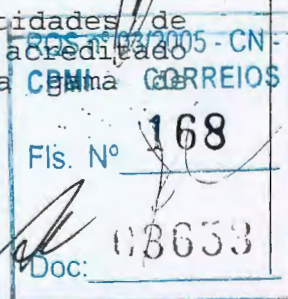
Data : 5 de agosto de 1993

BSI Quality Assurance
Emitido por : BSI Quality Assurance
P.O.Box 375 Milton Keynes MK14 6LL



Aposto logotipo da Acreditação Nacional de Entidades de Certificação. Este logotipo indica que o escopo de acreditação da BSI (NACCB Certificado Número 003) cobre a atividade outorgada neste Certificado

Acreditado pelo Conselho Holandês de Acreditação





REPÚBLICA FEDERATIVA DO BRASIL
OFÍCIO DE TRADUTOR PÚBLICO E INTÉRPRETE COMERCIAL

ULRICH HERMANN HÖSCHELE
TRADUTOR PÚBLICO E INTÉRPRETE COMERCIAL
Traduções Juramentadas - Comerciais - Técnicas - Jurídicas
Português - Alemão - Inglês - Espanhol



MATRICULADO NA JUCESP SOB N.º 278
CCM N.º 1215 767-0
CPF N.º 047 480 268-04
AVENIDA BOSQUE DA SAÚDE, 1917
CEP 04142-092 - Fone: 275-6669 - São Paulo-SP

Tradução
Traducción
Translation
Übersetzung

Nº 12.107 L. 63 FL 086 Data 2 de julho de 1999

Eu, o Tradutor Público e Intérprete Comercial abaixo firmado,
CERTIFICO que esta é a tradução fiel do inglês para o vernáculo de um Certificado de
Registro de Controle de Qualidade, impresso em papel estilizado, nos seguinte termos:

Certificado de Registro

(Logotipo)

BSI – REGISTRADA

Certificado Número FM 37067

(Barra vertical
esquerda:)

HEWLETT-PACKARD BRASIL S. A.
AV. FERNANDO CERQUEIRA
CEZAR COIMBRA No. 398
06465-090 BARUERI, SÃO PAULO
BRASIL

(Barra vertical
direita:)

Logotipos de:
INMETRO

opera um sistema de gerenciamento de qualidade, o qual
cumpre as exigências da norma BS EN ISO 9002:1994.

ANSI-RAB

Assinatura: *(ilegível)*, Diretor

(rubrica)

NATIONAL
ACCREDIT'N
OF CERTIF.
BODIES
Reg. No. 003

Originalmente registrado em 4 de junho de 1997 com
Aditamento em 6 de abril de 1999.

Logotipo
de BSI

*Este Certificado permanece propriedade de British Standards Institution e deverá
ser devolvido imediatamente a pedido. Este Certificado não tem vencimento. Para
verificar a sua validade, telefone para +44 (0) 1819969000.
Deverá ser lido em conjunto com o Apêndice anexado.*

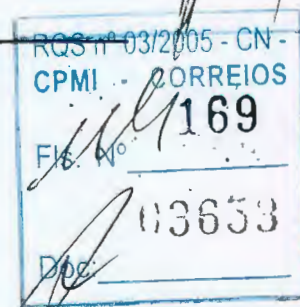
DUTCH
COUNCIL

O British Standards Institution (Instituto de Normas Britânicas) está constituído
por Alavrá Real.

British Standards Institution – 889 Chiswick High Road – London W4 4AL

Anexo ao documento acima:

RECIBO DE ENTREGA
SERVICO PUBLICO
DELEGADO
RECEBIMOS DO
ULRICH HERMANN HOSCHELE
626181





Tradução No. 12.107

- 2 -

Anexo:

Ao Certificado Número FM 37067

Número 1

Página 1

Este Anexo declara o alcance do registro do certificado concedido a:

HEWLETT-PACKARD BRASIL S. A.
AV. FERNANDO CERQUEIRA
CEZAR COIMBRA NO. 398
06465-090 BARUERI - SÃO PAULO
BRASIL

Alcance da Licença

Distribuição de computadores pessoais, periféricos e acessórios.

(a) (ilegível) 6 de abril de 1999

(rubrica)

BSi Este Apêndice é parte integrante do Certificado de Firma Registrada e somente deverá ser lido em conjunto com o mesmo. Este Apêndice é propriedade de BSI Quality Assurance, parte do British Standards Institution, constituído por Alvará Real.

British Standards Institution – 889 Chiswick High Road – London W4 4AL

Edição A508 (USA) 1.

Em ambas as folhas originais consta um selo de autenticidade do Registro Civil e Tabelionato de Barueri, respectivamente de nº LM 769114 e LM 769362.

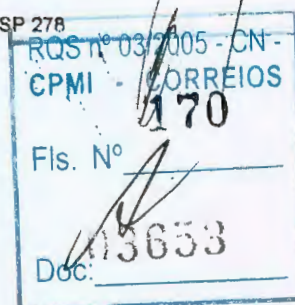
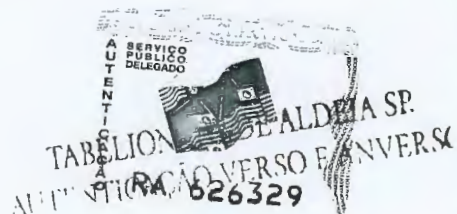
N.T.: No corpo do documento constam 2 selos de autenticidade do Registro Civil e Tabelionato de Barueri, de nº 927951 e 927952..

XXXX

Nada mais constava do documento acima, que devolvo com esta tradução em duas laudas, que conferi e firmo por conforme. DOU FE:

Emols. RS 72, 00
Rec. N.º RPA- 07 Tal. N.º 40

São Paulo 2 de julho de 1999
Ulrich Hermann Höschele
ULRICH HERMANN HÖSCHELE
 Tradutor Público Jur Sworn Translator
 Tradutor Jurado Vereidigter Übersetzer Reg JUCESP 278



Certificate of Registration



Certificate Number FM 37068

HEWLETT-PACKARD COMPUTADORES LTDA

AV FERNANDO CERQUEIRA

CESAR COIMBRA 398

**06465-090 BARUERI, SAO PAULO
BRASIL**

operate a quality management system which complies with the requirements of BS EN ISO 9002:1994



TABELIAO DE NOTAS PROTESTO DE LETRAS E TITULOS OFICIAL DE REGISTRO DE IMOVEIS, TITULOS, DOCUMENTOS E CIVIL DE PESSOA JURIDICA
Bel. Francisco Raymundo Tabelião / Oficial Designado
Alameda Araguaia, 190/200 - Alphaville - Barueri - SP

AUTENTICACAO

Barueri, 04 NOV. 1997

Autentico a presente copia reprográfica conforme ao original a mim apresentado, do que dou fé.

☐ Nedyr da Silva Lupo ☐ Rosângela Ap. Lupo Nascimento
☐ Ivonete da Silva ☐ Cristina Maria Lupo Englerth
☐ Luiz Carlos Malagó ☐ Artur Rodrigues da Silva

(Válido
Somente com
o Selo de
Autenticidade)

N. Withey

Signed on behalf of BSI QA, N. Withey.

Este documento deverá ser vertido em vernáculo e registrada a tradução pública, para produzir efeitos no Brasil ou valer contra terceiros. (Artigo 140 do Código Civil e Artigo 148 da Lei nº 6.105)



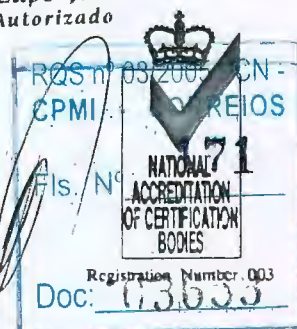
TABELIAO DE NOTAS PROTESTO DE LETRAS E TITULOS OFICIAL DE REGISTRO DE IMOVEIS, TITULOS E DOCUMENTOS E CIVIL DE PESSOA JURIDICA
Bel. Geraldo Lupo Júnior
Escrevente Autorizado

Originally registered 4 June 1997 Amendments to 4 June 1997

This certificate remains the property of British Standards Institution and shall be returned immediately upon request. This certificate does not confer the right to use the BSI logo or to claim affiliation with BSI without the prior written consent of BSI.



BSI Quality Assurance PO Box 375 Milton Keynes United Kingdom MK14 6LL



BSI Registered Firms Scheme Appendix

to Certificate Number FM 37068

Number One

Page 1

This appendix declares the scope of registration of the certificate granted to :

Hewlett-Packard Computadores Ltda
Av Fernando Cerqueira
Cesar Coimbra #398
06465-090 BARUERI
Sao Paulo
Brasil



Licence Scope

Manufacturing and process engineering of personal computers.

TABELÃO DE NOTAS PROTESTO DE LETRAS E TÍTULOS OFICIAL DE REGISTRO DE
IMÓVEIS TÍTULOS E DOCUMENTOS E CIVIL DE PESSOA JURÍDICA
Bel. Francisco Raimundo Tabelião / Oficial Designado
Alameda Araguaia, 190/200 - Alphaville - Barueri - SP

AUTENTICAÇÃO
(Válido
Somente com
o Selo de
Autenticidade)
Barueri, 04 NOV. 1999

Autentico a presente cópia reprográfica conforme
ao original a mim apresentado, do que dou fé.

☐ Nedyr da Silva Lupo ☐ Rosângela Ap. Lupo Nascimento
☐ Ivonete da Silva ☐ Cristina Maria Lupo Engler
☐ Luiz Carlos Malagó ☐ Ardur Rodrigues da Silva
Escrivães Autorizados

TABELÃO DE NOTAS PROTESTO DE LETRAS E TÍTULOS
OFICIAL DE REGISTRO DE IMÓVEIS TÍTULOS E
DOCUMENTOS E CIVIL DE PESSOA JURÍDICA
Bel. Geraldo Lupo Júnior
Escrivente Autorizado

Este documento deve ser
em vernáculo e sem
tradução pública, para
efeitos no Brasil de 2ª
terceiros. (Artigo 10
Civil e Artigo 48)

N Withey

Signed on behalf of BSI QA

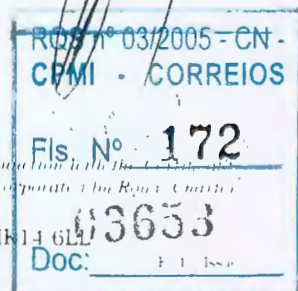
Date

4 June 1997

N Withey
Director

This Appendix is an integral part of the Registered Firm Certificate and should only be read in conjunction with the Certificate.
This Appendix is the property of BSI Quality Assurance, part of the British Standards Institution, incorporated in the Royal Charter.

BSI Quality Assurance PO Box 375 Milton Keynes United Kingdom MK14 6LJ



BSI



BRITISH STANDARDS INSTITUTION



Certificate of Registration

This is to certify that

HEWLETT-PACKARD COMPUTADORES LTDA

**Av Fernando Cerqueira
Cesar Coimbra #398
06465-090 Barueri Sao Paulo
BRASIL**

hold Certificate No. FM 37068 and operate a quality management system which complies with the requirements of BS EN ISO 9002:1994 for the activities detailed in the scope of registration.

Originally registered 04 June 1997

This certificate does not expire. To check its validity telephone +44 (0) 1908 227700

Este documento deverá ser vertido em vernáculo e registrada a tradução pública, para produzir efeitos no Brasil ou valer contra terceiros. (Artigo 140 do Código Civil e Artigo 148 da Lei n.º 6.105)



TABELIAO DE NOTAS PROTESTO DE LETRAS E TITULOS OFICIAL DE REGISTRO DE IMOVEIS TITULOS E DOCUMENTOS E CIVIL DE PESSOA JURIDICA
Bel. Francisco Raymundo Tabelião / Oficial Designado
Alameda Araguaia, 190/200 - Alphaville - Barueri - SP

AUTENTICACAO

Barueri, 004 NOV. 1999

(Válido somente com o Selo de Autenticidade)

Autentico a presente cópia reprográfica conforme ao original a mim apresentado, do que dou fé.
☒ Nedyr da Silva Lupo ☒ Rosângela Ap. Lupo Nascimento
☒ Ivonete da Silva ☒ Cristina Marie Lupo Englerth
☒ Luiz Carlos Malagó ☒ Artur Rodrigues da Silva
Escritor de Autenticidade

TABELIAO DE NOTAS PROTESTO DE LETRAS E TITULOS OFICIAL DE REGISTRO DE IMOVEIS TITULOS E DOCUMENTOS E CIVIL DE PESSOA JURIDICA
Bel. Geraldo Lupo Júnior
Escritor Autorizado

N. Whitney

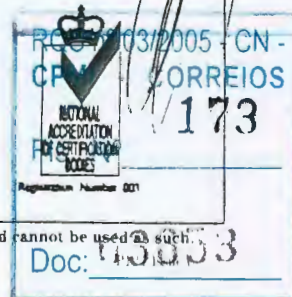
Director
BSI Quality Assurance



BSI Quality Assurance PO Box 375 Milton Keynes United Kingdom MK14 6LL



Accredited by the United Kingdom Council for Certification





REPÚBLICA FEDERATIVA DO BRASIL

OFÍCIO DE TRADUTOR PÚBLICO E INTÉRPRETE COMERCIAL

ULRICH HERMANN HÖSCHELE
TRADUTOR PÚBLICO E INTÉRPRETE COMERCIAL

Traduções Jureamentadas - Comerciais - Técnicas - Jurídicas
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MATRICULADO NA JUCESP SOB N.º 278
CCM N.º 1 215 757-0
CPF N.º 047 480 268-04
AVENIDA BOSQUE DA SAÚDE, 1917
CEP 04142-092 - Fone: 275-6669 - São Paulo-SP

Tradução
Traducción
Translation
Übersetzung

N.º 12.098 L. 63 FL 075 Data 23 de junho de 1999

Eu, o Tradutor Público e Intérprete Comercial abaixo firmado, CERTIFICO que esta é a tradução fiel do inglês para o vernáculo de um Certificado de Registro de Controle de Qualidade, impresso em papel estilizado, nos seguinte termos:

Certificado de Registro

(Logotipo)

BSI – FIRMA REGISTRADA

Certificado Número FM 37068

Barra vertical
esquerda:

HEWLETT-PACKARD COMPUTADORES LTDA.

**AV. FERNANDO CERQUEIRA
CEZAR COIMBRA 398
06465-090 BARUERI, SÃO PAULO
BRASIL**

Barra vertical
direita:

Logotipo:

Logotipos de:
INMETRO

opera um sistema de gerenciamento de qualidade, o qual
cumpre as exigências da norma BS EN ISO 9002:1994.

Dutch Council

Assinatura: N. Withey, Diretor
Por BSI QA

NATIONAL
ACCREDIT'N
OF CERTIF.
BODIES
Reg. No. 003

de

Originalmente registrado em 4 de junho de 1997 com
Aditamento em 4 de junho de 1997.

BSI

*Este Certificado permanece propriedade de British Standards Institution e deverá
ser devolvido imediatamente a pedido. Este Certificado não tem vencimento. Para
verificar a sua validade, telefone para +44 (0) 1908 227700.
Deverá ser lido em conjunto com o Apêndice anexado.*

O British Standards Institution (Instituto de Normas Britânicas) está constituído
por Alavrá Real.

BSI Quality Assurance: P.O.Box 375 Milton Keynes
Reino Unido MK14 6LL

Anexos ao documento acima:

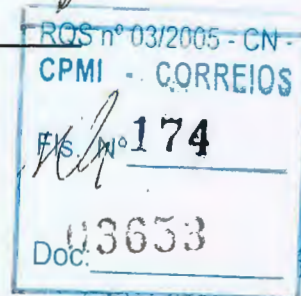
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REGISTRO CIVIL E TABELIONATO
ALDEIA - BARUERI - SP

RA 606106





Tradução No. 12.098

- 2 -

Anexo 1):

(ESCUDO DE ARMAS)

**Certificado
de Registro**

(Logotipo do BSI)

FIRMA REGISTRADA

O presente certifica que

HEWLETT-PACKARD COMPUTADORES LTDA.

Av. Fernando Cerqueira

Cezar Coimbra # 398

06465-090 Barueri – São Paulo

BRASIL

detém o Certificado No. FM 37068 e opera um sistema de gerenciamento de controle de qualidade, o qual cumpre as exigências da norma BS EN ISO 9002:1994 para as atividades declaradas no contexto de registro.

Originalmente registrado em 04 de junho de 1997.

Este Certificado não tem vencimento. Para verificar a sua validade, telefone para: +44 (0) 1908 227700

(a) N. Whitey

Diretor

BSI Quality Assurance

N.T.: Constam 3 dos logotipos já mencionados na página 1, acima.

Em ambas as folhas originais consta um selo de autenticidade do Registro Civil e Tabelionato de Barueri, respectivamente de nº LM 768847 e LM 768959

Anexo 2):

Esquema de Firmas Registradas BSI

Apêndice

ao Certificado No. FM 370068

Número UM

Página 1

Este Apêndice declara o alcance do registro do certificado concedido a:

Hewlett-Packard Computadores Ltda.

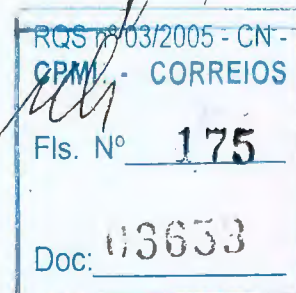
Avenida Fernando Cerqueira Cezar Coimbra #398

06465-090 BARUERI

São Paulo

Brasil

Alcance da Licença:



Tradução No. 12.098

- 3 -



Fabricação e engenharia de processo de computadores pessoais.

(a) N. Whitey

Diretor de
BSI QA

Data: 04 de junho de 1997

BSi Este Apêndice é parte integrante do Certificado de Firma Registrada e somente deverá ser lido em conjunto com o mesmo. Este Apêndice é propriedade de BSI Quality Assurance, parte do British Standards Institution, constituído por Alvará Real.

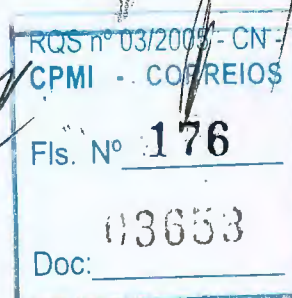
N.T.: No corpo do documento consta selo de autenticidade do
Registro Civil e Tabelionato de Barueri – SP.

----- XXXX -----

Nada mais constava do documento acima, que devolvo com esta tradução em três laudas,
que conferi e firmo por conforme. DOU FE:
(uhh/3,10 pp)

Emols. R\$ 86,80
Rec. N.º RPA- 48 Tal. N.º 34

São Paulo, 23 de junho de 1997
Ulrich Hermann Höschele
ULRICH HERMANN HÖSCHELE
Tradutor Público Jur Sworn Translator
Tradutor Jurado Veredigter Übersetzer Reg JUCESP 278



Hewlett-Packard Brasil
Alameda Rio Negro, 750 - Alphaville
06454 - 000 - Barueri - SP

Tel (011) 726.8118/8116
Telex 1711351
Fax (011) 726.8127

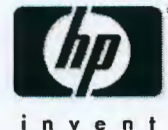


HEWLETT
PACKARD

CERTIFICAÇÃO HCL



RQS nº 03/2005 - CN -
CPM - CORREIOS
177
FSL Nº
03653
Doc:



São Paulo, 05 de maio de 2000

À
Empresa Brasileira de Correios e Telégrafos
A/C – Comissão Especial de Licitação
Concorrência 001/2000 – CPL/AC

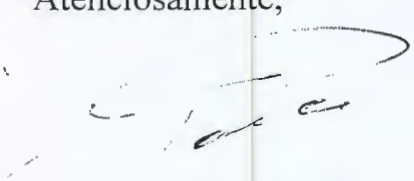


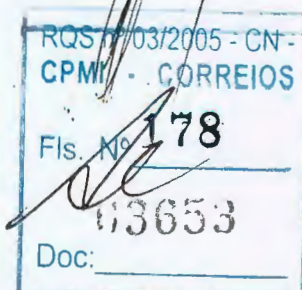
Ref.: Esclarecimento

Prezados Senhores,

Em atenção ao item “**Compatibilidade dos equipamentos servidores Intel com a certificação Microsoft HCL – Hardware Compatibility List, na categoria System/Server Multiprocessor**”, informamos que os servidores HP Netserver LC2000 foram certificados utilizando-se o modelo D9162A (processador PIII 733MHz). Informamos também que esta certificação independe do processador utilizado no servidor, sendo válida para todos os demais modelos pertencentes a linha HP Netserver LC2000.

Atenciosamente,


Alexandre Goudard
Technical Consultant
NetServer & Mass Storage
Hewlett-Packard Brasil S.A.
CNA, CNE, MCP, MCT & MCSE



The Icons
below
Mean...

Search for

NETSERVER

06890

in System/Server Multiprocessor

Product Type **Company Name** **Product Name**

Please click below for more details.

Windows 95

Windows 98

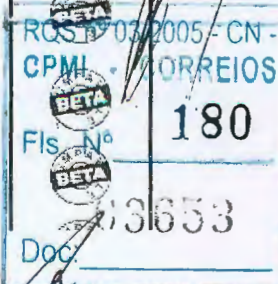
Windows NT 4.0

Windows 2000

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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LC 3 400 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LC 3 450 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LC 3 500 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer E 60 450 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer E 60 500 (2p)				
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer E 60 600 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LC 2000 733 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LC 3 500 (2p)				
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3 500 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3 550 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3 400 (2p)				
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3 450 (2p)				

RQS 03/2005 - CN -
CPM - CORREIOS
179
Fls. N°
05653
Doc:

System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer Lhr 3 400 (2p)
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer Lhr 3 450 (2p)
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer Lhr 3 500 (2p)
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3 400 (2p)
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LH 3r 400 (2p)
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System/Server Multiprocessor	Hewlett-Packard	NetServer LH 4 500 (4p)
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LPr 550 (2p)
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LPr 400 (2p)
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LPr 450 (2p)
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LPr 700 (2p)
System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LPr 450 (2p)
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System/Server Multiprocessor	Hewlett-Packard	Hewlett-Packard NetServer LXr 8000 450 (4p)



System/Server Multiprocessor	Hewlett-Packard	NetServer LXr 8000 450 (4p)
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System/Server Multiprocessor	Hewlett-Packard	NetServer 5/66 LM2
System/Server Multiprocessor	Hewlett-Packard	NetServer 5/66 LM2 Pentium 66 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer E 60 550 PentiumIII 550 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC 3 400 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC 3 450 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC 3 450 PentiumII 450 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC II 266 PentiumII 266 (2p)
System/Server		NetServer LC II



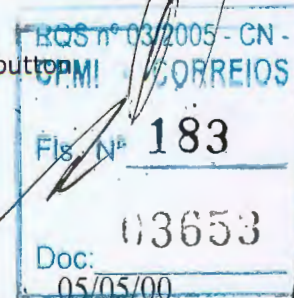
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RGST 03/2005 - CN -
CPM - CORREIOS
Fls. Nº 182
Doc 00687

Multiprocessor	Hewlett-Packard	300 PentiumII 300 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC II 300 PentiumII 300 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LC II PentiumII 333 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LD Pro P6/200 SMP
System/Server Multiprocessor	Hewlett-Packard	NetServer LD Pro P6/200 SMP
System/Server Multiprocessor	Hewlett-Packard	NetServer LD Pro P6/200 SMP PPro 200 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 3 400 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 3 450 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 3r 450 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 4 450 (4p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 4r 450 (4p); NetServer LH 4 400 (4p); NetServer LH 4r 400 (4p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH 4 Xeon 550 (4p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH II 266 PentiumII 266 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH II 300 PentiumII 300 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH II 333 PentiumII 333 (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH Plus 5/133 SMP (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH Plus 5/133 SMP (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH Plus 5/166 SMP (2p)
System/Server Multiprocessor	Hewlett-Packard	NetServer LH Plus 5/166 SMP (2p)



There are additional results that match your query. Please click on the NEXT button



DECLARAÇÃO RELATIVA AO "BUG DO MILÊNIO"



4



RQS nº 01/2005 - CN -	
CPME - CORREIOS	
Fls. Nº	184
Doc:	03653



Hewlett Packard Brasil S.A.
Alameda Rio Negro, 750 - Alphaville
06454-000 - Barueri - SP
CNPJ: 89.411.771/0001-85
Fone: (011) 7297 8413
Fax: (011) 7297 8780



ect 004 - registro

DECLARAÇÃO

À
EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS - ECT
Comissão Permanente de Licitação da Administração Central - CPL/AC

Ref.: Concorrência Nº 004/2000 - CPL/AC

Prezados senhores,

A Hewlett Packard Brasil S.A. garante que todo o produto de hardware, software, e firmware fornecido sob esta proposta deve ser capaz de processar precisamente dados de datas incluindo, mas não se limitando a: cálculos, comparações e seqüenciamento de, para e entre os séculos vinte e vinte e um, incluindo cálculos de anos bissextos, quando utilizados de acordo com a documentação do produto fornecida pela Hewlett Packard. A duração desta garantia e seus limites estão sujeitos aos termos e limitações de garantia gerais contidas neste contrato, ou caso não existam as garantias comerciais padrão da HP. O Usuário se declara ciente de que o equipamento que se constitui objeto do contrato foi testado pela Hewlett Packard e sua compatibilidade para processar dados de datas nas condições referidas se restringem as condições de teste realizadas. Deve o usuário proceder os testes de compatibilidade no ambiente em que vai ser utilizado o aludido equipamento. A Hewlett Packard não assume responsabilidade pela compatibilidade deste equipamento interfaciar com produtos ou softwares não fabricados pela Hewlett Packard.

A HP envidou seus melhores esforços para assegurar-se da exatidão nos testes de seus produtos. Entretanto, como o ambiente operacional de cada cliente é diferente do ambiente laboratorial de testes da HP, é responsabilidade do cliente validar a compatibilidade desses produtos com o Ano 2000 em seus próprios ambientes. Desse modo, as informações sobre a conformidade com o ano 2000 de produtos HP são prestadas "no estado", sem garantias de qualquer espécie, e estão sujeitas à mudanças sem prévio aviso. A HP não representa ou garante a precisão ou confiabilidade de informações sobre produtos Não-HP. Estas informações, se existem, foram fornecidas pelos fabricantes de tais produtos e, aos clientes, é recomendado contactar diretamente o fabricantes desses produtos, para verificação da capacitação destes para o ano 2000!

Barueri, 11 de Abril de 2.000.

Sandra Oliveira
Gerente de Programa Ano 2000

RQS nº 03/2005 - CN
CPMI - CORREIOS
Fls. Nº 185
Doc: 03653

Hewlett-Packard Brasil
Alameda Rio Negro, 750 - Alphaville
06454 - 000 - Barueri - SP

Tel (011) 726.8118/8116
Telex 1711351
Fax (011) 726.8127



HEWLETT
PACKARD

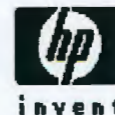
CARTAS DE SOLIDARIEDADE DO FABRICANTE



4

[Signature]

RQS nº 03/2005 - CN -
CPMI - CORREIOS
Fis. Nº 186
03653
Doc: _____



Hewlett Packard Brasil S.A.
Alameda Rio Negro, 750 - Alphaville
06454-000 - Barueri - SP
CNPJ: 89.411.771/0001-85
Fone: (011) 7297 8413 / 8134
Fax: (011) 7297 8780



Barueri, 14 de Abril de 2.000.

DECLARAÇÃO

Decl. 367787-1/00

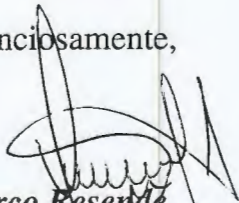
À
EMPRESA BRASILEIRA DE CORREIOS E TELEGRÁFOS
Comissão Permanente de Licitação da Administração Central CPL/AC

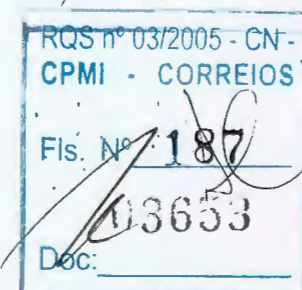
Ref.: Concorrência N° 001/2000 – CPL/AC

Prezados senhores,

Declaramos na qualidade de distribuidores exclusivos da Hewlett Packard Company e Hewlett Packard Computadores Ltda., que estamos aptos a fornecer, instalar, prestar garantia de funcionamento e treinamento, quando for o caso aos técnicos da ECT.

Atenciosamente,


Marco Resende
Representante de Vendas



CONSULADO-GERAL DO BRASIL EM MIAMI



Reconheço verdadeira a assinatura de MIRIAM Y MACHADO NOTÁRIA PÚBLICA NO ESTADO DA FLÓRIDA, nos Estados Unidos da América. E, para constar onde convier, mandei passar o presente, que assinei e fiz selar com o Selo deste Consulado-Geral. Dispensada a legalização da assinatura de autoridade consular, de acordo com o artigo 2º do Decreto Nº 84.451, de 31/01/1980.

A legalização deste documento não implica aceitação ou aprovação de seu conteúdo.

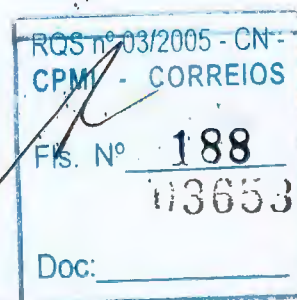
The legalization of this document does not imply acceptance or approval of its contents.

Miami, em 12 de outubro de 1999.



Anamaria Nóbrega Fernandes
Vice-Cônsul

Pagou R\$. 20,00 ouro
ou US\$ 20.00
Tabela 416



Hewlett-Packard Company
3000 Avenue of the
Americas
New York, NY 10105

October 6, 1999



BRAZILIAN CONSULATE GENERAL
2601 S. Bayshore Drive, Suite 800
Coconut Grove, FL 33133



REF.: CARTA DE EXCLUSIVIDADE

A Quem Possa Interessar.

Declaramos para os devidos fins, que a empresa HEWLETT-PACKARD BRASIL S/A., sociedade com sede na Alameda Rio Negro, 750, Alphaville, Barueri, São Paulo, inscrita no CGC/MF nr. 89.411.771/0001-85, é exclusiva na distribuição e serviços de assistência técnica e manutenção, para todo o território brasileiro, para equipamentos e softwares de instrumentação de teste e medição, analítica, médica e equipamentos de processamento de dados, industrializados/desenvolvidos pela HEWLETT-PACKARD COMPANY, e comercializados pela aludida sociedade no Brasil

Atenciosamente,

Carlos Balandra
Finance & Administration Manager
Latin America Operations
Hewlett-Packard Company

Sworn and subscribed before me on this 6TH day of OCTOBER, 1999, by CARLOS BALANDRA (Name of Affiant).

State of Florida

County of MIAMI-DADE

Sworn to (or affirmed) and subscribed before me
this 6TH day of OCTOBER, 1999

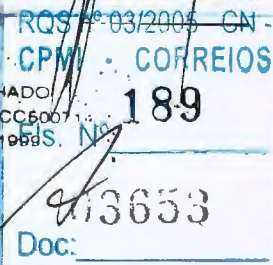
by CARLOS BALANDRA (Name of Affiant).

Miriam Y. Machado
(Signature of Notary)
Notary Public - State of Florida

(Name of Notary Public)
Personally Known ☒ OR Produced Identification
Type of Identification Produced _____



MIRIAM Y MACHADO
My Commission CC6007
Expires Oct 10 1999



CONSULADO-GERAL DO BRASIL EM MIAMI



Reconheço verdadeira a assinatura de MIRIAM Y MACHADO NOTÁRIA PÚBLICA NO ESTADO DA FLÓRIDA, nos Estados Unidos da América. E, para constar onde convier, mandei passar o presente, que assinei e fiz selar com o Selo deste Consulado-Geral. Dispensada a legalização da assinatura de autoridade consular, de acordo com o artigo 2º do Decreto Nº 84.451, de 31/01/1980.

A legalização deste documento não implica aceitação ou aprovação de seu conteúdo.

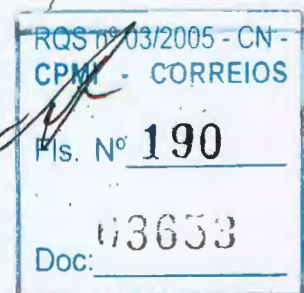
The legalization of this document does not imply acceptance or approval of its contents.

Miami, em 12 de outubro de 1999.



Anamaria Nóbrega Fernandes
Anamaria Nóbrega Fernandes
Vice-Cônsul

Pagou R\$ 20,00 ouro
ou US\$ 20.00
Tabela 416



Hewlett-Packard Company

10000 North Central Expressway

San Jose, California 95134-6099

Attn: Legal Department

October 6, 1999



BRAZILIAN CONSULATE GENERAL
2601 S Bayshore Drive, Suite 800
Coconut Grove, FL 33133



REF.: CARTA DE EXCLUSIVIDADE

A Quem Possa Interessar:

Declaramos para os devidos fins, que a empresa HEWLETT-PACKARD BRASIL S/A., sociedade com sede na Alameda Rio Negro, 750, Alphaville; Barueri, São Paulo, inscrita no CGC/MF nr. 89.411.771/0001-85, é exclusiva na distribuição e serviços de assistência técnica e manutenção, para todo o território brasileiro, para equipamentos e softwares de instrumentação de teste e medição, analítica, médica e equipamentos de processamento de dados, industrializados/desenvolvidos pela HEWLETT-PACKARD COMPANY, e comercializados pela aludida sociedade no Brasil

Atenciosamente,

Carlos Balandra
Finance & Administration Manager
Latin America Operations
Hewlett-Packard Company

Sworn and subscribed before me on this 6TH day of OCTOBER, 1999, by CARLOS BALANDRA (Name of Affiant),

State of Florida

County of MIAMI-DADE

Sworn to (or affirmed) and subscribed before me
this 6TH day of OCTOBER, 1999

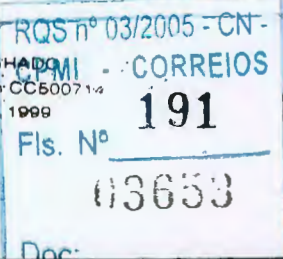
by CARLOS BALANDRA (Name of Affiant),

MIRIAM Y. MACHADO
(Signature of Notary)
Notary Public - State of Florida

(Name of Notary Public)
Personally Known ☒ OR Produced Identification ☐
Type of Identification Produced _____



MIRIAM Y MACHADO
My Commission: CC600714
Expires Oct 10, 1999





RELAÇÃO COMPLETA DA REDE DE ASSISTÊNCIA TÉCNICA AUTORIZADA



2

[Handwritten signature]

RQS nº 03/2005 - CN -
CPMI - CORREIOS
Fls. Nº 192
Doc: 03653



Hewlett Packard Brasil S.A.
Alameda Rio Negro, 750 - Alphaville
06454-000 - Barueri - SP
CNPJ: 89.411.771/0001-85
Fone: (011) 7297 8413 / 8134
Fax: (011) 7297 8780



Barueri, 14 de Abril de 2.000.

DECLARAÇÃO

Decl. 367787/00

À
EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS
Comissão Permanente de Licitação da Administração Central CPL/AC

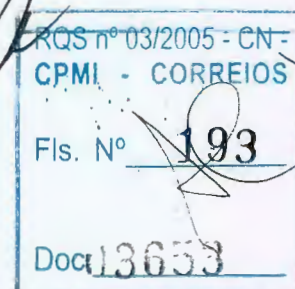
Ref.: Concorrência Nº 001/2000 – CPL/AC

Prezados senhores,

Apresentamos em anexo, nossa Rede Autorizada de Serviços, bem como os dados para contato com nossa Central, conforme solicitado na ocorrência, para quaisquer eventualidades que venham a ocorrer os equipamentos ofertados da marca HP, no referido certame. *h*

Atenciosamente,

Marco Resende
Marco Resende
Representante de Vendas





INFORMAÇÕES GERAIS

- Para atendimento de NETSERVERS, OMNIBOOKS, DESIGNJETS/PLOTTERS, VECTRAS/PC's e LASERJETS o cliente deverá ligar diretamente para a HP, nos telefones:

Grande São Paulo: (0XX11) 7297.4998

Demais Localidades: 0800.13.0999

▪ HP CENTRO DE INFORMAÇÕES AO CLIENTE

Grande São Paulo: 822.5565

Demais localidades: 0800.15.7751

Questões mais comuns:

- e. **Onde comprar**
- e. **Onde reparar**
- e. **Características dos produtos**
- e. **Sugestões / Reclamações**

▪ HP HELP PHONE

Suporte pós-vendas para DeskJets, LaserJets, Scanners, Vectras, Calculadoras, Palmtops e Omnibooks

Fone: (011) 829.6612

Fax: (011) 829.0018

Questões mais comuns:

- e. **Problemas ou dúvidas na instalação, configuração e uso**
- e. **Solicitação de drivers**

Suporte telefônico gratuito por 90 dias a partir do primeiro chamado, durante o período de garantia do produto.

O Cliente só será atendido se tiver em mãos o modelo e nº de série do equipamento.

Doc.

13653

194

Lista dos Centros Autorizados de Serviços HP



ALAGOAS

TECNOCOOP MACEIÓ
Rua da Praia, 165
Centro Maceió - AL 57020-680
responsável: Lourival

produtos: DJ,SJ,L1,L2,N,V,P1
Fone/ fax: (82) 326 -1505
e-mail: tecnofmc@tecnocoop.com.br

AMAZONAS

TECNOCOOP MANAUS
R. Dr. Machado, 40
Centro Manaus - AM 69090-020
responsável: Raimundo da Costa Serudo

produtos: DJ,SJ,N,P2,V,L2,P1
fone: (092) 633 -4381 fax: (092) 633 -4608
e-mail: tecnofma@tecnocoop.com.br

BAHIA

LEBRE
R. Sen. Theotonio Vilela, 190 sl.1002
Brotas Salvador - BA 40277-900
responsável: Irlene Luzia dos Santos

produtos: DJ,SJ,N,P1, P2,V,L2
fone: (071) 352 -9077 fax: (071) 352 -9011
e-mail: atecnica@lebre.com.br

PLANTEL
Av. Tancredo Neves, 1672 sl.402A
Pituba Salvador - BA 41820-020
responsável: Ultímio Danza

produtos: DJ,SJ,L1,L2
fone/fax: (071) 341-3636
e-mail: quele@plantel.com.br

TECNOCOOP SALVADOR
Av. Tancredo Neves, 805 Sl 402, 403
Pituba Salvador - BA 41850-021
responsável: Cláudio Pataro Machado

produtos: DJ,SJ,L2, P2,V,L1
fone: (071) 341 -5436 fax: (071) 341 -1032
e-mail: tecnofsa@tecnocoop.com.br

CEARÁ

INTERMICRO
L. Padre Valdevino, 1046
Aldeota Fortaleza - CE 60135-040
responsável: Edevalcy Bezerra/Marcio Porto

produtos: DJ,SJ,L1,L2
fone: (085) 264- 1655 fax: (085) 261.4794
e-mail: intermicro@secrel.com.br

TECNOCOOP FORTALEZA
R. Barão de Studart, 2821
Aldeota Fortaleza - CE 60120-002
responsável: José Jorge da Costa

produtos: DJ,SJ,L1, L2, N,P1, P2,V
fone/fax: 85 257-4239
e-mail: tecnoffo@tecnocoop.com.br

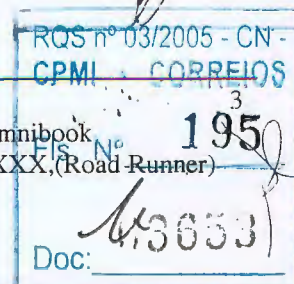
VTI
R. BR de Aracati, 2150
Aldeota Fortaleza - CE 60115-082
responsável: Francisco Viana Campos Junior

produtos: DJ, SJ,P,V
fone/fax: (085) 244-5290
e-mail: balcao@vti.com.br

DISTRITO FEDERAL

Última modificação: 27/03/00

V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Omnibook
P1=Plotters 230C, 250C, 3XX, 6XX, 7XX; P2=4XX, CP(2XXX, 3XXX); P3=4XX, CP(2XXX, 3XXX), 1XXX, (Road Runner)



Lista dos Centros Autorizados de Serviços HP



COMPUTER STAR

SCLRN 714/715 - Bloco B - lj. 02
Asa Norte Brasília - DF 70760-790
responsável: João Gomes da Silva Júnior

produtos: DJ,SJ
fone: (061) 347-7878 fax: (061) 347-3327
e-mail: compstar@zaz.com.br

TECNOCOOP BRASÍLIA

SHCG/NORTE CLR - QUADRA 714 -
BLOCO "C" - LOJA 50
Asa Norte Brasília - DF 70760-538
responsável: Juber José de Oliveira

produtos: DJ,SJ,L1,N,P2,V,L2,P1,L3
fone: (061) 340-8616 fax: (061) 274 -3226
e-mail: tecnofbr@tecnocoop.com.br

ESPÍRITO SANTO

MAVIX

R. Alberto Oliveira Santos, 59 conj. 1603/04
Centro Vitória - ES 29010-250
responsável: Marlon Carielo Macedo

produtos: DJ,SJ
Fone/fax: (027) 322-0054
e-mail: mavix@gol.com.br

TECNOCOOP VITÓRIA

Av. Americo Buaiz, 501
Centro Vitória - ES 29050-911
responsável: Frederico Pulier Gonçalves

produtos: DJ,SJ,L1,V,P1,P2
fone: (027) 200-3849 fax: (027) 222 -7849
e-mail: tecnofvi@tecnocoop.com.br

TELEMÁTICA

Av. Jerônimo Monteiro, 155
Jaburuna Vila Velha - ES 29100-400
responsável: Janes Dean Guimarães

produtos: DJ,SJ,L1,P1,N,L2,V
fone: (027) 200-4388 fax: (027) 329-0334 R. 21
e-mail: telematica@tropical.com.br

GOIÁS

HEPCOM

Al. Ricardo Paranhos, Nº 208
Setor Marista Goiânia - GO 74175-020
responsável: Nara Regina Silveira

produtos: DJ,SJ,O
Fone/fax: (062) 281-2621
e-mail: hepcom@zaz.com.br

IMPACTA

Av. Pinheiro Chagas, 500 A
Jundiaí Anápolis - GO 75110-580
responsável: Alexandre Bastos

produtos: DJ,SJ
Fone/fax: (062) 311-1076
e-mail: impacta@genetic.com.br

TECNOCOOP GOIÁS

R. Dr. Olinto Manso Pereira, 1135 ap. 02
Setor Sul Goiânia - GO 74080-100
responsável: Wilmar Mendes da Silva

produtos: DJ,SJ,L1,N,V,L2,P2,P1
fone: (062) 213-3277 fax: (062) 213-3277
e-mail: tecnofgo@tecnocoop.com.br

MARANHÃO

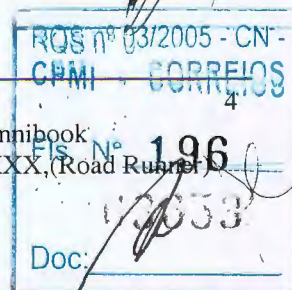
DIGITAL

Rua do Sol, 388
Centro São Luís - MA 65010-600
responsável: George Washington Castelo Branco Coelho

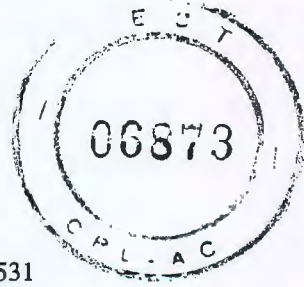
produtos: DJ,SJ,LJ
fone: (098) 231-6011 fax: (098) 231-7986
e-mail: digital@elo.com.br

Última modificação: 27/03/00

V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Omnibook
P1=Plotters 230C, 250C, 3XX, 6XX, 7XX; P2=4XX, CP(2XXX, 3XXX); P3=4XX, CP(2XXX, 3XXX), 1XXX, (Road Runner)



Lista dos Centros Autorizados de Serviços HP



HPJET

R. Inácio Xavier Carvalho, 677
S. Francisco São Luís – MA 65075-360
responsável: Giselda de Jesus Pinto Muniz

produtos: DJ,SJ,L1,L2,V
fone: (098) 235 –2587 fax: (098) 235-3531
e-mail: hpjet@wac.com.br

MATO GROSSO

TECNOCOOP CUIABÁ

Av. Miguel Sutil, 10204
Santa Rosa Cuiabá – MT 78040-700
responsável: Luiz Carlos Santos

produtos: DJ,SJ,L1,N,L2,P1,V
fone: (065) 626 –3289 fax: (065) 626-3289
e-mail: tecnofcb@tecnocoop.com.br

MATO GROSSO DO SUL

TECNOCOOP CAMPO GRANDE

R. 25 de dezembro, 921 pavimento superior
Centro Campo Grande – MS 79002-060
responsável: Rubens Francisco de Oliveira

produtos: DJ,SJ,L1,N,L2,P1, P2,V
fone: (067) 721-4616 fax: (067) 721-4014
e-mail: tecnofcg@tecnocoop.com.br

MINAS GERAIS

CAMPELLO

Av. Do Contorno, 9297
Prado Belo Horizonte – MG 30110-130
responsável: Edgard Cardoso Neto

produtos: DJ,SJ,L2,V,N
fone: (031) 291 –8444 fax: (031) 291 –5914
e-mail: campello@campello.com.br

COMPEX (BHZ)

Av. Nossa Senhora do Carmo, 655
Carmo Sion Belo Horizonte – MG 30360-740
responsável: Jairo Nedes

produtos: DJ,SJ,L1,L2,P2,V
fone: (031) 225 –7262 fax: (031) 227 –6836
e-mail: jairo@compex.com.br

DML

R. Cons. Rocha, 425B
Floresta Belo Horizonte – MG 30150-210
responsável: Milton Cabral Moreira

produtos: DJ,SJ,L1,L2
fone: (031) 282-8009 fax: (031) 227-0267
e-mail: dml@net.em.com.br

INFOHELP

R. Santo Antônio, 270
Centro Juiz de Fora – MG 36015-000
responsável: Carlos Souza

produtos: DJ,SJ,L1,L2,V
fone: (032) 215 –0460 fax: (032) 277-6836
e-mail: infohelp@artnet.com.br

LINEA (BHZ)

R. Guajajaras, 682
Centro Belo Horizonte – MG 30180-100
responsável: Marcos

produtos: DJ,SJ,L1,L2,V,N,O
fone: (031) 224 –3664 fax: (031) 224 –3994
e-mail: lineainf@net.em.com.br

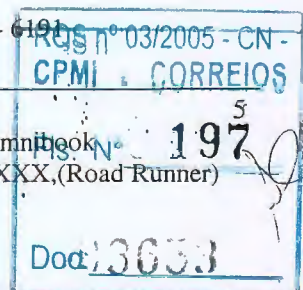
MIRA

R. Luiz Ensich, 428
Gran-Duquesa Governador Valadares – MG 35057-

produtos: DJ,SJ,L1,L2,V
fone: (033) 271- 6191 fax: (033) 271- 6191

Última modificação: 27/03/00

V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=OmniBook;
P1=Plotters 230C, 250C, 3XX, 6XX, 7XX; P2=4XX, CP(2XXX, 3XXX); P3=4XX, CP(2XXX, 3XXX), 1XXX, (Road Runner)



Lista dos Centros Autorizados de Serviços HP



480

responsável: Rodrigo Cardoso Mira

e-mail: mira@wkve.com.br

ORGANIZAÇÃO & MÉTODOS

Av. Fernando Costa, 909 – 2º an., lj. 02

São Benedito Uberaba – MG 38022-300

responsável: Mauro Cesar Barbosa

produtos: DJ,SJ,V

fone: (034) 336-2111 fax: (034) 336-3221

e-mail: oem.info@zaz.com.br

PACIFIC

Av. Rondon Pacheco, 3909

Cazeca Uberlândia – MG 38400-050

responsável: José Vander Freitas Oliveira

produtos: DJ,SJ,L1,L2,P3,V

fone: (034) 236-8803 fax: (034) 236-8921

e-mail: pacific@paiol.com.br

PRÓ-ATIVA

R. Mucuri, 191

Floresta Belo Horizonte – MG 30150-190

responsável: Elvio Domingues

produtos: DJ,SJ,V

fone: 31 274-0580 fax: (031) 422-5533

e-mail: elvio.domingues@proativainfo.com.br

RC SISTEMAS (BHZ)

Av. Raga Gabágia, 1686 – 5º e 6º andar

Gutierrez Belo Horizonte – MG 30350-540

responsável: Elenita Braga/Ana Paula V.r

produtos: DJ,SJ,L1,N,P2,L2,V

fone: (031) 296-6377 fax: (031) 296-5191

e-mail: suporte@rcsistemas.com.br

SINCO

Pça. Santa Terezinha, 162/164

Fabricao Uberaba – MG 38065-130

responsável: Fernando Henrique Martins

produtos: DJ,SJ,L1,V

fone: (034) 312-7524 fax: (034) 312-3383

e-mail: sinco@sinco.com.br

TECNOCOOP BELO HORIZONTE

R. Rio de Janeiro, 1629

Bairro de Lourdes Belo Horizonte – MG 30160-042

responsável: Cicero Adriano Roque Tolentino

produtos: DJ,SJ,L1,P2,V

fone: (031) 273-1061 fax: (031) 273-3698

e-mail: tecnofbh@tecnocoop.com.br

TECNOCOOP JUIZ DE FOR A

R. Halfeld, 1400 – Sl 212, 220

Centro Juiz de Fora – MG 36016-000

responsável: Marcelo Reis Junqueira

produtos: DJ,SJ,L1,P1,L2,P2

fone: (032) 215-0759 fax: (032) 217-8199

e-mail: tecnofjf@tecnocoop.com.br

TECNOSYS (BHZ)

Av. Francisco Sales, 695

Floresta Belo Horizonte – MG 30150-221

responsável: Gualdo Luis de Andrade Ribeiro

produtos: DJ,SJ,L1,P1

fone: (031) 226-2521 fax: (031) 273-5459

e-mail: tecnosys@gold.com.br

PARÁ

TECNOCOOP BELÉM

Av. Ceará, 219A

Belém – PA 66090-460

responsável: Raimundo Santos da Luz

produtos: DJ,SJ,L1,N,P2,L2,V,P1

fone: (091) 266-1987 fax: (091) 246-0215

e-mail: tecnofbe@tecnocoop.com.br

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V=Vectras; N=NetServers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=OmniBook

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Lista dos Centros Autorizados de Serviços HP



PARAÍBA

TECNOCOOP JOÃO PESSOA

Av. Almirante Barroso, 974
João Pessoa – PB 58013-080
responsável: Paulo Sérgio A. Farinazzo

produtos: DJ,SJ,L1,N,P2,L2,V,P1
fone: (083) 221-0243 fax: (083) 222-2411
e-mail: tecnofjp@tecnocoop.com.br

PARANÁ

COMPWIRE

Av. Sen. Salgado Filho, 1385 – cj. 108 e 109
Guabirubata Curitiba – PR 81510-000
responsável: Marcos Roberto Hohmann Choinski

produtos: DJ,SJ,L1,L2,V
fone: (041) 376-1120 fax: (041) 376-1120
e-mail: compwire@per.com.br

LINEA (PR)

R. Alberto Folloni, 41
Juveve Curitiba – PR 80530-300
responsável: Marco Tulio Gomes de Moraes

produtos: DJ,SJ,L1,V,N,O
fone: (041) 352-8203 fax: (41) 352-8225
e-mail: linea@bsi.com.br

MICROSENS (CUR)

Av. João Gualberto, 1740 – 1º an.
Juvevê Curitiba – PR 80030-001
responsável: Cláudio Leandro Martins

Produtos: DJ,SJ,L1
fone: (041) 352-2050 fax: (041) 254 –3524
e-mail: microsens.tec@mps.com.br

MICROSENS (LON)

Av. Duque de Caxias, 2208
Centro Londrina – PR 86010-200
responsável: Cludemir Passoni

produtos: DJ,SJ,L1
fone: (043) 323-3584 fax: (043) 322-5519
e-mail: micro2@sercomtel.com.br

NORTH BYTE INF.

Rua Santos Dumont, 1554 – sobreloja
Zona 03 Maringá – PR 87050-100
responsável: Roelf Rillo Sacoman

produtos: DJ,SJ,L2,V
fone: (044) 227-6009 fax: (044) 222-6009
e-mail: chamados@northbyte.com.br

TECNOCOOP CURITIBA

R. Paula Gomes, 209
São Francisco Curitiba – PR 80510-070
responsável: Izonilton Zanetti

produtos: DJ,SJ,L1,P2,L2
fone: (041) 225 –6768 fax: (041) 225 –6768
e-mail: tecnofcw@tecnocoop.com.br

TECNOCOOP LONDRINA

R. Rua Prof. João Cândido, 1270
V. Ipiranga Londrina – PR 86010-160
responsável: Cláudio Tesser

produtos: DJ,SJ,P1,P2,V,L1,L2
fone: (043) 321-4598 fax: (043) 321-4598
e-mail: tecnoflo@tecnocoop.com.br

PERNAMBUCO

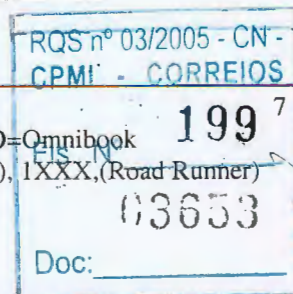
MULTIPLA

Rua Ribeiro de Brito, 1002 sl.808
Boa Viagem Recife – PE 51021-040
responsável: Nelson Quaiotti

produtos: DJ,SJ,L1,P1,V
fone: (081) 326 –2172 fax: (081) 466-6136
e-mail: multipla@br.homeshopping.com.br

Última modificação: 27/03/00

V=Vectras; N=Net servers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Omnibook
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Lista dos Centros Autorizados de Serviços HP



TECNOCOOP RECIFE

R. São Salvador, 138
Espinheiro Recife - PE 52020-200
responsável: Paulo Roberto da Silva

produtos: DJ,SJ,L1,N,L2,P2,P1
fone: (081) 423-2808 fax: (081) 423-2808
e-mail: tecnofre@tecnocoop.com.br

MICROSERV

R. Rui Barbosa, 582 - Sul
Centro Teresina - PI 64001-090
Responsável: Cláudio Sampaio/ Ricardo Sampaio

PIAUI

produtos: DJ, SJ, L1, L2
fone: (86) 221-2223 fax: (86) 221-2223
email: claudio@microserv.com.br

RIO DE JANEIRO

BRJ

R. Gonçalves Dias, 51
Centro Rio de Janeiro - RJ 20050-030
responsável: Luiz Rajão / Suenon Paladini

produtos: DJ,SJ,L1,L2,V
fone: (021) 509-1100 fax: (021) 509-1100
e-mail: cashp@brjinf.com.br

DI ALMEIDA

R. Sen. Dantas, 71 sl. 905
Centro Rio de Janeiro - RJ 20031-200
responsável: Paulo Cesar de Almeida

produtos: DJ,SJ,L1
fone: (021) 220-3074 fax: (021) 533-3552
e-mail: dialmeid@iis.com.br

EQUANT

R. Av. Rio Branco, 01 - 12º and.
Centro Rio de Janeiro - RJ 20090-003
responsável: Paulo Otavio

produtos: L2,V,L1
fone: 21 514-6800 fax: 21 233-0178
e-mail: paulo.otavio@is.equant.com

INTERFACE

R. Ipiranga, 56 sala 01
Centro Campos - RJ 28015-050
responsável: José Carlos Gipione

produtos: DJ,SJ
fone: (024)733-2301 fax: (024) 733-0068
e-mail: interface@rol.com.br

IVHARDWOOD

Estr. Do Portela, 99 sl. 417 - Shop. Polo 1
Madureira Rio de Janeiro - RJ 21351-050
responsável: Irineu Vargas

produtos: DJ,SJ,L1,P3
fone: (021) 450-4002 fax: (021) 450-4002
e-mail: ivhardwood@correio.com

LEO SERVICE

Av. Treze de Maio, 33 - 28º an.
Centro Rio de Janeiro - RJ 20031-000
responsável: Orlando Braga

Produtos: DJ,SJ,L1,N,V,P2,O
fone: (021) 533-8299 fax: (021) 262-1444
e-mail: leoservice@leohp.com.br

LINEA (RJ)

R. do Rosário, 103 - 5º andar
Centro Rio de Janeiro - RJ 20004-004
responsável: Antônio Carlos Oliveira

produtos: DJ,SJ,L1,N,V
fone: (021) 252-2122 fax: (021) 252-6079
e-mail: linearj@iis.com.br

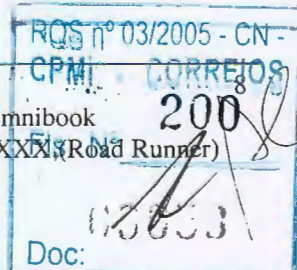
MICRO MÍDIA INF.

R. Carmela Dutra, 94
Tijuca Rio de Janeiro - RJ 20520-080
responsável: Eduardo Falcone

produtos: DJ,SJ,L1,P1,V,L2
fone: (021) 569-3151 fax: (021) 204-2807
e-mail: mmscas@micromidia.com.br

Última modificação: 27/03/00

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Lista dos Centros Autorizados de Serviços HP



MICROWARE

R. Noronha Torrezão, 416
Santa Rosa Niterói - RJ 24240-183
responsável: Antônio Augusto V. dos Reis

produtos: DJ, SJ, P1, P2, V
fone: (021) 612-2600 fax: (021) 710-2780
e-mail: mwtecnico@microware.com.br

MOMAR

Estrada dos Bandeirantes, 703
Taquara Jacarepaguá - RJ 22710-570
responsável: Jorge Eduardo Chame

produtos: DJ, SJ, L1, P3, L2
fone: (021) 427-0851 fax: (021) 427-0852
e-mail: casmomar@uninet.com.br

MULTIPLUS (RJ)

R. Álvaro Ramos, 260 sala 201
Botafogo Rio de Janeiro - RJ 22270-000
responsável: Nei Ferreira Monteiro

produtos: DJ, SJ, L1, L2
fone: (021) 543-7516 fax: (021) 539-0896
e-mail: multiplus@openlink.com.br

MULTIPLUS (VTR)

R. Luiz Alves Pereira, 115 - sl.207
Volta Redonda - RJ 27295-570
responsável: Nelson Gaia

produtos: DJ, SJ, L1, L2
fone: (024) 347-4326 fax: (024) 347-4326
e-mail: multi.vr@uol.com.br

9 L INFORMÁTICA

Av. Pres. Vargas, 446 - GR.1204
Rio de Janeiro - RJ 20085-900
responsável: Evandro Araripe

produtos: DJ, SJ, N, V
fone: (021) 253-4729 fax: (021) 233-8766
e-mail: 9l@ibm.net

NTL (RJ)

R. Visconde de Inhaúma, 38 - 7º A
Centro Rio de Janeiro - RJ 20091-000
responsável: Marcio Cordeiro

produtos: DJ, SJ, LJ, V
fone: (021) 518-7366 fax: (021) 518-7366
e-mail: ntltec@antares.com.br

SPE DATA

R. dos Inválidos, 212 - sl. 601
Centro Rio de Janeiro - RJ 20231-020
responsável: Paulo Gustavo Duna Badin

produtos: DJ, SJ, L1, L2, V
fone: (021) 297-0088 fax: (021) 233-1196
e-mail: speinfo@rionet.com.br

SUPORTE HELP DESK

R. Academico Valter Gonçalves, 01 sal 404
Centro Rio de Janeiro - RJ 24020-290
responsável: Sidney Torres/Katia Marins

produtos: DJ, SJ, P1, V
fone: 21 594-8522 fax: 21 269-5559
e-mail: katia@suporteinf.com.br

TECNOCOOP (RJ - Matriz)

R. Prof. Rodolfo Coutinho, 7/17
Ramos Rio de Janeiro - RJ 21030-160
responsável: Wellington

produtos: DJ, SJ, L1, N, P1, L2, V
fone: (021) 560-1922 fax: (021) 280-6689
e-mail: printhp@tecnocoop.com.br

TECNOCOOP RIO DE JANEIRO

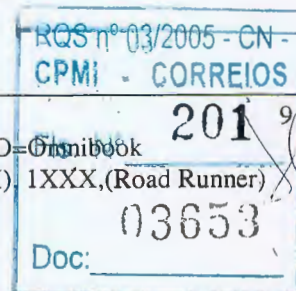
Av. Nilo Peçanha, 155 - 8º A - SI 801 a 810
Centro Rio de Janeiro - RJ 20020-100
responsável: Jordelio Marcos de Lima

produtos: DJ, SJ, L1, L2, V, P2
fone: (021) 533-0122 fax: (021) 533-0122
e-mail: tecnofrj@tecnocoop.com.br

RIO GRANDE DO NORTE

Última modificação: 27/03/00

V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Onibook
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Lista dos Centros Autorizados de Serviços HP



TECNOCOOP NATAL
Av. Prudente de Moraes, 1869
Tirol Natal - RN 59022-400
responsável: Rafael Pedrine Gomes

produtos: DJ,SJ,L1,P1,P2,L2
fone: (084) 201-1945 fax: (084) 221-4337
e-mail: tecnofna@tecnocoop.com.br

RIO GRANDE DO SUL

CS
R. Galvão Costa 1176
Centro Santa Cruz do Sul - RS 96810-170
responsável: Gilberto Ferro Zago

produtos: DJ,SJ,L1,P1,L2
fone: (051) 713-3430 fax: (051) 715-2271
e-mail: cs@viavale.com.br

DIGIPAMPA
R. Venâncio Aires, 1552
Centro Santa Maria - RS 97010-002
responsável: Genaro Botton Dell'Aglio

produtos: DJ,SJ,P1,V
fone: (055) 222-7955 fax: (055) 222-7804
e-mail: dpampa@zaz.com.br

ENIL INF.
R. Tiradentes, 2963
Centro Pelotas - RS 96010-160
responsável: Enio Machado Lopes

produtos: DJ,SJ,L1,V
fone: (053) 225-4377 fax: (053) 225-4377
e-mail: enil@zaz.com.br

LINCK (SATI)
R. Dona Laura, 40
Rio Branco Porto Alegre - RS 90430-090
responsável: Fernando Linck

produtos: DJ,SJ,L1,L2,P2,V,O
fone: (051) 346-1346 fax: (051) 346-1346
e-mail: linck@linck.com.br

MIC & MAC
R. Arabuta, 386
Navegantes Porto Alegre - RS 90240-470
responsável: Maria Lúcia Pereira/Rogério Dias Peixoto

produtos: DJ,SJ,L1,L2,V
Fone/ fax: (051) 337-4999
e-mail: chamados@micmac.com.br

OLITÉCNICA
Av. Itália, 325
São Pelegrino Caxias do Sul - RS 95010-040
responsável: Mario Marcon

produtos: DJ,SJ,L1,N,L2,P2,V
fone: (054) 223-8100 fax: (054) 223-8100
e-mail: oli@pro.via-rs.com.br

SK INF.
R. Uruguai, 1336
Centro Passo Fundo - RS 99010-111
responsável: Jacinta Schwartz

produtos: DJ,SJ,L1,N,V
fone: (054) 311-9200 fax: (054) 311-6802
e-mail: skinfo@annex.com.br

TECNOCOOP PORTO ALEGRE
R. Pernambuco, 2323
São Geraldo Porto Alegre - RS 90220-100
responsável: Sérgio Luiz Garcia da Silva

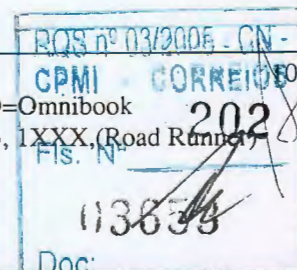
produtos: DJ,SJ,L1,V,P2,N
fone: (051) 346-2123 fax: (051) 346-2123
e-mail: tecnofpa@tecnocoop.com.br

TRI SHOP
R. Andre Marques, 744
Santa Maria - RS 97010-040

produtos: DJ,SJ,L1,L2
fone: (55) 223-4101 fax: (55) 223-4101

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V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Omnibook
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Lista dos Centros Autorizados de Serviços HP



responsável: Neimar Dias de Cassenot

e-mail: trishop@zaz.com.br

TS

R. Buenos Aires, 520
Centro Santa Rosa - RS 98900-000
Responsável: Adriano Theisen

produtos: DJ,SJ,L1
fone: (055) 512 -5660 fax: (055) 512 -5660
e-mail: ts@santarosa.com.br

WBM INF. (RS)

Av. Amazonas, 576
São Geraldo Porto Alegre - RS 90240-541
responsável: Walter Beduschi

produtos: DJ,SJ,L1,N,P1,V
fone: (051) 325-1300 fax: (051) 325 -1300
e-mail: wbm@wbm.com.br

RONDÔNIA

TECNOCOOP PORTO VELHO

Av. Pinheiro Machado, 2011 loja 4
ão Cristóvão Porto Velho - RO 78901-250
responsável: Ricardo Jose Eloi

produtos: DJ,SJ,LJ,V,L1,L2,N,P1,P2
fone: (069)221-8666 fax: (069) 221-8585
e-mail: tecnofpv@tecnocoop.com.br

SANTA CATARINA

CHROMA INF.

R. Autur Souza, 125 sl. 02
Comerciário Criciúma - SC 88802-410
responsável: Nazareno Fernandes

produtos: DJ,SJ,P3 ,L1,L2,V
fone: (048) 437 -0960 fax: (048) 437 -2250
e-mail: master@chroma.com.br

ILHA SERVICE

R. 7 de Setembro, 14
Kobrasol São José - SC 88102-030
responsável: Leandro Alfredo de Brida

produtos: DJ,SJ,L2,P1,L1
fone: (048) 247 -7167 fax: (048) 247 -7173
e-mail: ilhaservice@ilhaservice.com.br

LINCK (DJA)

Av. Hercílio Luz, 1425 Loj 1
Centro Florianópolis - SC 88020-000
responsável: Arthur Sergio Strzelecki

produtos: DJ,SJ,V,L2,P1,P2
fone: 48 324-0649 fax: (048) 224-4222
e-mail: linckfp@vatech.net

MAGUETA

R. Samuel Heusi, 479
Centro Itajaí - SC 88301-090
responsável: Cláudio da Costa Magueta

produtos: DJ,SJ,L1,P1,L2,V
fone: (047) 348 -4378 fax: (047) 348 -4378
e-mail: magueta@melim.com.br

SEPROL (BLM)

R. Ângelo Dias, 220 - sl.s 101-102
Centro Blumenau - SC 89010-310
responsável: Andrei Garcia

produtos: DJ,SJ,L1,L2,P1,P2,V,N
fone: (047) 326 -8484 fax: (047) 326 -8484
e-mail: seprolbm@zaz.com.br

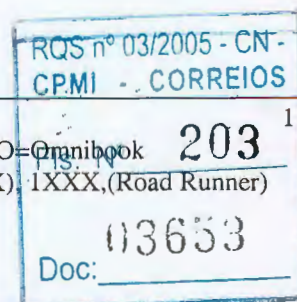
SEPROL (FLP)

Av. Prof. Osmar da Cunha, 183 - lj.05
Centro Florianópolis - SC 88015-100

produtos: DJ,SJ,L1,N,P2,V
Fone/fax: (048) 259-8321

Última modificação: 27/03/00

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Lista dos Centros Autorizados de Serviços HP



responsável: Chehab

e-mail: ceisa@beenet.com.br

SEPROL (S.JOSÉ)

R. Delamar José da Silva, 252 - sl. 01
Kobrasol São José - SC 88102-100
responsável: Andrei Garcia

produtos: DJ,SJ,L1,N,P2,L2,V
fone: (048) 259 -8321 fax: (048) 259 -8321
e-mail: seprol@beenet.com.br

SERCOMPE

R. Prudente de Moraes, 80
Santo Antônio Joinville - SC 89218-000
responsável: James Krieger

produtos: DJ,SJ,L1,L2,P1,V
fone: (047) 433-1797 fax: (047) 433-8454
e-mail: sercompe@datasul.com.br

SHW

R. Marechal Hermes, 250
Glória Joinville - SC 89217-200
responsável: Valdemir Selner

produtos: DJ,SJ,L1,V,P3,O
fone: (047) 453 -0586 fax: (047) 453 -0586
e-mail: shw@netville.com.br

TORTELLI COMP.

Rua Guaporé, 392 E sala 1 ed. Talita
Centro Chapecó - SC 89802-300
responsável: Fernando Picinini

produtos: DJ,SJ,L1,N,V
fone: (049) 723 -5153 fax: (049) 723 -5153
e-mail: tortelli@redamp.com.br

TORTELLI INF.

Av. Presidente Vargas 1548
Coral Lages - SC 88509-501
responsável: Valmir Tortelli

produtos: DJ,SJ,L1,N,V
fone: (049) 225 -1099 fax: (049) 225 -1099
e-mail: tortelli@matrix.com.br

VENDOR

R. Blumenau, 2605 - sl.1
América Joinville - SC 89204-251
responsável: José Carlos Einek

produtos: DJ,SJ,L2,V,O
fone: (047) 425-2991 fax: (047) 425-2991
e-mail: vendor@zaz.com.br

SÃO PAULO

ABC TECN.

Antonio Pereira Matos, 295 - sl. 21
Jd. Vera Cruz São Bernardo do Campo - SP 09860-040
responsável: Rafael Tadeu Venditi

produtos: DJ,SJ,L1
fone: (011) 751-5674 fax: (011) 751-5674
e-mail: abctec@mandic.com.br

ADVANCE ABC

Av. Lucas Nogueira Garcez, 809
Jd. Do Mar São Bernardo do Campo - SP 09750-660
responsável: Wilson Rogério Sanchez

produtos: DJ,SJ,L2,V,L1
fone: (011) 11 4332-5872 fax: (011) 452-1219
e-mail: advance@sol.com.br

ASSISTI

R. Desembargador do Vale, 543
Pompéia São Paulo - SP 05010-040
responsável: Julio Gutierrez

produtos: DJ,SJ,L1,N,V
fone: (011) 3871-5813 fax: (011) 3871-5813
e-mail: atec@assisti.com.br

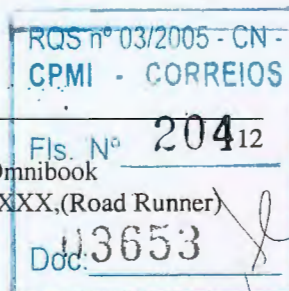
ATOS INF.

R. São Gonçalo, 4-19

produtos: DJ,SJ,L1,P1,P2,L2,V

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V=Vectras; N=Netservers; DJ=Deskjets; SJ=Scanjets; L1=Laserjet bancada; L2=L1+Laserjet on site; O=Omnibook
P1=Plotters 230C, 250C, 3XX, 6XX, 7XX; P2=4XX, CP(2XXX, 3XXX); P3=4XX, CP(2XXX, 3XXX), 1XXX, (Road Runner)



Lista dos Centros Autorizados de Serviços HP



Jd. Altinópolis Bauru – SP 17043-170
responsável: Luiz Renato Rodrigues

fone: (014) 234-8350 fax: (014) 234-8350
e-mail: atos@atosnet.com.br

BRASCIN
R. Gama Cerqueira, 486
Cambuci São Paulo – SP 01539-010
responsável: Ricardo Cebam Thomé

produtos: DJ,SJ,L1,N,V
fone: (011) 3277-5600 fax: (011) 3277-4900
e-mail: brascin@originet.com.br

BRASPLAN
Av. Meira Junior, 328
Jd. Paulista Ribeirão Preto – SP 14090-000
responsável: Luiz Carlos Zorzetto

produtos: DJ,SJ
fone: (016) 632-0989 fax: (016) 632-0989
e-mail: suporte@brasplan.com.br

COMPEX
Av. Dr. Jesuíno M. Machado, 1300
Jardim Planalto Campinas – SP 13092-321
responsável: José Carlos Vannucci

produtos: DJ,SJ,L1,N,P2,V,O
fone: (019) 254-0611 fax: (019) 252-2367
e-mail: compex@compexinfo.com.br

COMPUHELP COMPUTER
Al. Araguaia, 671
Alphaville Barueri – SP 06455-000
responsável: Luiz Alberto Branco

produtos: DJ,SJ,L1,L2,V
fone: (011) 7295-6955 fax: (011) 7295-4760
e-mail: compuhelp@compuhelp.com.br

CONTEC
R. Américo Brasiliense, 1005
Chácara Santo Antônio São Paulo – SP 04714-015
responsável: Adorno Ragonesi Junior

produtos: DJ,SJ,L1,N
fone: (011) 5182-8964 fax: (011) 5182-9774
e-mail: contec@amcham.com.br

COVEREX
R. das Perobas, 178
Jabaquara São Paulo – SP 04321-120
responsável: Ibsen José Fabis Marques

produtos: DJ,SJ,P1,L1,L2,V
fone: (011) 5011-3696 fax: (011) 5011-3336
e-mail: coverexp@uol.com.br

CPP
Av. Barão de Valim, 171
Campo Belo São Paulo – SP 04613-120
responsável: Sergio Chao Lin Liang

produtos: DJ,SJ,L1,L2,P1,V
fone: (011) 240-3474 fax: (011) 241-4495
e-mail: cppnet@uol.com.br

DATANORTH
R. Conselheiro Saraiva, 820/822
Santana São Paulo – SP 02037-021
responsável: Marcelo Camargo

produtos: DJ,SJ,L1,L2
fone: (011) 6950-7316 fax: (011) 6959-1543
e-mail: assistec@datanorth.com.br

DIGICON
R. São Paulo, 82
Alphaville Barueri – SP 06465-130
responsável: Luiz Carlos Rupolo

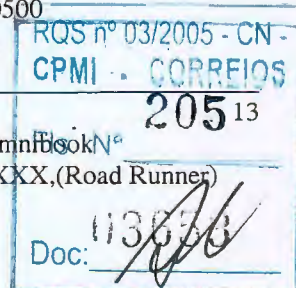
produtos: P3
fone: (011) 7291-9488 fax: (011) 421-2585
e-mail: lcrupolo@digicon.com.br

DIGIGRAF
R. do Rócio, 93
V. Olímpia São Paulo – SP 06700-000
responsável: Ricardo Zerbini

produtos: P3
fone: (011) 820-4089 fax: (011) 828-0500
e-mail: adm.suporte@digigraf.com.br

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ENTER

R. Leandro Dupret, 254/262
Vila Clementino São Paulo – SP 04025-010
responsável: Wilson Rodrigues Galvão

produtos: DJ,SJ,L1,L2,V
fone/ fax: (011) 539-0933
e-mail: enter@entermicros.com.br

ENTERDATA

R. Carvalho de Mendonça, 95
V. Mathias Santos – SP 11070-100
responsável: Paulo Eduardo Mauá

produtos: DJ,SJ,L1,L2,V
fone: (013) 222 –1500 fax: (013) 233-6906
e-mail: enterdata@enterdata.com.br

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Av. Da Liberdade, 809
Liberdade São Paulo – SP 01503-001
responsável: Celso R. Baeta

produtos: DJ, SJ, L1,L2
fone: (011) 270-7566 fax: (011) 279-9959
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ACTOR

R. José Fracalossi, 119
Jd. João Batista Limeira – SP 13486-081
responsável: Engº José Haylton Claudino

produtos: DJ,SJ,L1,L2,P1,P2
fone: (019) 451-9636 fax: (019) 451-3731
e-mail: factor@widesoft.com.br

FREGNI E JARA

R. Epiacaba, 297
V. Arapuã São Paulo – SP 04257-170
responsável: Silvio Jara

produtos: DJ,SJ,L1,L2,V
fone: (011) 6947-7355 fax: (011) 6947-7355
e-mail: fjinfor@ibm.net

H.M.M

R. Santa Terezinha, 260
Centro Limeira – SP 13480-090
responsável: Marcelo Roberto

produtos: DJ,SJ,L1,L2,P1,V
fone: (019) 451 –6780 fax: (019) 451 –6780
e-mail: informatica@hmm.com.br

HIGH VALUE ASSISTENCIA TECNICA

Av. Liberdade, 947
Liberdade São Paulo – SP 01503-001
responsável: Ricardo Katsudi Okamura

produtos: DJ,SJ,L1,N,L2,V,P1,P2
fone: (011) 3277-3373 fax: (011) 3277-3373 R. 112 / 147
e-mail: ricardo.katsudi@highvalue.com

INF. RIO PRETO

R. Prudente de Moraes, 1100
Parque Industrial S. J. do Rio Preto – SP 15025-045
responsável: Adriana Ramos Meuchi

produtos: DJ,SJ,L1,L2,V
fone/fax: (017) 235 –4767
e-mail: inforp@westnet.com.br

INFORTRON

R. Pedro José Senger, 563
Árvore Grande Sorocaba – SP 18015-000
responsável: Ricardo Cornejo

produtos: DJ,SJ,L2
fone: (015) 227-4848 fax: (015) 227-4848 R.209
e-mail: infortro@spicenet.com.br

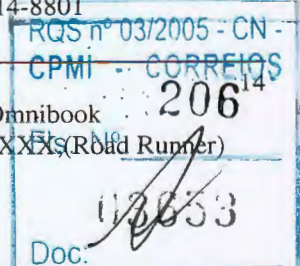
LINEA (SP)

R. Fausto,45
Moinho Velho São Paulo – SP 04285-080

produtos: DJ,SJ,L1,N,V,P3
fone: (011) 6914-8801 fax: (011) 6914-8801

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responsável: Cláudio Branco Haydin

e-mail: service@linea-info.com.br

LMC INF.

R. Camargo Pimentel, 892
Jd. Guanabara Campinas – SP 13073-340
responsável: Lupericio Pedroso de Oliveira

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e-mail: lmcinfor@dglnet.com.br

MAGICCOMP

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e-mail: magiccomp@magiccomp.com.br

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e-mail: mater@uol.com.br

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e-mail: adriana@mgi.com.br

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Jd. São Dimas S.J. Campos – SP 12245-450
responsável: Paulo Roberto P. Bastos

produtos: DJ,SJ,L1,L2
fone: 12 325-5000 fax: (012) 341-8258
e-mail: helder@microstation.com.br

MS COPY

R. Catão, 732
Lapa São Paulo – SP 05049-000
responsável: Raquel Bixofis

produtos: DJ,SJ
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e-mail: rbixofis@imares.com.br

MULTISERVICE

R. Cardoso de Almeida, 797
Perdizes São Paulo – SP 05013-001
responsável: Gilberto Stampacchio da Silva

produtos: DJ,SJ,L1,L2,P1,V
fone: (011) 262-4800 fax: (011) 262-4474
e-mail: mservice@multiservice.com.br

NETBRAZ

R. Pedro Bueno, 935/ 937
Jd. Aeroporto São Paulo – SP 04342-010
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produtos: DJ,SJ,LJ
fone: (011) 5031-5600 fax: (011) 5031-7811
e-mail: andreia.roiz@netbraz.com

OTS

Av. Moaci, 155 Sobreloja
Moema São Paulo – SP 04083-000
responsável: Marco Antonio Meniglim

produtos: DJ,SJ,L1,L2
fone: (011) 531-7611 fax: (011) 532-0607
e-mail: ots@mandic.com.br

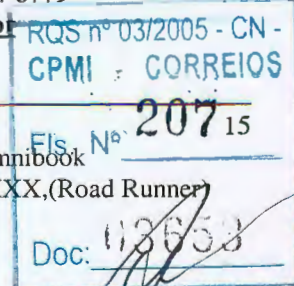
PC MANUTENÇÃO

Av. Brigadeiro Luís Antônio, 1096
Bela Vista São Paulo – SP 01318-001
responsável: Ivete Valgas/ Eduardo Marreiros

produtos: DJ,SJ,L1,L2,N,V
fone: (011) 3104-5667 fax: (011) 3104-6779
e-mail: pcmmssp@pcmanutencao.com.br

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PHL
Rua Picinguaba, 372
Vila Santa Isabel São Paulo – SP 03422-000
responsável: Roberta Bergamin

produtos: L2,P2,V,L1
fone: (011) 6781-3607 fax: (011) 6781-1863
e-mail: phl@sol.com.br

PRIAM
R. Abrahão Miguel do Carmo, 73
Vila Guarani São Paulo – SP 04306-090
responsável: Carina Takamine

produtos: DJ,SJ,LJ
fone: (011) 5589-6388 fax: (011) 5589-6388
e-mail: pctech@pctechinf.com.br

R.A INF.
R. Major Claudiano, 1279A
Centro Franca – SP 14400-690
responsável: Raquel Aparecida

produtos: DJ,SJ
fone: (016) 724-0711 fax: (016) 724-0711
e-mail: rainfo@netsite.com.br

ATIONALE SERVICE
R. Coronel José Domingos de Vasconcelos, 195
S. J.dos Campos – SP 12243-840
responsável: Carlos Cravo

produtos: DJ,SJ,P1,L1,L2
fone: (012) 341-7190 fax: (012) 341-7190
e-mail: ratserv@rationale.com.br

S.J. TECH
R. Alves Guimaraes, 761
Pinheiros São Paulo – SP 05410-001
responsável: Mario Sergio dos Santos

produtos: DJ,SJ,L1,L2,N,V
fone: (011) 3064-9994 fax: (011) 3064-9994
e-mail: sitech.geral@uol.com.br

SENSUS INFORMÁTICA
Av. Moraes Sales, 2098
Nova Campinas Campinas – SP 13010-110
responsável: Julio Salvato Dias

produtos: DJ,SJ
Fone/fax: (019) 252-0166
e-mail: sorocamp@bitline.com.br

SISCO
R. Afonso Celso, 227
Vila Mariana São Paulo – SP 04119-900
responsável: Eliezer M. França

produtos: DJ,SJ,L1,L2,V
fone: (011) 574-8877 fax: (011) 571-5425
e-mail: avelinoo@sisco.com.br

SISTÉCNICA
R. Coronel Frias, 240
Ipiranga São Paulo – SP 01552-010
responsável: Wilson Duarte Rosa

produtos: DJ,SJ,L1,L2,V
fone: (011) 272-1477 fax: (011) 6163-7209
e-mail: wilsondr@sistecnica.com.br

SYSCAMP
R. Profr. Jorge Mennings, 35
Castelo Campinas – SP 13073-420
responsável: Hellen Morais

produtos: DJ,SJ, L1, N,L2,V
fone: (19) 242 -0299 fax: 19 241 -1739
e-mail: syscamp@correionet.com.br

TECNOCOMP
R. Domingos Bertaglia, 76, 1ºan.
Vl. Sta Isabel São Bernardo do Campo – SP 09891-110
responsável: Sidnei Lourenço Molia

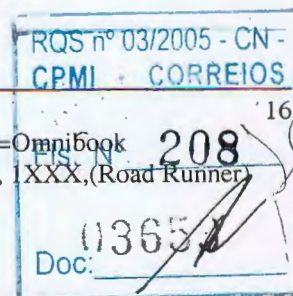
Produtos: DJ,SJ,L1,L2
fone: (011) 458-2855 fax: (011) 414-4545
e-mail: atendimento@tecnocomp.com.br

TECNOCOMPO
Rua Coronel Gomes Nogueira, 463

produtos: DJ,SJ

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Centro Taubaté - SP 12010-120
responsável: Eugênio Sette

fone: (012) 221-1163 fax: (012) 222-4714
e-mail: tecnocompo@tecnocompo.com.br

TECNOCOOP (SP)
R. Carlos Petit, 287
Vila Mariana São Paulo - SP 04110-000
responsável: Arlington Campos

produtos: DJ,SJ,L1,N,P1,P2,P3,L2,V
fone: (011) 539 -0188 fax: (011) 539 -0188
e-mail: tecnofsp@tecnocoop.com.br

TECNOCOOP CAMPINAS
R. Profº Jorge Hennings, 393
Jd. Chapadão Campinas - SP 13073-420
responsável: Celso Mion

produtos: DJ,SJ,L1,L2,V
fone: (019) 243-6751 fax: (019) 243-6751
e-mail: tecnofca@tecnocoop.com.br

TECNOSET
Av. Indianópolis, 2616
Planalto Paulista São Paulo - SP 04062-003
responsável: Eliseu Solimenes

produtos: DJ,SJ,L1
fone: (011) 5583-3444 fax: (011) 5581-4470
e-mail: tecnoset@brworld.com.br

TEXT0 (BARUERI)
R. Campos Sales, 909
Jd. Regina Alice Barueri - SP 06411-150
responsável: Ricardo Christino

produtos: DJ,SJ,L1
fone: (011) 7298-3661 fax: (011) 7298-3661
e-mail: ass-tec@texto.com.br

TEXT0 (PINHEIROS)
R. Paes Lemè, 364/366
Pinheiros São Paulo - SP 05424-010
responsável: Ingo Dauller Janser

produtos: DJ,SJ,L2,V,N,P3,L1
fone: (011) 816-0022 fax: (011) 210-4500
e-mail: ass-pin@texto.com.br

UNITECH
Av. Plinio de Castro Prado, 190
Jd. Macedo Ribeirão Preto - SP 14091-170
responsável: Mario Sergio Junqueira Azevedo

produtos: DJ,SJ,L1,V
Fone/fax: (016) 618-3100
e-mail: unitech@netsite.com.br

WORLD INF.
R. Baroneza do Japi, 71
Centro Jundiaí - SP 13207-000
responsável: Heitor Fiorini

produtos: DJ,SJ,L1,L2,V
fone: (011) 7396-0061 fax: (011) 7396-0061
e-mail: world@dglnet.com.br

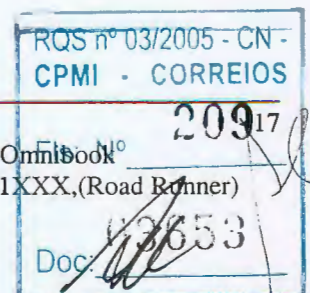
SERGIPE

TECNOCOOP ARACAJU
R. Lagarto, 1529
São José Aracaju - SE 49015-270
responsável: Milton Dalan

produtos: DJ,SJ,L1,N,L2,V,P2
Fone/fax: (079) 211-5200
e-mail: tecnofaj@tecnocoop.com.br

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22290-160 - Rio de Janeiro - RJ

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Brasília, DF, 09 de Maio de 2000.

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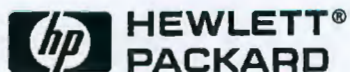

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Government Relationship
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HP VISUALIZE B2000 Owner's Guide

HP VISUALIZE Workstations



Manufacturing Part Number: HP Part No. A5983-90001

Edition E1199

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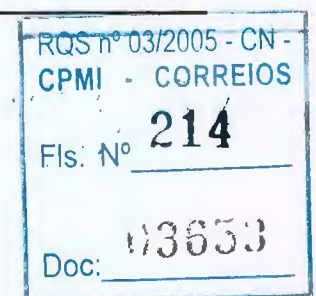


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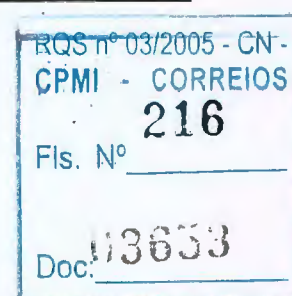
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Preface

This owner's guide describes how to use your HP VISUALIZE B2000 workstation.

This manual assumes that you have installed your workstation as described in the *HP VISUALIZE B2000 Installation Card*.

Audience

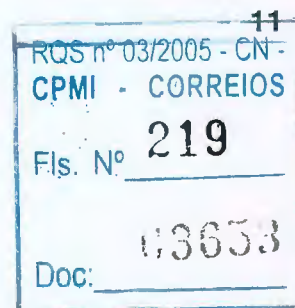
This guide is intended for HP VISUALIZE B2000 workstation users.

Regulatory and Safety Statements

See Appendix A for the regulatory and safety statements that apply to the HP VISUALIZE B2000 workstation.

Installation Notice

Products designated in the applicable Hewlett-Packard price list as customer-installable can be installed by workstation-knowledgeable customers who carefully read and follow the instructions provided. Customers who elect to have the product installed by HP field personnel are charged the applicable field installation charge, as covered under the standard terms and conditions. For more information, please contact your local HP sales representative.





Related Documentation

For more information, refer to the following documents:

- *Configuring HP-UX for Peripherals*
- *HP-UX System Administration Tasks*
- *HP CDE Getting Started Guide*
- *Managing Systems and Workgroups*
- *Using Your HP Workstation*

Note that the documents listed above can be viewed with a web browser using this URL:

<http://www.docs.hp.com>

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Revision History

The revision history for each edition of this manual is listed below.

Printing Date	Edition
November 1999	First

Problems, Questions, and Suggestions

If you have any problems or questions with your hardware, software, or documentation, please contact either your HP Response Center or your local HP representative. If you have access to a web browser, you can get the latest software and hardware patches at the following URL:

<http://us-support.external.hp.com/>

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Documentation Conventions

Unless otherwise noted in the text, this guide uses the following symbolic conventions.

<i>user-supplied values</i> (or) <i>emphasis</i>	Italic words or characters in syntax and command descriptions represent values that you must supply. Italics are also used in text for emphasis.
screen display	Information that the system displays, commands that you must use literally, and path names appear in this typeface.
Enter	Keycaps are presented with a special keycap font as shown in the left column. (In this manual, we refer to the Enter key. On your keyboard, the key may be labeled either Enter or Return .)

Electrostatic Discharge (ESD) Precautions

Electrostatic charges can damage the integrated circuits on printed circuit boards. To prevent such damage from occurring, observe the following precautions during board unpacking and installation:

- Stand on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, routing nodes, and peripheral units to that piece of equipment.
- Keep uninstalled printed circuit boards in their protective antistatic bags.
- Handle printed circuit boards by their edges only once you have removed them from their protective antistatic bags.

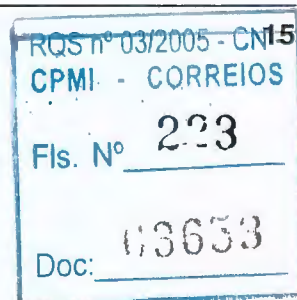
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1

Overview

This chapter provides an overview of the key features and components of the HP VISUALIZE B2000 workstation. It then explains how to get started using your B2000 workstation.

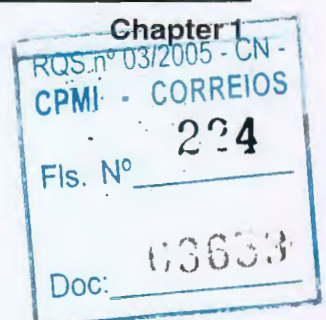


Overview



This chapter contains the following topics:

- Product Information
 - “Key Features” on page 17
 - “Front Panel Components” on page 19
 - “Rear Panel Components” on page 22
 - “Memory” on page 31
 - “Monitors” on page 31
- Getting Started
 - Operating System Overview
 - Information You Need to Record
 - Gathering Required Information
 - Powering on the Workstation for the First Time
 - Documentation





Product Information

This section describes the key features and the components of the B2000 workstation. The purpose of this section is to familiarize you with your new workstation.

Key Features

Table 1-1 lists the key features of the HP VISUALIZE B2000 workstation.

Table 1-1

Key Features of the B2000 Workstation

Feature	Description
Processor	400 MHz PA-Risc processor with 1.5 MB cache
Operating System	HP-UX 10.20 with the 9912 Additional Core Enhancements (ACE) software bundle (December 1999)
User Interface	HP Common Desktop Environment (CDE) graphical user interface
Compatibility	Source and binary code compatible with the B- and C-Class product families
Main Memory	Four memory slots supporting 128MB, 256MB and 512 MB memory DIMMs. Minimum memory configuration is 256 MB, and maximum is 2 GB.
Internal Storage Devices	• One standard 9 GB 7200 RPM Ultra2 Wide Low-Voltage Differential (LVD) SCSI hard disk drive; a second 9 GB 7200 RPM Ultra2 Wide LVD SCSI hard disk drive is optional • One standard ATAPI CD drive, 32x ATAPI • One optional 3.5-inch floppy disk drive

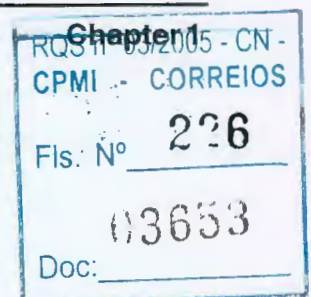
Overview
Product Information



Table 1-1

Key Features of the B2000 Workstation

Feature	Description
Standard Networking	Ethernet IEEE 802.3, RJ45 Twisted Pair 10/100 BaseT
Standard I/O	• Two Serial (RS-232) ports • Two USB (Universal Serial Bus) ports • One Parallel (IEEE 1284) port • Four Audio ports (Line In, Line Out, Microphone In, and Headphones Out)
I/O Expansion Capabilities	Four PCI (Peripheral Connect Interface) slots: • Two 64-bit PCI-2X slots at 5V, 33 MHz • Two 32-bit PCI-1X slots at 5V, 33MHz
Monitors Currently Supported	• 21-inch, 1280×1024 (stereo capable) color, 75 Hz • 21-inch, 1600×1200 color, 75 Hz • 19-inch, 1280×1024 color, 75 Hz
Graphics	• Integrated HP VISUALIZE <i>fxe</i> graphics chip on system board • HP VISUALIZE <i>fxe</i> graphics card (optional)
Keyboard	USB (Universal Serial Bus) HP keyboard
Mouse	USB (Universal Serial Bus) HP 3 button mouse



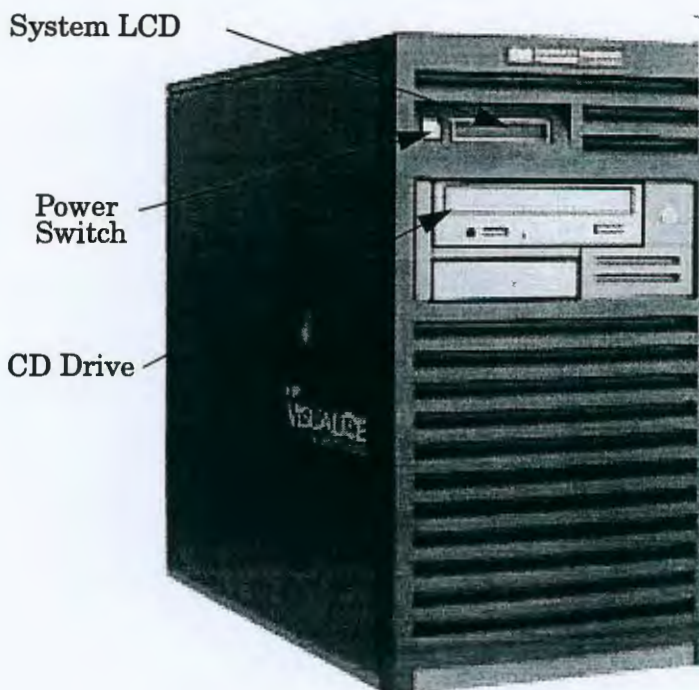


Front Panel Components

Figure 1-1 shows the components that are located on the front panel of the B2000 workstation. The following subsections describe the system LCD, power switch, and the internal storage devices (including the standard CD drive and optional floppy disk drive) that are located on the front panel.

Figure 1-1

Front Panel Components





Overview Product Information

System LCD

The Liquid Crystal Display (LCD) is located on the left side of the front panel. The LCD has a 2-line display, with up to 16 characters per line. The LCD displays progress messages and error messages. Error messages, known as chassis codes, are used in troubleshooting. The symbols in Figure 1-2 appear in the LCD, representing different system activities.

Figure 1-2

LCD Symbols



Operating system running



Disk access in progress



Network receive in progress



Network transmit in progress

For more information, see the "LCD Information" section in Chapter 6.

Power Switch

The power switch is also located on the left side of the front panel. Use the power switch to power your workstation on and off.

When you press the power switch to power off your workstation, the operating system executes an automatic shutdown -q command. This prevents any damage to programs and data on your system disk.

Pressing the power switch on again automatically boots up the HP-UX operating system, if your system has been configured to auto boot. For information on setting auto boot, see "Setting the Auto Boot and Auto Search Flags" in Chapter 5.



Internal Storage Devices

The B2000 workstation has one 9 GB 7200 RPM Ultra2 Wide Low-Voltage Differential (LVD) SCSI hard disk drive as a standard component. Optionally, the workstation also supports a second 9 GB 7200 RPM Ultra2 Wide LVD SCSI hard disk drive.

In addition, the B2000 workstation has one ATAPI CD drive as a standard component. Optionally, the workstation also supports one 3.5-inch floppy disk drive.

NOTE

You cannot have two CD drives nor two floppy disk drives, since the B2000 workstation only supports one each of these devices.

Figure 1-1 on page 19 shows the workstation with one CD drive installed. See Chapter 2 for detailed descriptions of the CD drive controls and Chapter 3 for detailed descriptions of the floppy disk drive controls.

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Rear Panel Components

This section describes the following components on the rear panel of the B2000 workstation:

- Monitor connector
- Serial (RS-232) connectors
- USB (Universal Serial Bus) connectors
- LAN (Ethernet IEEE 802.3, RJ45 Twisted Pair 10/100 BaseT) connector
- Parallel (IEEE 1284) connector
- Audio connectors (Line In, Line Out, Microphone In, and Headphones Out)
- TOC (Transfer Of Control) button
- I/O slots
- Power cord connector
- Security loop

NOTE

To maintain FCC/EMI compliance, verify that all cables are fully seated and properly fastened.

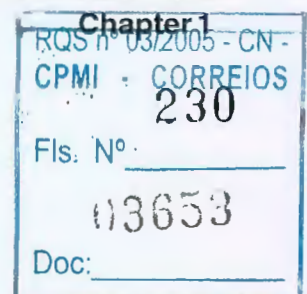
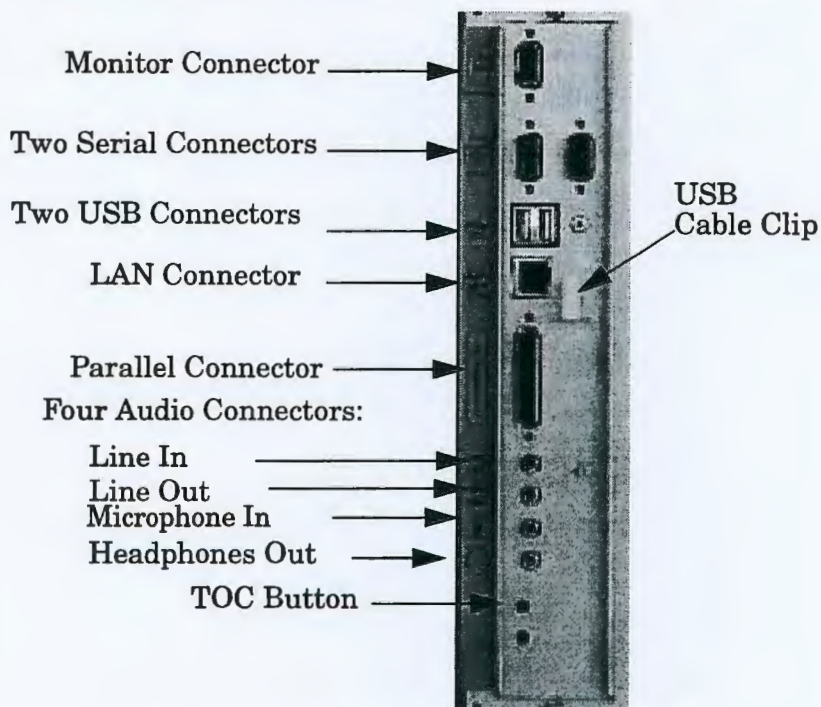




Figure 1-3 shows the locations of the components on the rear panel of the B2000 workstation.

Figure 1-3

Rear Panel Components



Monitor Connector

The B2000 workstation has an integrated HP VISUALIZE *fxe* graphics chip on the system board. Thus, the monitor connector on the rear panel of the workstation connects your monitor to this graphics chip on the system board.

Overview
Product Information



Serial Connectors

You can attach a variety of pointing devices (such as a mouse or trackball) or peripheral devices (including printers, plotters, modems, and scanners) to the two Serial Input/Output (SIO) RS-232 ports on the rear panel of this workstation. Consult the documentation that accompanies each pointing device or peripheral device for specific information concerning its use.

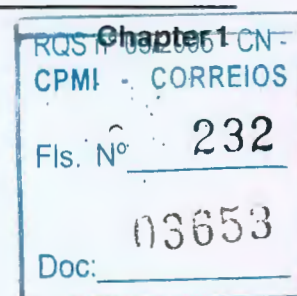
The SIO ports are programmable, allowing functions such as bit rate, character length, parity, and stop bits to be set. You can set these by using the HP-UX System Administration Manager (SAM) utility, or by selecting a system special device file with the functions already programmed. The SIO ports are used as an interface for serial asynchronous devices to the CPU.

Table 1-2 shows the SIO connector pin listings. The serial connectors are 9-pin D-sub connectors. Signal names are those specified in the EIA RS-232 standard.

Table 1-2

Serial I/O Pins

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator





USB Connectors

The USB connectors located on the rear panel of the workstation provide and interface for the keyboard and mouse to the system. These USB connectors support only the HP keyboard, HP mouse and USB hub. The keyboard and mouse may be plugged into either USB connector on the rear of the workstation or plugged into the USB hub. No other USB configuration is currently supported. Consult the documentation that accompanies each input device for specific information concerning its use.

For more information on USB, see the Universal Serial Bus website at the following URL:

<http://www.usb.org>

The following subsections briefly describe each of the three USB devices you can connect to the B2000 workstation's USB connectors. The mouse and keyboard were shipped with your workstation, and the USB hub can be ordered separately.

CAUTION

Usage of devices other than USB specification may result in unpredictable functionality and inferior performance of the B2000 workstation.

NOTE

The USB cable clip on the rear of the chassis provides strain relief for the USB cables. Open the cable clip, loop the cables through the clip and snap it closed to secure the USB cables. See Figure 1-3 on page 23.

HP USB Keyboard

The HP USB keyboard provides the standard keycaps found on most PC keyboards.

NOTE

The USB keyboard and mouse may be plugged into either USB connector on the rear of the B2000 workstation.



HP USB Three Button Mouse

For general information on the various cursor shapes associated with different areas of HP CDE while using a mouse, see the *Using Your HP Workstation* manual.

LAN Connector

Your workstation has one built-in, Ethernet IEEE 802.3, RJ45 Twisted Pair (TP) connector for 802.3 (Ethernet) or 10/100 BaseT networking. Your workstation will automatically select the correct network setting.

Parallel Connector

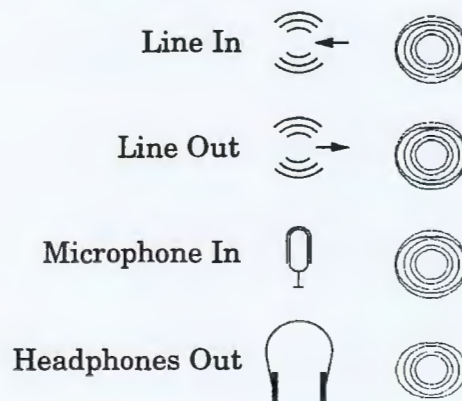
The 25-pin HP Parallel I/O interface uses IEEE 1284 I/O interface protocols to support peripheral devices such as printers and plotters. consult the documentation that accompanies each parallel peripheral device for specific information concerning its use.

Audio Connectors

Your workstation has audio-input and -output capability through external input and output connectors on the rear panel and through an internal speaker. As shown in Figure 1-4 on the next page, the workstation's rear panel contains four audio connectors: Line In, Line Out, Microphone In, and Headphones Out.

Figure 1-4

Audio Connectors





Overview
Product Information

The audio connectors are standard stereo audio mini-jacks. Hewlett-Packard recommends using gold-plated plugs available through audio retailers for best quality recording and playback through the external connectors. The audio electrical specifications are summarized in Table 1-3.

Table 1-3

Audio Electrical Specifications

Frequency Response	25 Hz to 20 kHz
Input Sensitivity/Impedance: Line in Microphone in	2.8Vp-p/10Kohm 40mVp-p/47Kohm
Maximum Output Level/Impedance: Line out Headphone out	2.8Vp-p/920ohm 5.6Vp-p/110ohm

Overview
Product Information



TOC Button

You can press the TOC (Transfer Of Control) button on the rear panel to interrupt the system.

I/O Slots

The four I/O slots located on the rear panel are PCI (Peripheral Connect Interface) slots, which you can use for add-on I/O interface cards. There are two PCI-2X slots and two PCI-1X slots, which are defined as follows:

Slot 1: 64-bit PCI-2X at 5V, 33 MHz

Slot 2: 64-bit PCI-2X at 5V, 33 MHz

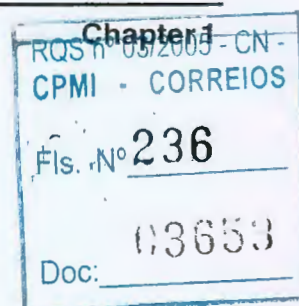
Slot 3: 32-bit PCI-1X at 5V, 33 MHz

Slot 4: 32-bit PCI-1X at 5V, 33 MHz

For more information, see the "I/O Cards" on page 81 in Chapter 4.

Power Cord Connector

Plug the workstation's power cord into the power cord connector to provide AC power to the workstation.





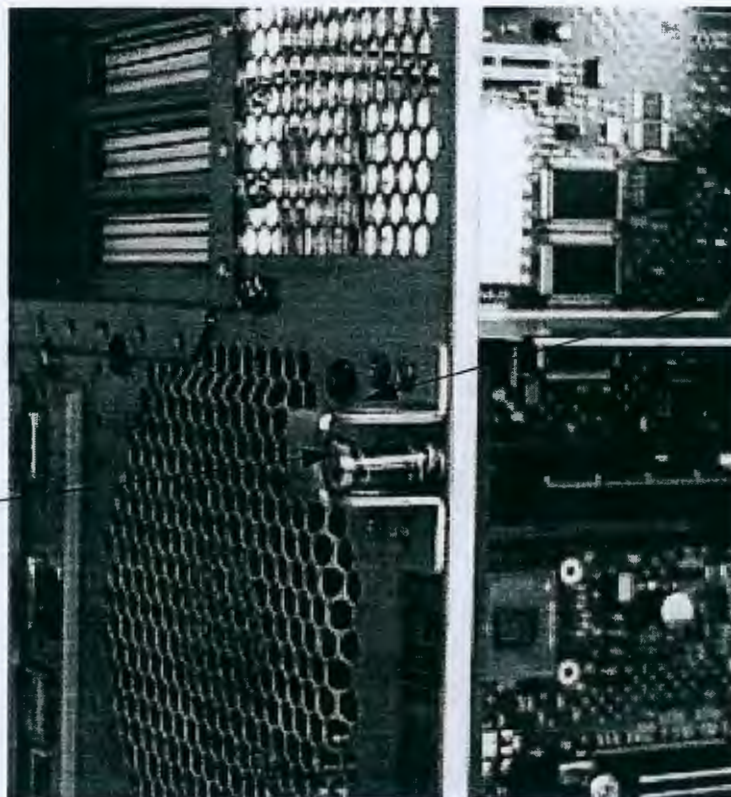
Security Loop

There is also a security loop on the rear panel of the B2000 workstation. The security loop allows you to lock the workstation's left side panel, thus securing the internal components of your workstation. Figure 1-5 provides a view of the security loop.

Figure 1-5

Security Loop Components

Security Loop Pin
and Spring



Security
Loop Pin
Hole

Overview
Product Information

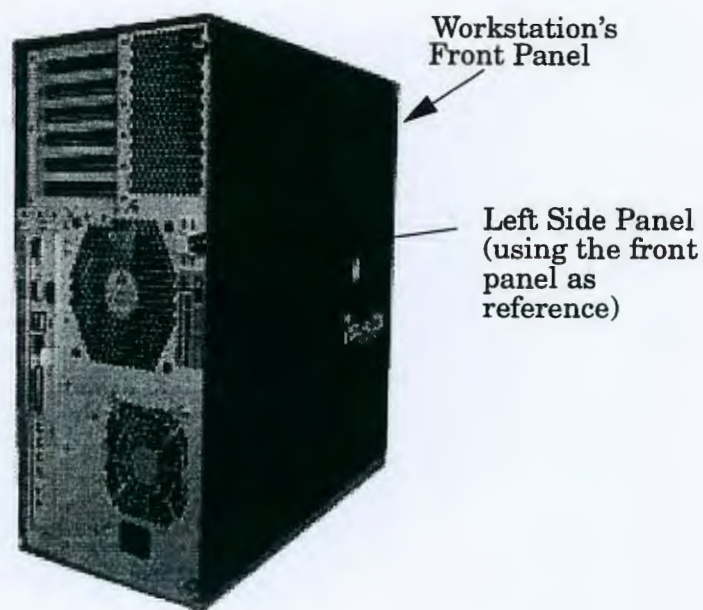


To lock your workstation's left side panel, follow these steps:

1. Make sure the workstation's left side panel is closed. See Figure 1-6.

Figure 1-6

Closed Left Side Panel



2. Push the security loop's pin into the security loop pin hole, and insert the padlock's latch through the holes at the top and bottom of the security loop. This locks the left side panel.
3. Lock the padlock. Your workstation's left side panel is now secure.



Memory

The B2000 workstation has four slots for memory DIMMs. You can install only 128 MB, 256 MB, or 512 MB DIMMs in these slots. The minimum memory configuration for a B2000 workstation is 256 MB, and the maximum is 2 GB.

To install memory DIMMs in your workstation, follow the procedure in the "Installing Additional Memory" on page 132. Please keep in mind that if memory is installed improperly or if it is bad, your workstation's operating system will not boot-up, and a DIMM error message will appear on your workstation's LCD. If a DIMM error does occur, please refer to the "Memory Failures" section in Chapter 6.

Monitors

Your HP monitor should be set to one of the following resolutions:

- 1280×1024 color (stereo capable), 75Hz, VESA
- 1600×1200 color, 75Hz, VESA
- 1280×1024 color, 75 Hz, VESA

Your workstation must have either an HP-supported monitor running at 75 Hz with a 1280×1024 resolution, or a full multi-mode color monitor. Monitors with EVC, D-Sub, or 5 BNC connectors (RGB, vertical sync, horizontal sync) will function.

NOTE

The HP VISUALIZE *fxe* graphics card will not function with older HP monitor types that use a sync on green signal. This includes monitors such as the HP 1097A/B/C/D, A2088A, and A2828A/B that only have 3 BNC connectors.

Note that you can connect the B2000 workstation to earlier HP monitors with 15-pin miniature D-Sub cables using the A4168A adapter shipped with your workstation's accessory kit.

Before using your monitor, you should become familiar with its controls, connectors, and indicators. For information about using your monitor, see the documentation that came with the monitor.



Getting Started

Operating System Overview

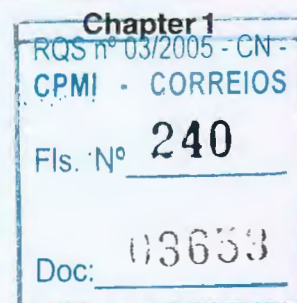
Your B2000 workstation runs the HP-UX 10.20 operating system with the 9912 Additional Core Enhancements (ACE) software bundle (December 1999).

The B2000 is an Instant Ignition system (that is, a workstation with preloaded software). It has X-Windows, HP's graphical user interface, and HP CDE (Common Desktop Environment) installed and configured. Please refer to the "System Information" sheet that came with your workstation for details on configuration. If your Instant Ignition system does not have the kernel preconfigured with all of the required device drivers, refer to the *Managing Systems and Workgroups* manual to configure your kernel. If you have any questions about Instant Ignition, refer to the *Using Your HP Workstation* manual for more information.

NOTE

You can find the documents mentioned in the previous paragraph on HP's documentation website at the following URL:

<http://www.docs.hp.com/>





Information You Need to Record

Before you begin using your workstation, take a moment to gather the following important information and record it in the appropriate subsection for future use:

- LAN Station ID
- IP (Internet Protocol) address
- Subnet mask

LAN Station ID

Locate the contents label that came with your workstation's shipping carton. Find the LAN Station ID listed there and record it here:

LAN Station ID: _____

The LAN Station ID can also be found on the back of the workstation near the LAN connector. If the previous methods for locating your LAN Station ID do not work, you can get your LAN Station ID by executing the lanscan command in a terminal window.

IP Address and Subnet Mask Information

Get the IP address and the subnet mask information for your workstation from either your system administrator or your network administrator and note them here:

IP Address: _____

Subnet Mask: _____



Gathering Required Information

The start-up procedure for your workstation will require you to supply the following information. Therefore, you should gather the following information before you power on the workstation for the first time.

NOTE

If you are not the system administrator for your workstation, and you do not know the required information, ask your system administrator for the information.

- *Hostname* _____
The hostname is sometimes called the "system name."
- *IP (Internet Protocol) address* _____
You will need this address if you are connecting the workstation to a local area network (LAN).
- *Time zone* _____
This is the time zone where the workstation is located.
- *Optional networking parameters*
Ask your system administrator if you need to configure these parameters.

Subnet mask _____

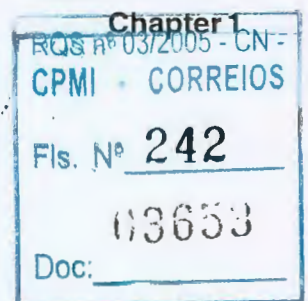
Network gateway IP address _____

Local domain name _____

DNS server host name _____

DNS server IP address _____

Network Information Service domain name _____





- *Optional font server parameters*

You need to supply these parameters if you want the workstation to obtain its fonts from a network server. Ask your system administrator if you need to configure these parameters.

Font server name _____

Font server IP address _____

Powering on the Workstation for the First Time

After you have connected the various parts of your workstation by following the *HP VISUALIZE B2000 Installation Card*, you are ready to power on the workstation.

NOTE

Your B2000 workstation may be powered on in the minitower, upright position, or powered on while laying on the right-side panel.

The HP Instant Ignition process has already installed the HP-UX operating system on your workstation. When you power on the workstation, you will be presented with a series of questions. When you have answered these questions, the HP CDE login screen will appear. Once the HP CDE login screen appears, you can log in as `root`—initially there is no password.

Follow these steps when powering on your B2000 workstation for the first time:

1. Power on the monitor and any external peripherals (for example, printers) that are connected to the workstation.
2. Power on the workstation.

The workstation will run a series of self-tests.

NOTE

Your display monitor may appear blanked for a few moments while the system is booting. Messaging will appear in approximately two minutes.



Overview

Getting Started

3. A series of messages are displayed as various hardware and software subsystems are activated.

During the initial boot process you will be asked to:

- Select a monitor type
 - Select the appropriate keyboard type
4. Enter the required information about your workstation when prompted for it. This is the information you gathered in the previous subsection, such as your workstation's hostname, IP address, and time zone.

NOTE

You should enter the hostname when requested; otherwise, you will get an error message when you log in.

If you do not have other required pieces of information, press **Enter** to use the default value. You can provide missing information later by logging into a terminal emulator window as root and executing this command:

```
/sbin/set_parms
```

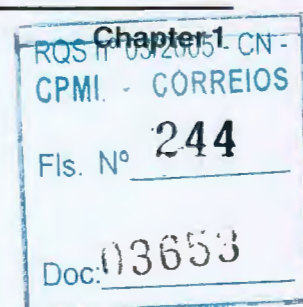
5. Specify the root password when prompted for it. The root password is the password used for the superuser account. (The superuser, root, is a special user who has permission to perform all system administration tasks.)

When you have finished answering all of the questions, the workstation completes its start-up sequence and displays the HP CDE login screen.

6. Log into your first HP CDE session as root. For information on logging into HP CDE, see the *Common Desktop Environment User's Guide*.

NOTE

You must log into the first session as root. This is because the system contains no other user accounts. Once you have created user accounts, you should log out as root and log back in as one of the other users.





7. After you log into your first HP CDE session you can customize the desktop user interface for your specific language. For detailed information to configure localized desktop sessions, see the *Common Desktop Environment User's Guide*.
8. Use the HP-UX System Administration Manager (SAM) utility to set-up user accounts.

Documentation

Additional documentation for your system is located on the "Instant Information" CD that is shipped with the keyboard accessory kit. To view this CD, follow the special mounting instructions that came with the CD.

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Getting Started



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2

Using Your CD Drive

This chapter provides an overview of the optional CD drive and media as well as an explanation of how to use the CD drive.

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Using Your CD Drive



Here are the topics covered in this chapter:

- Operating the CD Drive
- Mounting and Unmounting a CD
- Verifying the CD Drive Operation
- Configuring the CD Driver
- Audio Control for the CD Drive
- CD Media Description

The instructions in this chapter assume you are using the HP-UX 10.20 operating system and Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999) with the HP CDE interface.

For information about installing or removing a CD drive, see Chapter 4 of this document.

NOTE

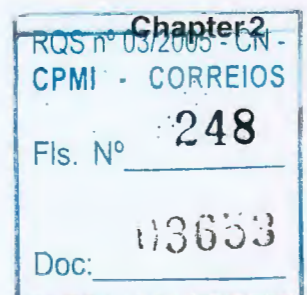
Be sure you have read and understand the information on mounting and unmounting CDs before you begin using your CD drive.

NOTE

This chapter requires you to be superuser (root). If you cannot log in as root, contact your system administrator.

In this chapter, the terms "CD" and "CD drive" are used rather than "CD-ROM" and "CD-ROM drive" because the CD drive used in the B2000 can read the original CD-ROM disks, plus CD-R disks and the newer CD-RW disks (also called "CD-RAM" because they are rewriteable). Thus, since not all CDs are ROMs any longer, that portion of the term has been dropped.

Incidentally, the CD drives also are multisession-capable.





Using Your CD Drive CD Media Description

CD Media Description

CDs, which can be CD-ROMs, CD-Rs, or CD-RWs, are 120mm (4.7 inches) in diameter, and use one data surface with a capacity of 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed. You may access files and data stored on a CD, but you may not write files or data to a CD.

CAUTION

Handle CDs by the edges only. Always be sure a CD is either in the CD drive or its protective case when not in use. This will reduce the chance of exposing the disk surface to dust. Over time, dust reduces the reliability of the read head in the CD drive.

Caring for CDs

Observe the following guidelines to help prevent data loss and prolong the life of you CD and CD drive:

- Use CDs in a clean environment to prevent dust particles from scratching disc surfaces.
- Store CDs in a cool, dry place to prevent moisture and heat damage.
- Do not try to clean the surface of a CD with cleaning solvents, as some cleaning solvents may damage the disk.



Operating the CD Drive

This section provides a description of the CD drive and it describes how to perform tasks with your CD drive.

CD Drive

The CD drive is a mass storage device that can read removable CD-ROM, CD-R, and CD-WR media. The drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except you cannot write to the drive. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with an ATAPI interface.



Using Your CD Drive Operating the CD Drive

Controls and Features

Figure 2-1 and Table 2-1 describe the operating controls and features of the CD drive.

NOTE

The exact positioning of CD Drive controls/features may vary depending on the model of the device.

Figure 2-1

CD Drive Controls and Features

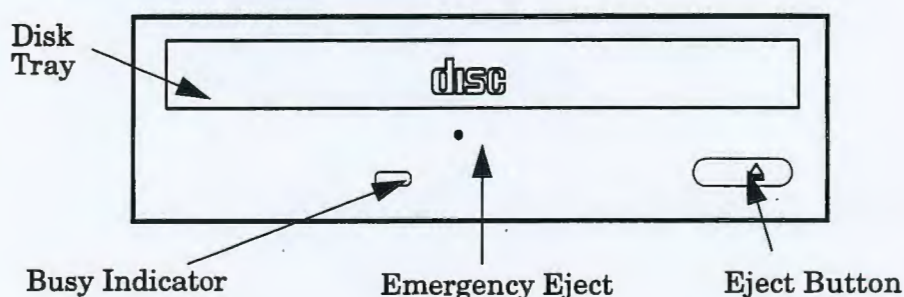


Table 2-1

CD Drive Operating Controls and Features

Control/Feature	Purpose
Headphone Jack	Accommodates mini-headphones with a 3.5 mm diameter miniature stereo plug.
Volume Control	Adjusts the audio output volume to the headphone.
Busy Indicator	The Busy Indicator blinks during a data transfer.
Eject Button	The Eject Button when pressed opens the Disk Tray for removal or insertion of a disk. When the drive is in use, you must press the eject button for more than one second to open the Disk Tray.
Emergency Eject	You can open the Disk Tray when the workstation does not have power by inserting the end of a paper clip into this opening.
Disk Tray	The Disk Tray holds the CD. This style of CD drive does not use a disk caddy.

Using Your CD Drive
Operating the CD Drive



To listen to an audio CD, use the headphone jack on the rear panel, and control the sound volume via software called "xmcd" (for details, see "Audio Control for the CD Drive" on page 56).



Loading and Unloading a CD

This section explains how to load or unload a CD.

NOTE

To use the file system on a CD, you must be superuser (root) and mount the disk as discussed in the section "Mounting a CD Using SAM." Once the CD has been mounted, you must unmount it before removing the CD. Unmounting a CD is discussed in the section "Unmounting a CD Using SAM."

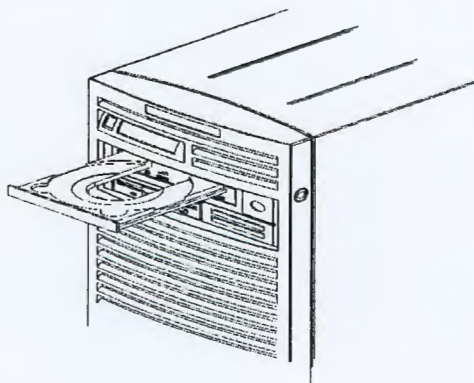
Loading a CD

This CD drive has an automatic loading/ejecting feature. To load a CD in the CD drive, follow these steps:

1. Press and release the eject button on the CD drive. The disk tray opens as shown in Figure 2-2.

Figure 2-2

Open CD Tray



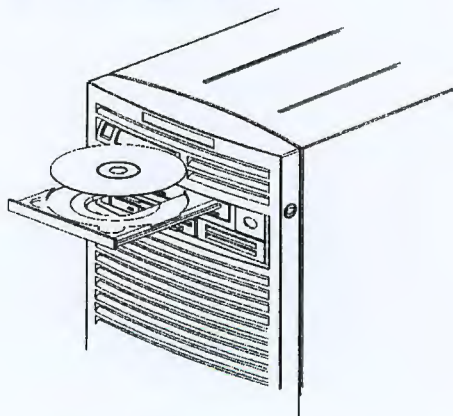


Using Your CD Drive Operating the CD Drive

2. Hold the disk by the edges with the label side up and place it in the disk tray as shown in Figure 2-3.

Figure 2-3

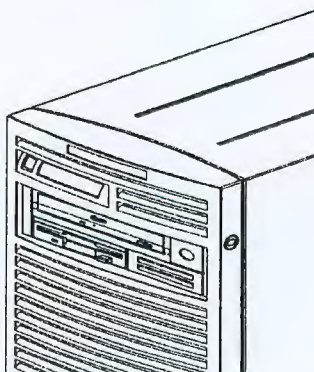
Placing the CD in the Disk Tray



3. Press the eject button to close the tray as shown in Figure 2-4.

Figure 2-4

Closed Disk Tray





Using Your CD Drive Operating the CD Drive

Unloading a CD

To unload a disk from the Disk Tray, follow these steps:

1. Press and release the eject button on the CD drive to open the disk tray.
2. Grasp the disk by the edges and lift it out of the disk tray.
3. Press the Eject Button to close the disk tray.

Locating Help

If you have trouble with any of the procedures for using your CD drive, see the chapter "Solving Problems" in this document.



Mounting and Unmounting a CD

This section of the chapter explains how to mount and unmount a CD drive using the System Administration Manager (SAM).

The procedures in this section require you to log in as root. If you cannot log in as root, contact your system administrator.

Mounting a CD Using SAM

To access your CD drive, you must mount a CD every time you insert it into the drive. This applies to CDs with file system information only. If you wish to load a music CD, for example, you would not need to mount the disk. See "Installing the xmcd Utility" on page 56 for playing audio CDs. Mounting a disk with file system information gives the disk a path name that allows your workstation to communicate with it. You must unmount the CD before removing it from the drive.

To mount a CD on an HP-UX 10.20 operating system with the Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999), perform the steps covered in this section.

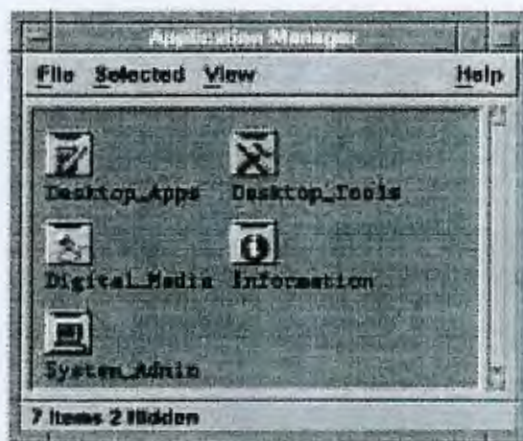
1. Log in as root.
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute `sam` at a terminal window command prompt and skip to step 5.



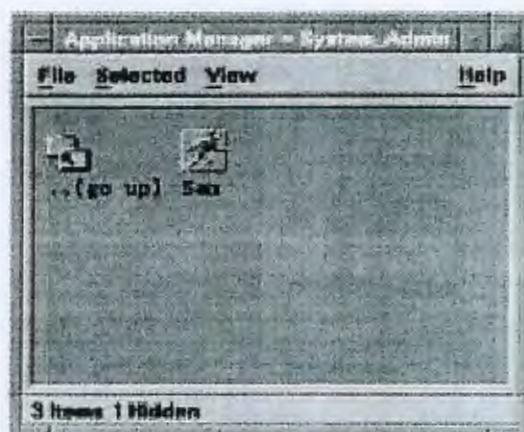


Using Your CD Drive Mounting and Unmounting a CD

3. Double click on the **System_Admin** icon in the **Application Manager** window.



4. Double click on the **Sam** icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Disks and File Systems** icon.



Using Your CD Drive
Mounting and Unmounting a CD



6. Double click on the **Disk Devices** icon.



The following screen message is displayed:

Scanning the system's hardware...

The **Disk and File Systems** window opens containing a list of devices installed in this system. From the list of devices, choose the CD drive you would like to configure as a file system by clicking on the device to highlight it.

7. Click on **Add** in the **Actions** menu. For this example you will select the item **Not Using the Logical Volume Manager**.
8. Enter the mount directory name (for example, /disk1) in the **Mount Directory** field of the **Add Disk without LVM** window.
9. Click on the **Modify Defaults...** button. In the **Modify Defaults** window, select the **Read Only** item from the Access button menu. Next, unselect the **Create New File System** item by clicking on it. Exit the **Modify Defaults** window by clicking on the **OK** button.
10. Click on the **OK** button in the **Add Disk without LVM** window. You will need to wait for a short time for the CD to be mounted. When the **Add Disk without LVM** window disappears and CDFS appears in the Use column of the **Disks and File Systems** window, you have mounted the CD.



Using Your CD Drive Mounting and Unmounting a CD

Unmounting a CD Using SAM

You must unmount a CD before it will eject from the drive.

NOTE

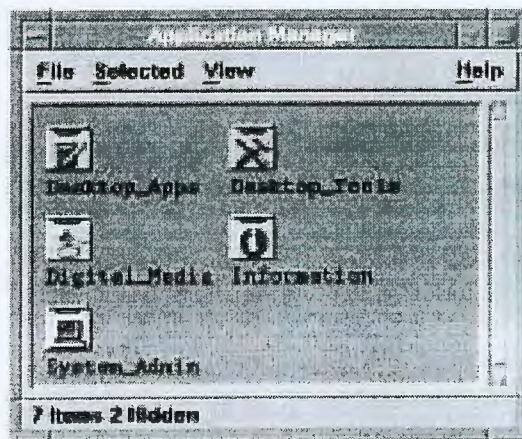
Before you unmount a CD, make sure that your working directory is set to a directory other than the one under which the disk was mounted.

To unmount a CD on an HP-UX 10.20 operating system with the Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999), perform the steps covered in this section.

1. Log in as root.
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute `sam` at a terminal window command prompt and skip to step 5.



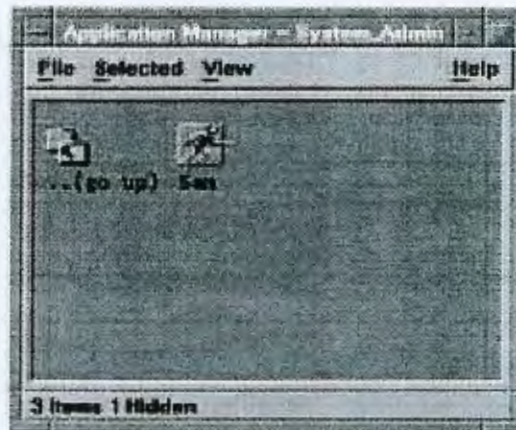
3. Double click on the **System_Admin** icon in the **Application Manager** window.



Using Your CD Drive
Mounting and Unmounting a CD



4. Double click on the **Sam** icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Disks and File Systems** icon.



6. Double click on the **Disk Devices** icon.



The following screen message is displayed:

Scanning the system's hardware...

The **Disks and File Systems** window opens containing a list of devices installed in this system. From the list of devices, choose the CD drive you would like to remove (unmount) by highlighting that device.



Using Your CD Drive Mounting and Unmounting a CD

7. Click on **Remove** in the **Actions** menu. In the window that next appears, click on the **Yes** button. This will unmount the CD. You will need to wait for a short time before the CD is unmounted. The CD is successfully unmounted when you see **Unused** in the **Use** column of the **Add Disk without LVM** window.



Verifying the CD Drive Operation

To verify that your workstation can communicate with the CD drive, follow the steps covered in this section. Note that to perform the steps required in this section, you must be superuser (root). If you cannot log in as root contact your system administrator.

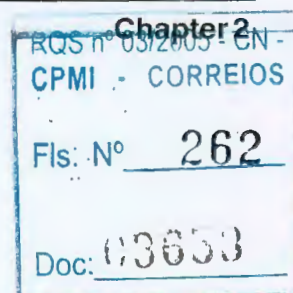
1. Log in as root.
2. Type the following command at the shell prompt and press **Enter**:

```
/usr/sbin/ioscan -d sdisk
```

After a few seconds the ioscan utility lists all of the I/O devices that use the "sdisk" driver. Your CD drive should be among the devices listed. The list appears similar to the following:

H/W Path	Class	Description
10/0/15/1.5.0	disk	SEAGATE ST39102LC
10/0/15/1.6.0	disk	SEAGATE ST39102LC
10/0/14/0.0.0	disk	TEAC CD-532E-B

If ioscan does not detect any usable I/O system devices, such as the CD drive, nothing is output and you are returned to the system prompt. Since this indicates possibly that the driver for the CD drive is not configured, read the section "Configuring the CD Driver" in this chapter.



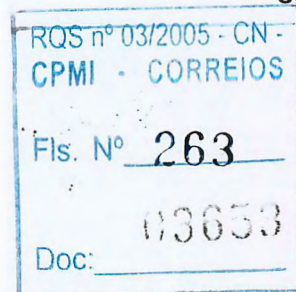


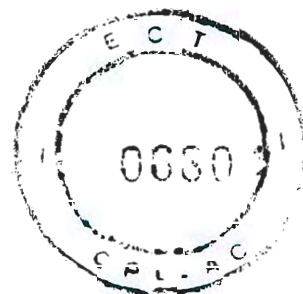
Configuring the CD Driver

If you reload software or rebuild the Instant Ignition system on your workstation, you may need to reconfigure the HP-UX kernel to add the CD driver. Use the **SAM** utility to add the CD driver and build a new HP-UX kernel.

For more information about how to reconfigure the kernel using **SAM**, see the following manuals:

- *Managing Systems and Workgroups*
- *Using HP-UX*





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Audio Control for the CD Drive

In order to control the playing of audio CDs on your CD drive, you will need a third party "CD player" application. One such application that supports HP workstations is `xmcd`. This is a third-party "CD player" utility that runs on an X window system using the Motif graphical user interface. The `xmcd` utility is not supported by Hewlett-Packard. Since the `xmcd` utility is not a part of HP-UX, you will need to download it off the web using your web browser and this URL:

<http://metalab.unc.edu/tkan/xmcd>

Installing the `xmcd` Utility

Here is the procedure for downloading the `xmcd` utility to your system:

1. Log in as root.
2. Type the previously given URL into the entry box on your web browser and press **Enter**.
3. Select the menu item labeled **Downloads** found on the `xmcd` homepage.
4. Scroll down to the section "Select your platform:" on the **Downloads** web page and select the item labeled "HP-UX 9.x and later (HP PA-RISC)."
5. Wait for a few seconds for the **Save As...** pop-up window to appear. In this window, click in the **Selection** entry box and type the following path and file name:

`/tmp/xmcdbin.tar.gz`

Next, click the **OK** button. This completes the download of `xmcd` to your system.

6. Follow the instructions in the section "Instructions to unpack `xmcd` binary" found on this **Binary Downloads** web page. This will complete the installation of the `xmcd` utility.



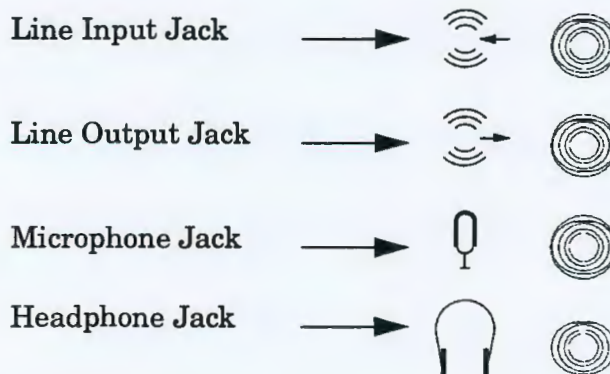
Using Your CD Drive Audio Control for the CD Drive

Using the xmcd Utility

The instructions in the section assume that you are using the HP-UX 10.20 operating system and the Workstation Additional Core Enhancements (ACE) for HP-UX 10.20 (December 1999) with the HP CDE interface. The xmcd utility must also be installed on your system. See the section "Installing the xmcd Utility."

To load and play an audio CD, follow the steps in this procedure.

1. Load the audio CD. See the section "Loading a CD" in this chapter.
2. Insert the headphone plug into the headphone jack located on the back of your system unit.



3. Click on the **Audio** icon located on your HP CDE control panel.

Audio Icon



Using Your CD Drive
Audio Control for the CD Drive



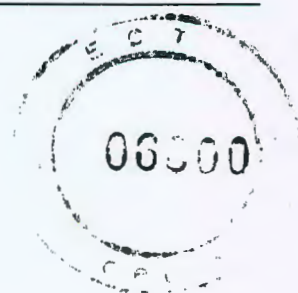
4. Click on the **Monitoring** checkbox in the **Audio** window to select it. Then select the **Output** menu and click on the **Headphones** item in the menu list. In the **File** menu select the item **Close**, this will close the **Audio** window and save your settings. Note that the **Output Volume** slider in the **Audio** window does not control the CD drive's volume level. To control the CD drive's volume, you need to use the volume slider on the xmcd user interface. See the window in step 5.



5. Start the utility by typing `xmcd` at the prompt and pressing **Enter**.



Now that you have your audio CD player started, put on your headphones and press the **Play** button to listen to the audio CD. Note that pressing the **Help** button will give you information on how to use the rest of the CD player's buttons.



3

Using Your 3.5-Inch Floppy Disk Drive

This chapter describes how to perform tasks that allow you to archive to or transfer data from the 3.5-inch floppy disk drive.

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Using Your 3.5-Inch Floppy Disk Drive

The instructions in this chapter assume you are using the HP-UX 10.20 operating system and the Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999) with the HP CDE interface.

NOTE

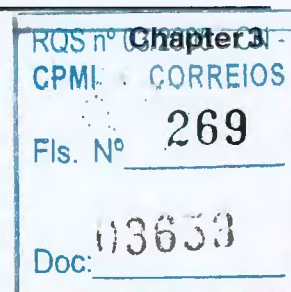
When examples of user input are given in this chapter, enter them at the command-line prompt in an HP CDE terminal window.

Some procedures in this chapter require you to log in as superuser (root). If you cannot log in as root, contact your system administrator.

Here are the topics covered in this chapter:

- Operating the Floppy Drive
- Verifying the Floppy Drive Configuration
- Additional Floppy Drive Information.

For information on installing and removing a floppy disk drive, see Chapter 4 of this document.





Operating the Floppy Drive

This section describes how to perform tasks with your 3.5-inch floppy disk drive.

Floppy Disk Drive

The floppy disk drive is a random access read/write mass storage device that uses removable floppy diskettes. The drive supports the 1.44 Mbyte High Density standard. You can access information from the drive like any other disk drive, that is you can write information to it and read information from it.

Controls and Features

Figure 3-1 and Table 3-1 describe the operating controls and features of the floppy disk drive.

Figure 3-1

Floppy Disk Drive Controls and Features

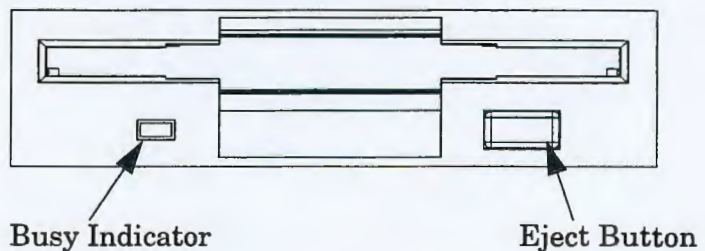


Table 3-1

Floppy Disk Drive Operating Controls and Features

Control/Feature	Purpose
Busy Indicator	The Busy Indicator illuminates during a data access operation and blinks during a data transfer.
Eject Button	The Eject Button, when pressed, ejects the floppy diskette from the floppy disk drive.

Using Your 3.5-Inch Floppy Disk Drive
Operating the Floppy Drive



Using the Floppy Diskette

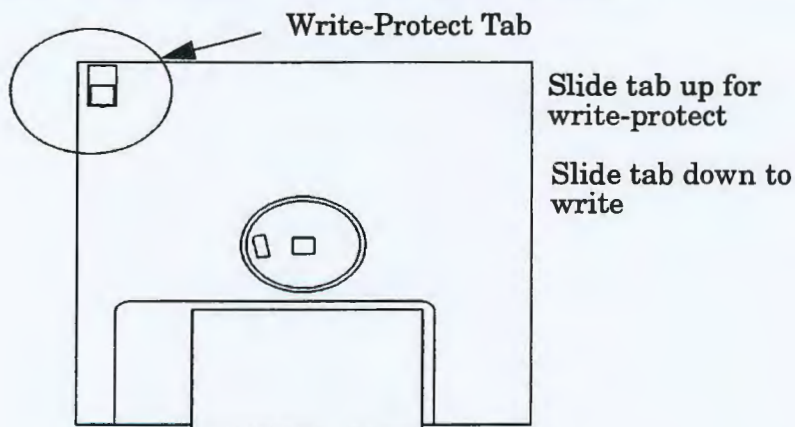
This section describes basic information needed to use your floppy diskettes.

Setting the Write-Protect Tab on a Diskette

You can only store or change information on a diskette when the write-protect tab is in the write position. So, before trying to write to the diskette, make sure that the write-protect tab is in the write position, as shown in Figure 3-2.

Figure 3-2

Setting the Write-Protect Tab on a Floppy Diskette



To protect files on a diskette from being overwritten, set the write-protect tab to the write-protect position.

NOTE

The write-protect tab should always be in the write position for formatting a new diskette and transferring data to a diskette.



Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

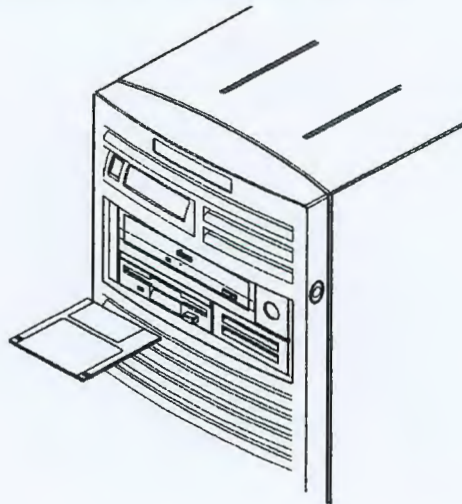
Inserting and Removing a Diskette

Follow these steps to insert and remove a diskette from the floppy disk drive.

1. Insert the diskette into the drive, as shown in Figure 3-3.

Figure 3-3

Inserting and Removing a Floppy Diskette



2. Push the diskette into the floppy drive until it clicks into place.
3. Remove the diskette by pressing the eject button (see Figure 3-1) and taking it out of the drive.

Using Device Files

Device files are special files that tell your system which pathway through the system hardware to use when communicating with a specific device. Device files also describe the type of device. You will need to know the special device file associated with your floppy disk drive so that you can write data to it or read data from it.

NOTE

The device file names depend on the naming conventions of your particular system.



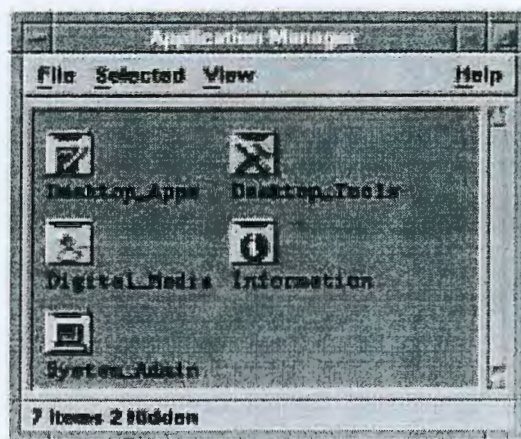
Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

To determine what device files are available for use with your floppy drive, use the following procedure:

1. Log in as root.
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute `sam` at a terminal window command prompt and skip to step 5.



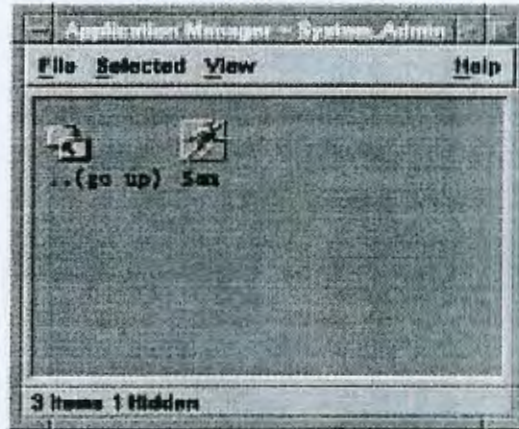
3. Double click on the **System_Admin** icon in the **Application Manager** window.





Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

4. Double click on the **Sam** icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Disks and File Systems** icon.



6. Double click on the **Disk Devices** icon.



The following screen message is displayed:

Scanning the system's hardware...

The **Disks and File Systems** window opens containing a list of devices installed in this system. From the list of devices, choose the floppy disk drive you would like to configure as a file system by clicking on the device to highlight it.

7. Select the **Actions** menu and then select the menu item **View More Information**. A window opens with a list of information for the floppy drive, including the device files.

Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive



Formatting a New Diskette

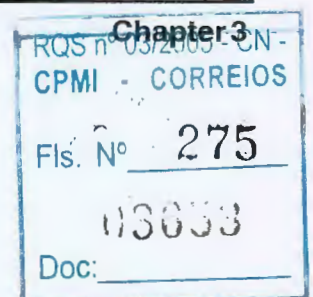
If you have floppy diskettes that have been previously formatted using the `mediainit` utility, you can skip this section. Otherwise, you must always format a new floppy diskette with the `mediainit` utility before using the diskette. To format a new floppy diskette, follow these steps:

1. Log in as root.
2. Make sure that the write-protect tab on the floppy diskette is in the write position, as shown in Figure 3-2.
3. Insert the diskette into the floppy disk drive.
4. Type the following at the prompt and press **Enter**:

```
mediainit -f 16 devicefile
```

where 16 is the High Density (HD) format option and `devicefile` is the device file as listed by SAM. See the section "Using Device Files" in this chapter. For a listing of format options, see the floppy manual page. To view this manual page, type the following at the prompt and press **Enter**:

```
man floppy
```





Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

Transferring Data To and From a Floppy Diskette

This section describes how to transfer data (reading and writing) to and from your floppy diskette using the HP-UX `tar` command with your floppy drive's device file.

You need to set the write-protect tab to the *write* position to transfer data to the diskette. The write-protect tab can be in either position when restoring data from a diskette or listing the files on a diskette.

Saving Files to a Floppy Diskette

Use the following instructions to save files to a floppy diskette:

1. Check the write-protect tab on the floppy diskette to ensure that it is in the *write* position.
2. Load the formatted floppy diskette into the disk drive.
3. Type the following command in a terminal window at the prompt and press **Enter**:

```
tar -cvf devicefile pathname
```

where *devicefile* is the device file as listed by SAM (see the section "Using Device Files" in this chapter), and *pathname* is the path name of the file or directory containing files that you want to write to the diskette.

Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive



Restoring Files from a Floppy Diskette to Your System

Use the following instructions to restore files from a floppy diskette to your system:

1. Load the floppy diskette into the disk drive.
2. Type the following command in a terminal window at the prompt and press **Enter**:

```
cd directory_path
```

This command changes you to the directory in which you want the files to reside.

3. Enter the following command at the prompt and press **Enter**:

```
tar -xvf devicefile pathname
```

where *devicefile* is the device file as listed in **SAM** (see the section "Using Device Files" in this chapter) and *pathname* is the path name of the file or directory containing files that you want to restore from the diskette. If you do not specify *pathname*, everything on the floppy diskette is restored.

Listing the Files on a Floppy Diskette

Use the following instructions to list the files on a floppy diskette:

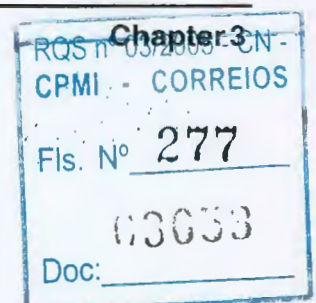
1. Load the floppy diskette into the disk drive.
2. Enter the following command in a terminal window at the prompt and press **Enter**:

```
tar -tvf devicefile
```

where *devicefile* is the device file as listed by **SAM**. See the section "Using Device Files" in this chapter. Note that this command will list all files on the floppy diskette.

Troubleshooting

If you have trouble with any of the procedures for using your floppy disk drive, see Chapter 6 of this document, "Solving Problems."





Using Your 3.5-Inch Floppy Disk Drive Verifying the Floppy Drive Configuration

Verifying the Floppy Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the `ioscan` command in a terminal window to see which devices are currently in use on your system. Note that you will have to be superuser or root to use the `ioscan` command.

Enter the following command at the prompt and press **Enter**:

```
/usr/sbin/ioscan -fnC floppy
```

After a few seconds, the `ioscan` utility lists all of the I/O devices that use the “floppy” class. Your floppy drive should be among the devices listed. The list appears similar to the following:

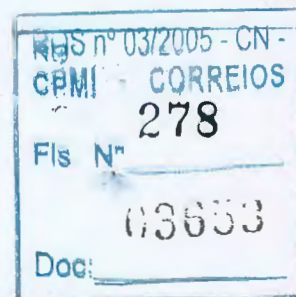
Class	I	H/W Path	Driver	S/W State	H/W Type	Description
floppy	0	10/0/14/1/4.1	sioflop	CLAIMED	DEVICE	HP_PC_FDC_FLOPPY
			/dev/floppy/c0t1d0		/dev/rfloppy/c0t1d0	

If `ioscan` does not detect any usable I/O system devices that use the “floppy” class, such as the floppy disk drive, nothing is output and you are returned to the system prompt. If this is the case, refer to Chapter 6, “Solving Problems.”

If the floppy disk driver is not configured, `ioscan` returns the following message:

```
ioscan: Device driver floppy is not in the kernel
```

If you receive this message, go to the section, “Configuring the Floppy Driver” in this chapter for information on adding the `sioflop` driver to the HP-UX kernel configuration.





Additional Floppy Drive Information

This section provides information about configuration of the floppy disk driver and information about useful HP-UX commands for copying and listing floppy disk files.

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your computer, you may need to reconfigure the HP-UX kernel to add the floppy disk driver. Use the **SAM** utility to add the **sioflop** disk driver and build a new HP-UX kernel.

For more information about how to reconfigure the kernel using **SAM**, see the following manuals:

- *Managing Systems and Workgroups*
- *Using HP-UX*

For More Information

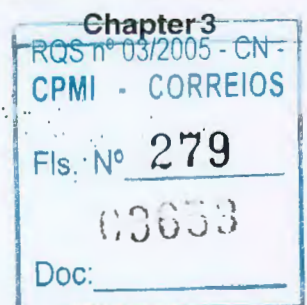
For more information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man tar
```

You can mount the floppy drive as a file system using the **SAM** utility. Be sure to unmount the drive before removing it as a file system. For more information about how to mount and unmount the floppy drive, see the manual *Using HP-UX*.

For more information on copying data to or from your system to other media, including your floppy diskette, refer to the **cpio** man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man cpio
```





Using Your 3.5-Inch Floppy Disk Drive Additional Floppy Drive Information

For more information on copying to or from DOS files, refer to the doscp man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man doscp
```

For more information on listing DOS directories, refer to the dosls man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man dosls
```

For more information on using your floppy disk drive and floppy diskettes, refer to the floppy man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man floppy
```

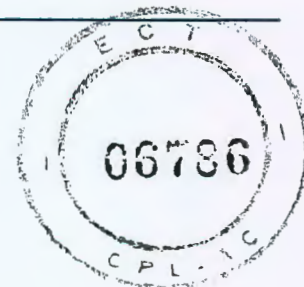
For more information on using the mediainit command, refer to the mediainit man page by typing the following command in a terminal window at the prompt and pressing **Enter**:

```
man mediainit
```

Using Your 3.5-Inch Floppy Disk Drive
Additional Floppy Drive Information



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4

Changing Your Workstation's Hardware Configuration

This chapter contains the procedures to change the hardware configuration for your HP VISUALIZE B2000 workstation.

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Changing Your Workstation's Hardware Configuration



This chapter contains the following topics:

- Front Panel
- Left Side Panel
- Power Supply
- I/O Cards
- Fans
- CD Drive and Floppy Drive
- Hard Disk Drives
- Memory Cards
- Monitor Type

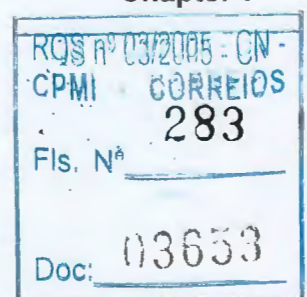
The instructions in this chapter assume you are using the HP-UX 10.20 operating system with the Additional Core Enhancements software bundle (December 1999) with the HP CDE interface. Information for the HP CDE interface can be found in the *HP CDE Getting Started Guide*.

CAUTION

Always wear a properly grounded wrist strap when reconfiguring your workstation with internal devices. For details on electrostatic discharge, read the section "Electrostatic Discharge (ESD) Precautions" in the Preface of this manual.

WARNING

Always unplug the workstation's power cord from the electrical outlet or power source before opening the workstation.





Changing Your Workstation's Hardware Configuration

Use the following tools to remove or replace hardware parts when changing your configuration:

- Light-duty flat blade screwdriver with 150mm (6 inch) long shaft
- T-15 Torx drivers. Note that the screws these drivers are used on have a recessed slot for use by flat-bladed screwdrivers.
- Needle-nose pliers

NOTE

Many of the HP-UX commands in this chapter will require that you become superuser (root). If you cannot log in as root, contact your system administrator.





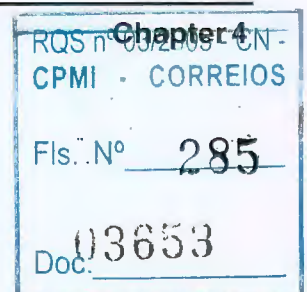
Front Panel

This section explains how to open and close the workstation's front panel.

Opening the Front Panel

Perform the following steps to open the workstation.

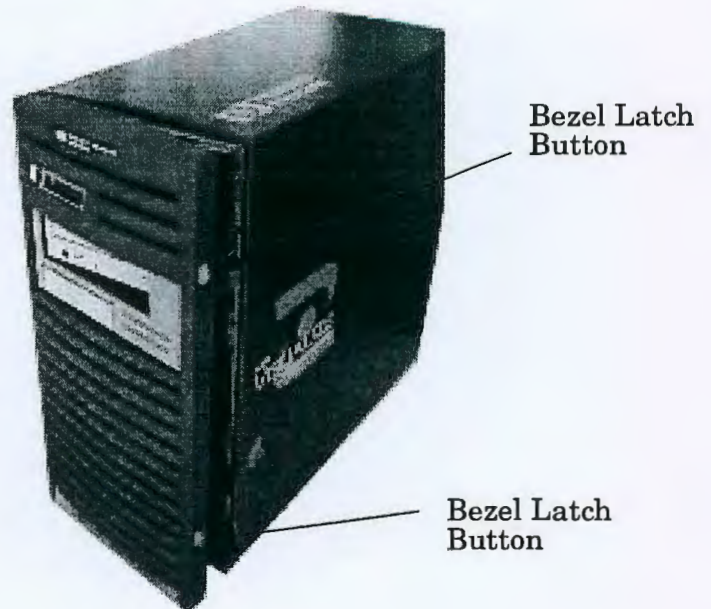
1. Power off the workstation, and unplug the workstation's power cord from the electrical outlet. Note that when you press the workstation's power switch, the workstation automatically performs a shutdown -q.
2. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the back panel of the workstation.
3. Unlatch the front panel (also known as the front bezel) by pressing in on the two latch buttons located on the right side of the front panel. See Figure 4-1. If the front panel does not open, you may have to locate the front panel key and unlock it.





Changing Your Workstation's Hardware Configuration Front Panel

Figure 4-1 **Opening the Front Panel**



4. Swing the panel outward on its left snap hinges until the panel comes free and place the front panel in a location where it cannot get broken.

Closing the Front Panel

Perform the following steps to close the workstation.

1. Locate the hinges on the left side of the front panel, and insert them into the holes located along the left edge of the workstation.
2. Rotate the front panel inward until you hear the two latch buttons snap in place. The front panel is now closed. If there is a need to lock the front panel, use the keys that came with your workstation to lock the panel. These keys are located inside the front bezel below the floppy disk drive.
3. Plug in the workstation's power cord, and power on the workstation.



Left Side Panel

This section explains how to open and close the left side panel of the workstation. This side panel will have to be opened whenever you need access to the internal components of the workstation.

Opening the Left Side Panel

Perform these steps to open the left side panel.

WARNING

Always unplug the workstation's power cord from the electrical outlet or power source before opening the workstation.

1. Power off the workstation, and unplug the workstation's power cord from the electrical outlet.
2. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the back panel of the workstation.
3. Turn the workstation around so its back is facing you. On the right edge of the workstation, there are two T-15 Torx thumbscrews as shown in Figure 4-2. Remove the two T-15 Torx thumbscrews.

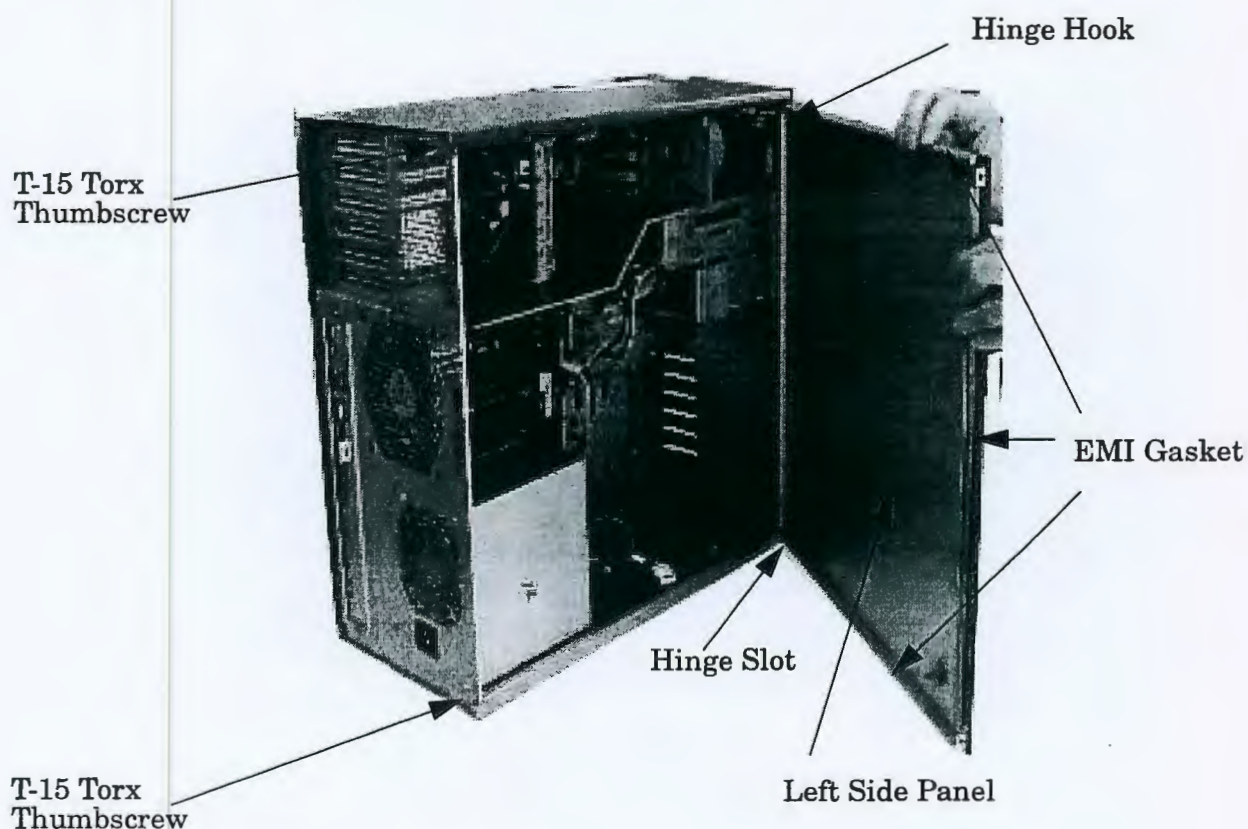


Changing Your Workstation's Hardware Configuration

Left Side Panel

4. Grasp the back edge of the left side panel and rotate it outward approximately 30 degrees to the workstation. Next, pull the panel toward you as shown in Figure 4-2. This releases the panel's top and bottom left side hook hinges from their hinge slots. See Figure 4-2.

Figure 4-2 Opening the Left Side Panel



NOTE

The EMI gasket, as shown in Figure 4-2, must not be removed from the side panel.

Changing Your Workstation's Hardware Configuration

Left Side Panel



Closing the Left Side Panel

Perform these steps to close the left side panel.

1. Hold the left side panel so that the top and bottom hinge hooks can be inserted into their hinge slots. See Figure 4-2. Note that the hinge slots are located on the far right edge of the workstation (using the back of the workstation as the reference).
2. Swing the back edge of the panel toward the workstation's back edge and press the outside edges of the side panel tightly against the workstation. This will ensure a tight seal of the EMI gaskets.
3. Secure the side panel in place and tighten the two T-15 Torx thumbscrews you previously removed.



I/O Cards

Your B2000 workstation's system board has four Peripheral Connect Interface (PCI) slots for option boards. Slots 1 and 2 are full-size PCI slots. Slots 3 and 4 are half-size PCI slots.

NOTE

The graphics boards supported by your workstation are designed to be electrically compatible with PCI option slots. See Table 1-1 on page 17 for graphics option boards supported in the B2000 workstation.

See Figure 4-3 for a brief description of slot capabilities.

Figure 4-3

PCI Card Slot Numbering and Capabilities

Slot 1	64 bits, 33MHz, 5V
Slot 2	64 bits, 33MHz, 5V
Slot 3	32 bits, 33MHz, 5V
Slot 4	32 bits, 33MHz, 5V

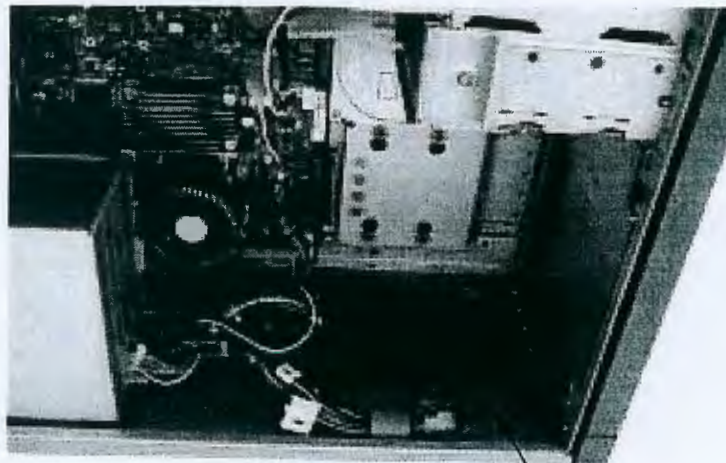
The information described in Figure 4-3 is located inside your workstation on the chassis floor. See Figure 4-4 for the physical location of the B2000 workstation label.

Changing Your Workstation's Hardware Configuration I/O Cards



Figure 4-4

Location of B2000 System Label



B2000 System Label

CAUTION

If you are installing an additional graphics card, you **must** insert the *fx* card in Slot 1 for optimal performance.

After you connect the monitor to the additional graphics card, you will need to change the graphics path for that monitor. To do this read the section "Displaying and Setting the Monitor Type" in the chapter "The Boot Console Interface."

The label on the chassis floor of your workstation contains important information for I/O configuration. See Figure 4-5.



Figure 4-5

B2000 System Label

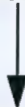


Note that the four I/O slots as seen from the back of the workstation are labeled from top to bottom starting with one. See Figure 4-6.

Figure 4-6

I/O Slot Numbering

I/O Slot 1



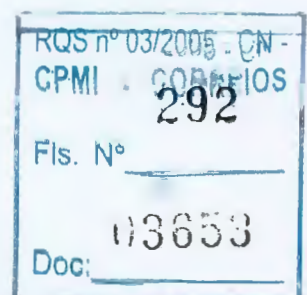
I/O Slot 4



Removing I/O Cards

You will need a T-15 Torx driver or flathead screwdriver to remove the I/O slot bulkhead screws.

Here are the steps required for remove an I/O card from the workstation.



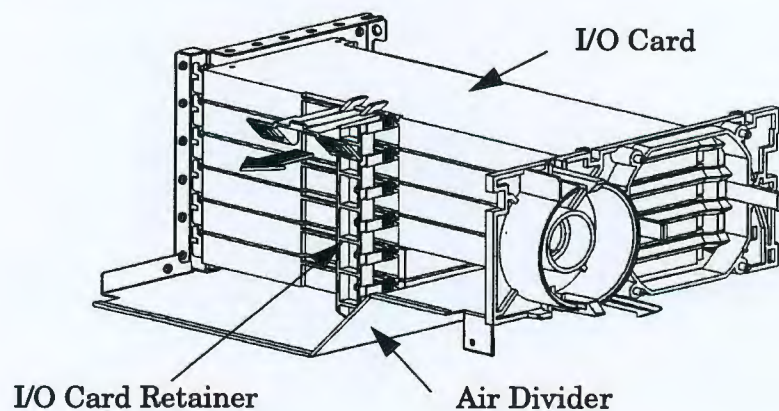
Changing Your Workstation's Hardware Configuration I/O Cards



1. Power off the workstation, and unplug the workstation's power cord from the electrical outlet. Note that when you press the workstation's power switch, the workstation automatically performs a shutdown -q.
2. Open the side panel of the workstation as explained in the section "Opening the Left Side Panel" in this chapter.
3. Pull evenly in the direction of the arrow on both PULL tabs of the I/O card retainer to remove it. See Figure 4-7.

Figure 4-7

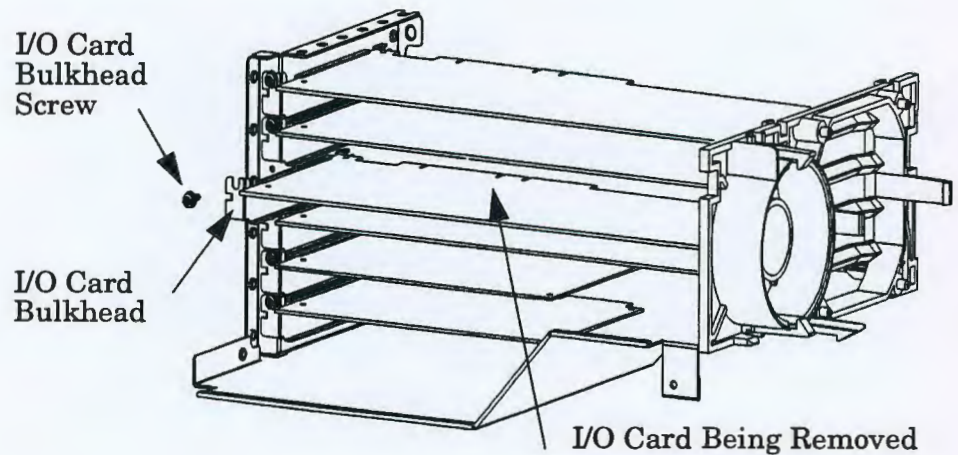
Removing the I/O Card Retainer



4. Locate the I/O card you want to remove and using a T-15 Torx driver remove the I/O card's bulkhead screw as shown in Figure 4-8.



Figure 4-8 Removing the I/O Card



5. Pull evenly on the outside edges of the I/O card to remove it. See Figure 4-8.

Installing I/O Cards

To install an I/O card into your workstation, follow these steps.

NOTE

The built-in VISUALIZE *fxe* graphics is the primary graphics slot (slot 0). Use the secondary graphics slot (PCI slot 1) for the highest performance graphics card and PCI slot 2 for the second graphics card and then any of the remaining 32 bit slots for the third PCI graphics card.

1. Open the left side panel of the workstation as explained in the section "Opening the Left Side Panel" in this chapter.
2. Locate the appropriate slot for the I/O card that is to be installed. See Figure 4-3.
3. Unscrew the T-15 Torx screw and remove the bulkhead blank of the slot you have chosen. If no blank is present, you may skip to step four.
4. Pull evenly in the direction of the arrow on both PULL tabs of the I/O card retainer to remove it. See Figure 4-7.
5. Insert the I/O card into the slot you have chosen with the bulkhead

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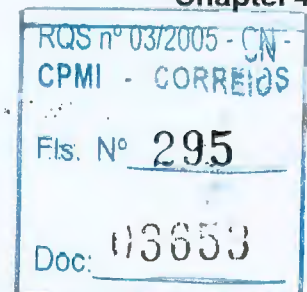
Changing Your Workstation's Hardware Configuration I/O Cards

appropriately positioned. See Figure 4-8. If the card is full length, the non-bulkhead end of the card should be placed in the I/O card guide. Press firmly and evenly on the I/O card until it is in the connector. Secure the I/O card to the bulkhead with the T-15 Torx screw.

6. Replace the I/O card retainer by placing the bottom retainer hook in the slot on the air divider and the clips on the PULL tabs into their slots on the chassis wall. See Figure 4-7.
7. Close the left side panel of the workstation by following the procedure in the section "Closing the Left Side Panel" in this chapter.

NOTE

If you connect a monitor to a graphics card, you will need to change the console path as described in "Displaying and Setting Paths" on page 161.



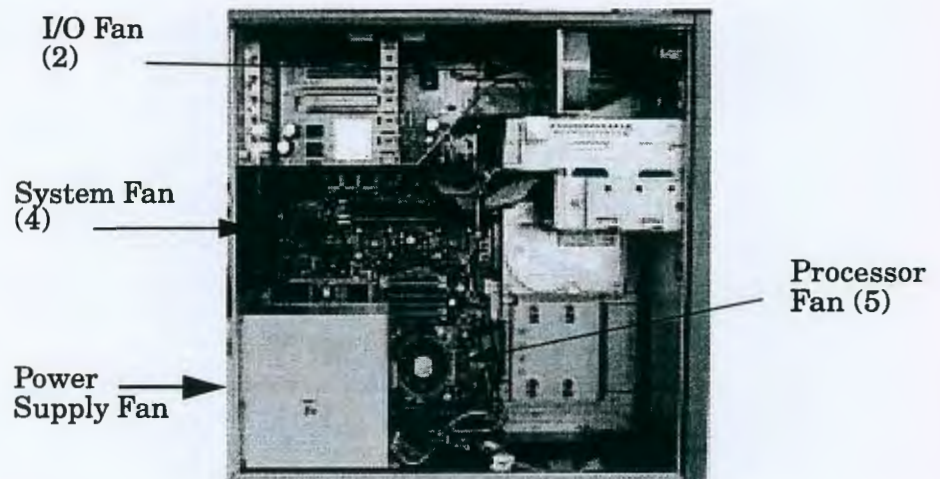


Fans

The B2000 has three internal fans; processor turbo cooler fan, memory fan and the I/O fan. The power supply fan is integrated with the power supply circuitry and is not a stand alone component. Note the turbo cooler fan is mounted to the processor substrate and is not considered a user replaceable part. However, if the system indicates a processor fan failure, the complete system board is replaced.

Figure 4-9

Fan Cooling Areas for the Workstation



CAUTION

If one of the fans in the fan areas shown in Figure 4-9 is not working as indicated by an LCD error message, you need to call your local Hewlett-Packard support representative. Continuing to operate your workstation with a bad fan will cause damage to the workstation. To determine the fan that needs to be replaced, see "LCD Fan Failures and Warnings" on page 193.



Removable Media Devices

There are only two internal removable media devices allowed in a B2000 workstation:

- CD drive
- 3.5-inch floppy disk drive.

The procedures provided in the subsequent sections explain how to install and remove removable media devices.

Installing a CD Drive

Install the CD drive by following the procedure covered in this section.

WARNING

Turn the workstation off and unplug the power cord before installing the CD drive.

Note that the installed CD drive will not need any jumpers set on the back of your CD drive, as they are set at the factory. However, if you bought a new CD drive to install in your workstation, you will have to make sure that the master/slave/CSEL jumper is set in the CSEL position. Since different manufacturers of CD drives have different locations for the CSEL jumper, look at the documentation that comes with your CD drive for the proper location of this jumper.

CAUTION

CD drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the CD drive kit. Always handle the drive carefully.

1. Perform the procedures in the sections "Opening the Front Panel" and "Opening the Left Side Panel." The front panel needs to be opened so you can insert the CD drive into its proper location in the chassis. The left side panel needs to be opened so you can get to the CD drive's audio, ATAPI and power connectors.



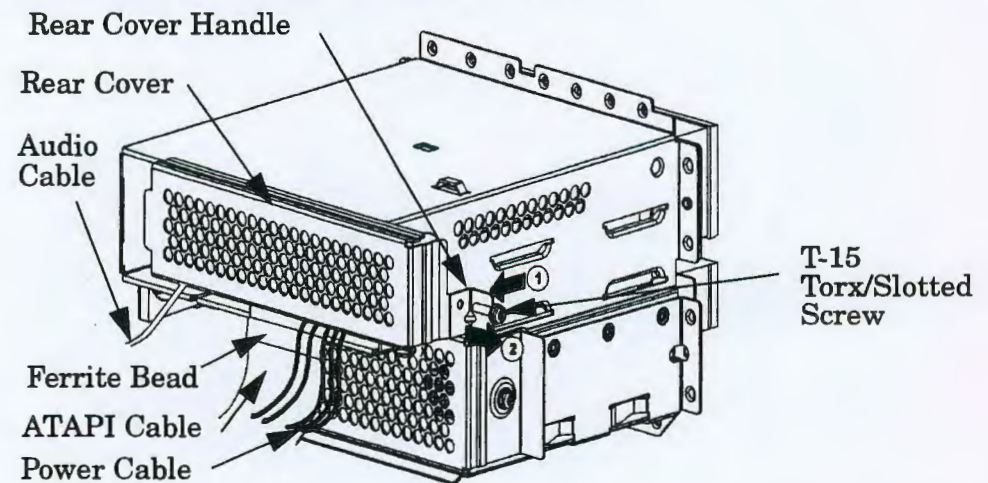
Changing Your Workstation's Hardware Configuration

Removable Media Devices

2. Remove the CD drive bay's rear cover by unscrewing the T-15 Torx/slotted screw as shown in Figure 4-10. Note that the CD drive's rear cover is located on the rear of the removable media chassis inside the workstation. Push the cover handle away from the rear of the removable media chassis approximately one inch. Next pull the cover handle toward you. The audio, ATAPI and power cables are now accessible to you.

Figure 4-10

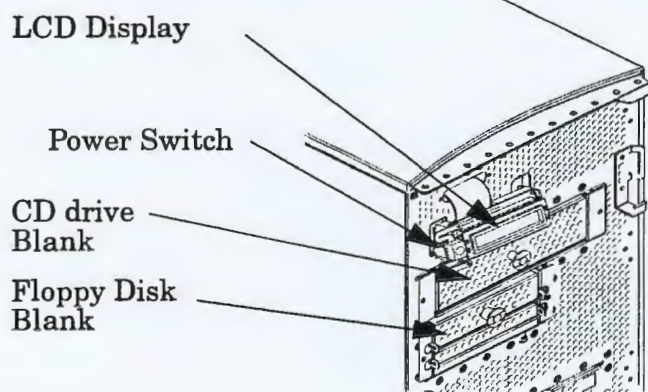
Removing the CD Drive Bay's Rear Cover



3. Rotate the workstation around until you see the front of the workstation as shown in Figure 4-11.

Figure 4-11

Front of Workstation with the Front Panel Removed



4. Remove both CD drive bracket screws (T-15 Torx/slotted screws) and pull the CD drive bracket out of the chassis assembly as shown in

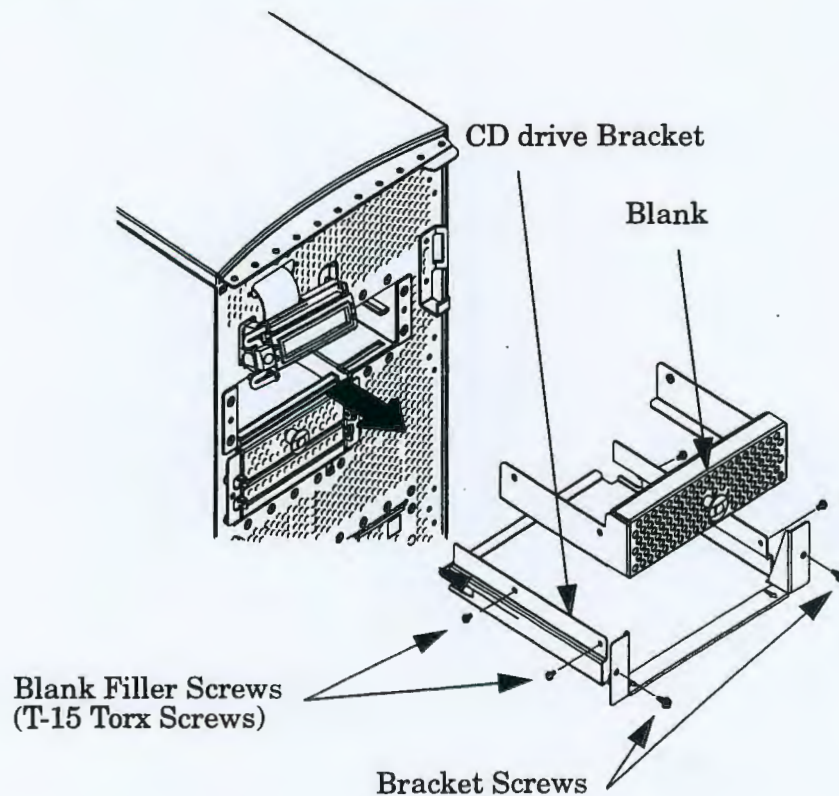
Changing Your Workstation's Hardware Configuration
Removable Media Devices



Figure 4-12. Next remove the four CD drive blank filler screws (T-15 Torx/slotted screws) as shown in Figure 4-12 and remove the blank filler from the bracket. You are now ready to mount the CD drive into the CD drive bracket. Note you will need the blank filler screws to mount the CD drive.

Figure 4-12

Removing the CD Drive Bracket and Blank



CAUTION

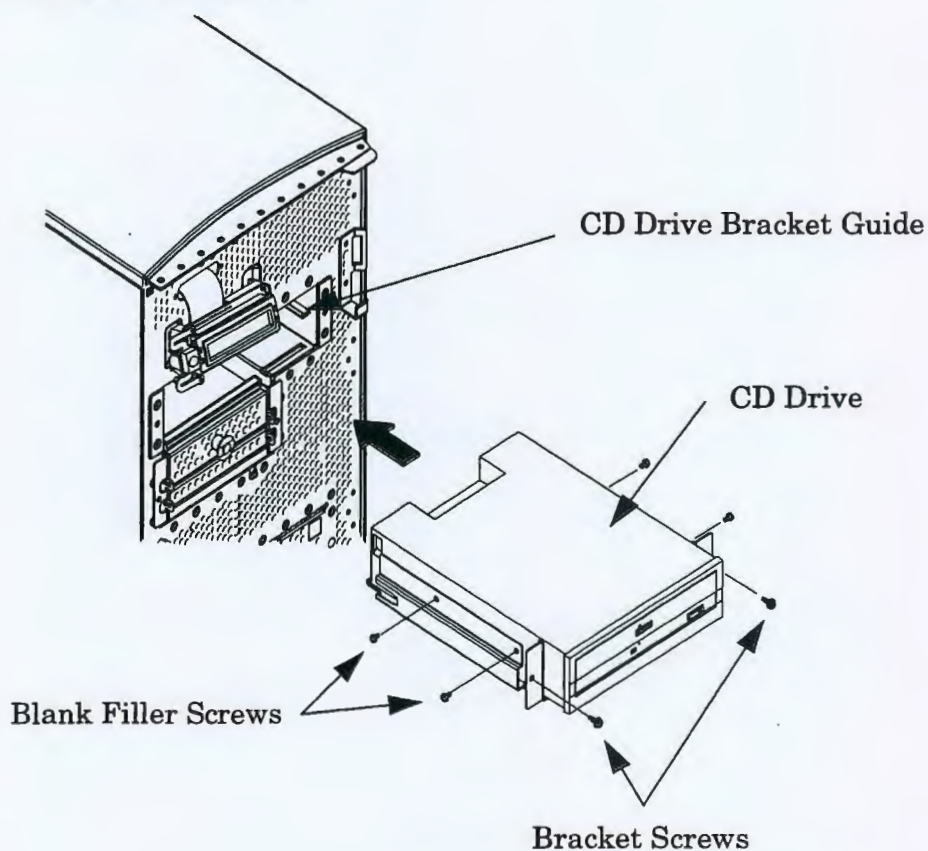
CD drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the CD drive kit. Always handle the drive carefully.



Changing Your Workstation's Hardware Configuration Removable Media Devices

5. Remove the CD drive from its shipping container and check to see that the jumper on the back of the CD drive is set to the C Select position. Using the four blank filler screws (T-15 Torx/slotted screws) that were just removed, mount the disk drive to the bracket as shown in Figure 4-13. The screws should be tightened using 6 inch-pounds of torque. Note that the CD drive should extend approximately one inch out from the front of the CD drive bracket.

Figure 4-13 **Installing the CD Drive**



6. Slide the CD drive and its bracket into the workstation chassis as shown in Figure 4-13. There are runners on the side of each bracket and guides inside the CD drive chassis that will help the assembly to slide into place.



Changing Your Workstation's Hardware Configuration Removable Media Devices

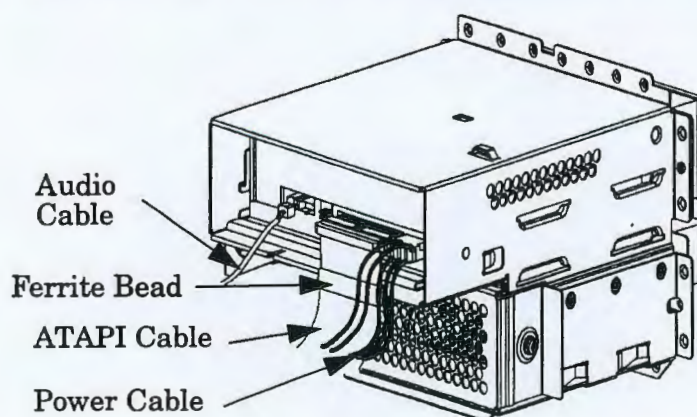
7. Plug the audio, ATAPI and power cables into their appropriate connectors. Note that the connectors are keyed for proper insertion. See Figure 4-14. To help with plugging in the audio connector, you can pull its cable through the back of the CD drive chassis to the front of the CD drive chassis and connect it. Note that you should connect the audio cable first.

NOTE

The red striped side of the data cable should be positioned next to the power cable.

Figure 4-14

Plugging in the Audio, ATAPI and Power Cables

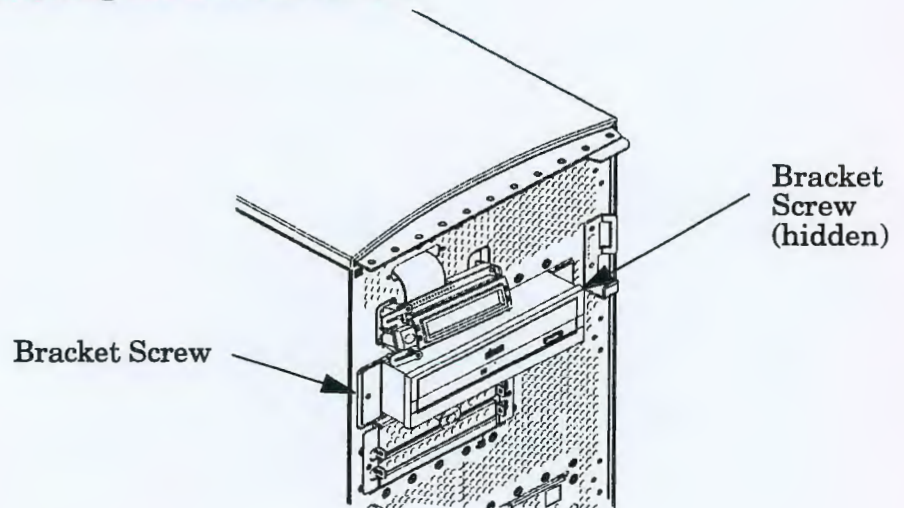


8. Tighten the two CD drive bracket screws as shown in Figure 4-15. The screws should be tightened using 6 inch-pounds of torque.



Changing Your Workstation's Hardware Configuration Removable Media Devices

Figure 4-15 Tightening the Bracket Screws



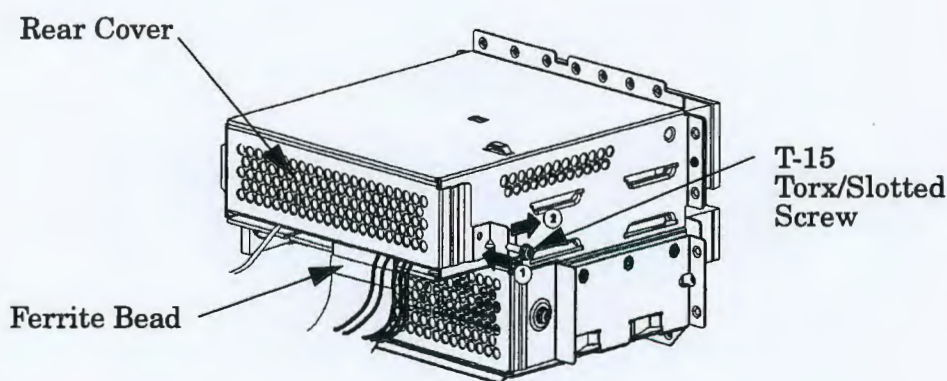
Changing Your Workstation's Hardware Configuration Removable Media Devices



9. Make sure that the audio, ATAPI and power cables are positioned so that they come out of the bottom edge of the CD drive bay's rear cover. This edge is rounded to prevent cutting of the cables. See Figure 4-16. Next, secure the CD drive bay's rear cover using the T-15 Torx/slotted screw. The screw should be tightened using 6 inch-pounds of torque. When you replace the rear cover, the ferrite bead on the ATAPI cable must remain outside of the CD drive bay's rear cover.

Figure 4-16

Replacing the CD Drive Bay's Rear Cover



10. Remove the plastic CD drive blank from the workstation's front panel.
11. Complete the installation of the CD drive by replacing the front and side panels of the workstation as explained in the sections "Closing the Left Side Panel" and "Closing the Front Panel" in this chapter. You should also make sure that all cables are positioned within the workstation so that they cannot be damaged.
12. Verify that the CD drive is recognized by the system. See the section "Verifying the CD Drive Operation" in Chapter 2, "Using Your CD Drive."



Changing Your Workstation's Hardware Configuration Removable Media Devices

Removing a CD Drive

This section explains how to remove a CD drive from your workstation.

WARNING

Turn the workstation off and unplug the power cord before removing the CD drive.

CAUTION

CD drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the CD drive kit. Always handle the drive carefully.

1. Perform the procedures in the sections "Opening the Front Panel" and "Opening the Left Side Panel." The front panel needs to be opened so you can remove the CD drive from the workstation chassis. The left side panel needs to be opened so you can get to the CD drive's audio, ATAPI and power connectors.



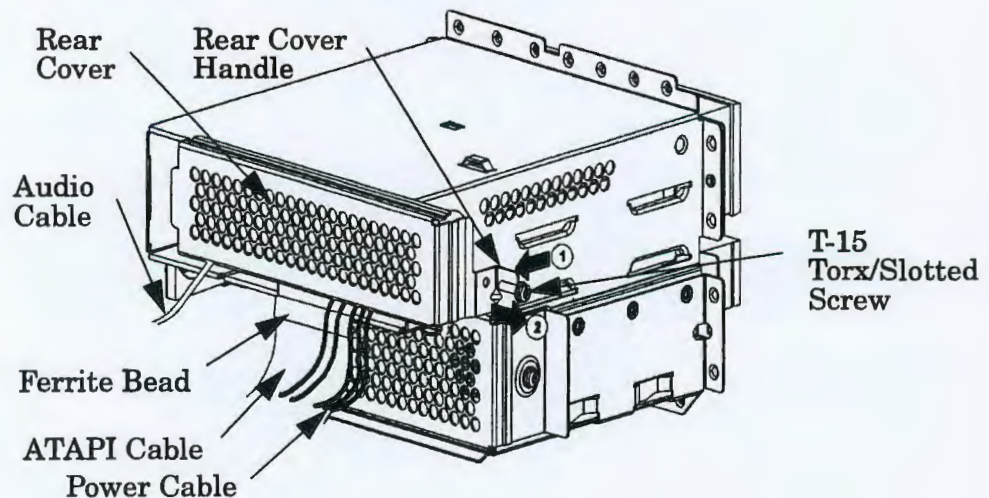
Changing Your Workstation's Hardware Configuration

Removable Media Devices

2. Remove the CD drive bay's rear cover by unscrewing the T-15 Torx/slotted screw as shown in Figure 4-17. Note that the CD drive bay's rear cover is located on the back of the removable media chassis inside the workstation. Push the cover handle away from the back of the removable media chassis approximately one inch. Next pull the cover handle toward you. The audio, ATAPI and power cables are now accessible to you. Disconnect these cables from the CD drive.

Figure 4-17

Removing the CD Drive Bay's Rear Cover

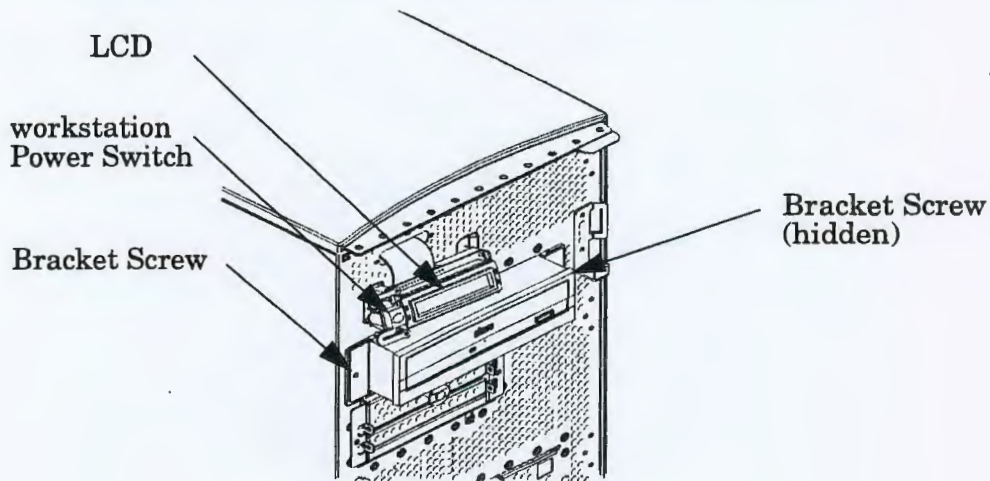




Changing Your Workstation's Hardware Configuration Removable Media Devices

3. Rotate the workstation around until you see the front of the unit as shown in Figure 4-18.

Figure 4-18 **Front of the Workstation with the Front Panel Removed**

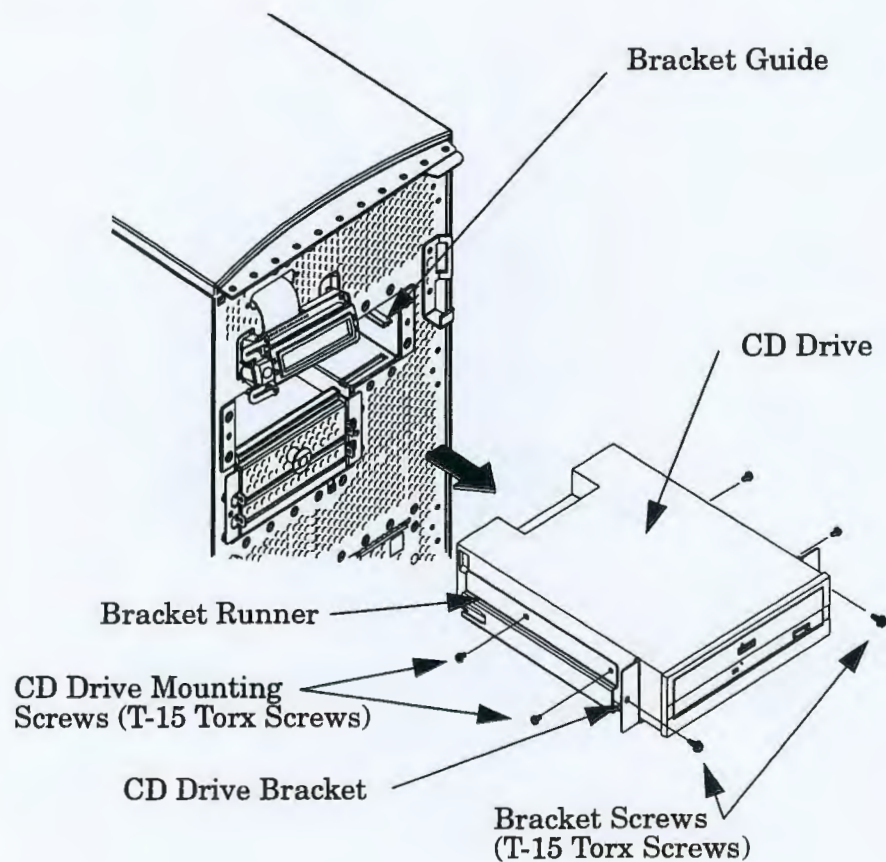




4. Remove both CD drive bracket screws (T-15 Torx/slotted screws) and pull the CD drive out of the chassis assembly as shown in Figure 4-19. Next remove the four CD drive mounting screws (T-15 Torx/slotted screws) as shown in Figure 4-19 and remove the CD drive from the bracket. You are now ready to attach the CD drive blank to the CD drive bracket.

Figure 4-19

Removing the CD Drive

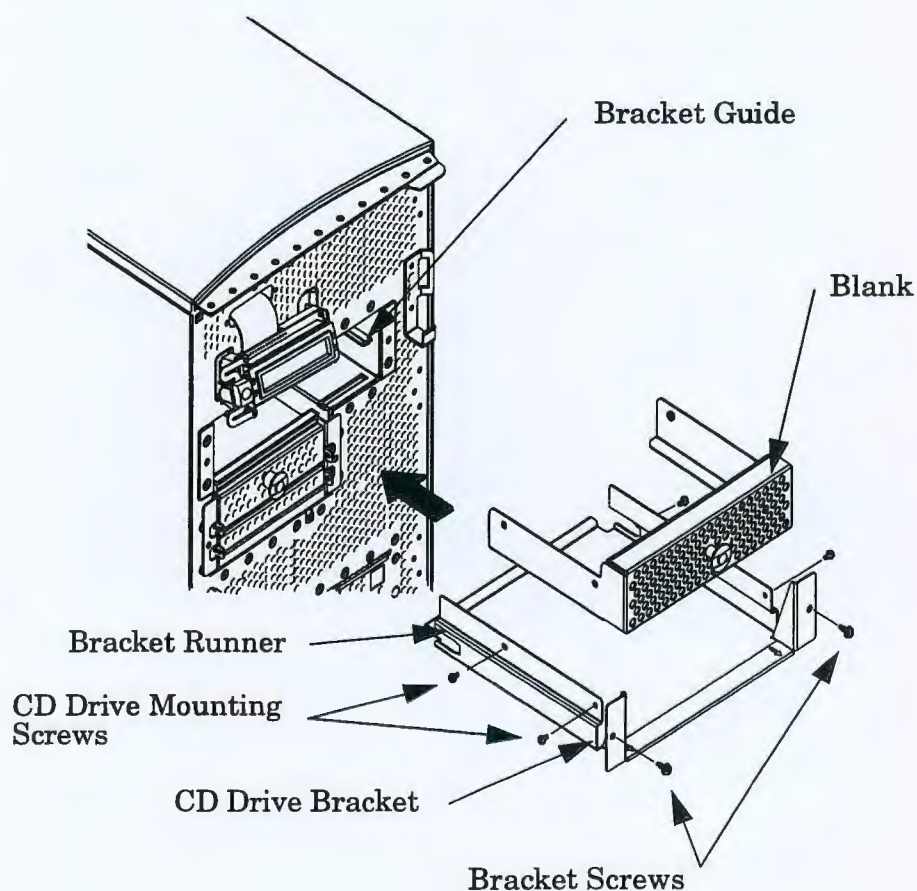




Changing Your Workstation's Hardware Configuration Removable Media Devices

5. Insert the CD drive blank in the CD drive bracket and tighten the four CD drive mounting screws (T-15 Torx/slotted screws) using 6 inch-pounds of torque. This will secure the CD drive blank in place. Align the bracket runners and bracket guides and slide the CD drive blank and bracket into place. See Figure 4-20.

Figure 4-20 **Installing the CD Drive Blank**



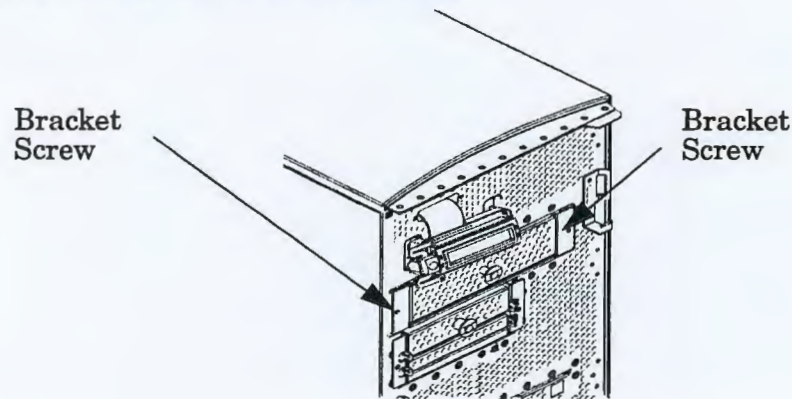
Changing Your Workstation's Hardware Configuration
Removable Media Devices



6. Tighten the two CD drive bracket screws as shown in Figure 4-21. These should be tightened using 6 inch-pounds of torque.

Figure 4-21

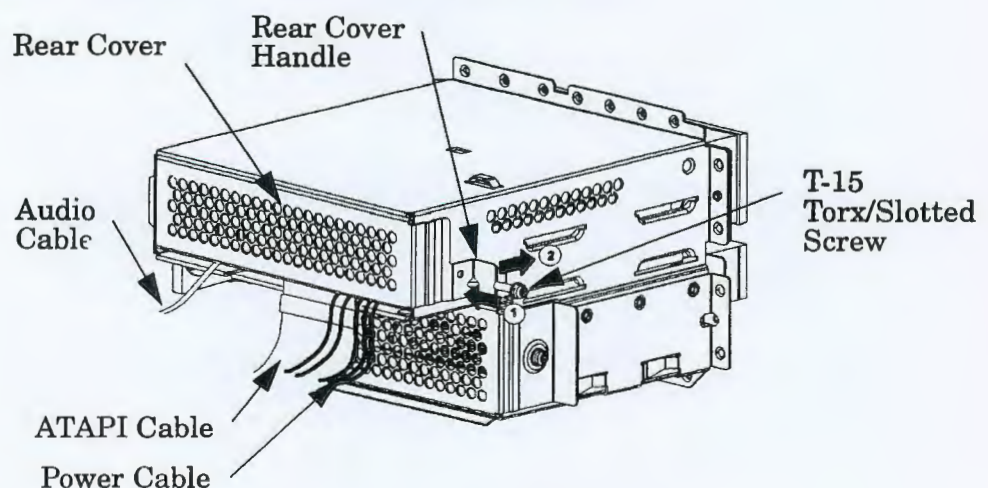
Tightening the Bracket Screws



7. Place the audio, ATAPI and power cables inside the CD drive bay, and position the cables so that they go under the bottom edge of the CD drive bay's rear cover. The CD drive bay's rear cover's edge is rounded to keep you from cutting the cables. See Figure 4-22. Next, place the end opposite the rear cover handle into the cover slot, rotate it into place, and tighten the T-15 Torx/slotted screw using 6 inch-pounds of torque. This will secure the rear cover in place. See Figure 4-22. You have completed the removal of the CD drive.

Figure 4-22

Replacing the CD Drive Bay's Rear Cover





Changing Your Workstation's Hardware Configuration Removable Media Devices

8. Replace the plastic CD drive blank in the workstation's front panel.
9. Replace the left side panel and front panel of the workstation as explained in the sections "Closing the Left Side Panel" and "Closing the Front Panel" in this chapter.

Installing a Floppy Disk Drive

Install the floppy disk drive by following the procedure covered in this section. Note that there are no jumper settings required for the installation of the floppy disk drive.

WARNING

Turn the workstation off and unplug the power cord before installing the floppy disk drive.

CAUTION

Floppy disk drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy disk drive kit. Always handle the drive carefully.

1. Perform the procedures in the sections "Opening the Front Panel" and "Opening the Left Side Panel." The front panel needs to be opened so you can insert the floppy disk drive into its proper location in the chassis. The left side panel needs to be opened so you can get to the floppy's data connector and its power connector.



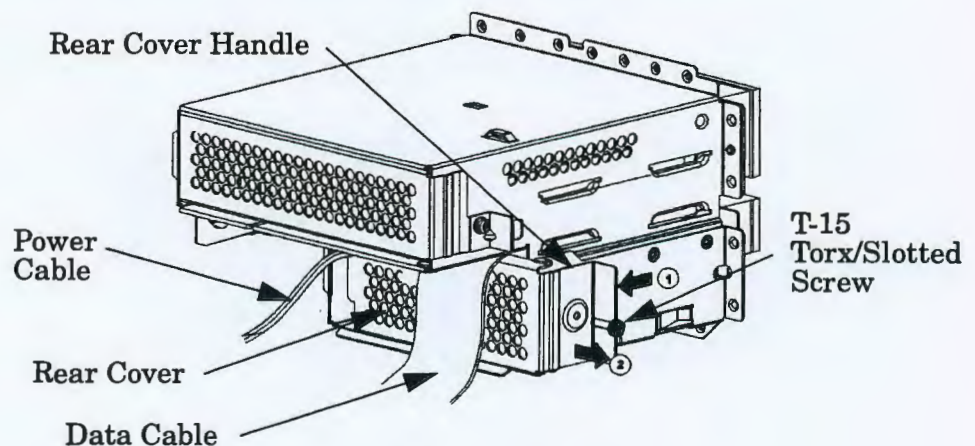
Changing Your Workstation's Hardware Configuration
Removable Media Devices



2. Remove the floppy disk drive bay's rear cover by unscrewing the T-15 Torx screw as shown in Figure 4-23. Note that the floppy disk drive bay's rear cover is located on the rear of the removable media chassis inside the workstation. Push the cover handle away from the rear of the removable media chassis approximately one inch. Next pull the cover handle toward you. The floppy data cable and power cable are now accessible to you.

Figure 4-23

Removing the Floppy Disk Drive Bay's Rear Cover



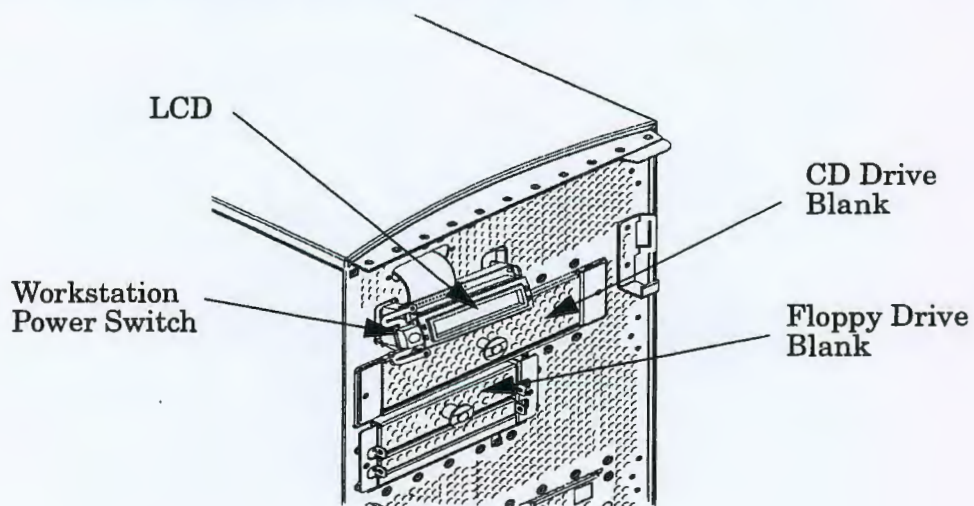
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Changing Your Workstation's Hardware Configuration Removable Media Devices

3. Rotate the workstation around until you see the front of the workstation as shown in Figure 4-24.

Figure 4-24 Front of Workstation with the Front Panel Removed



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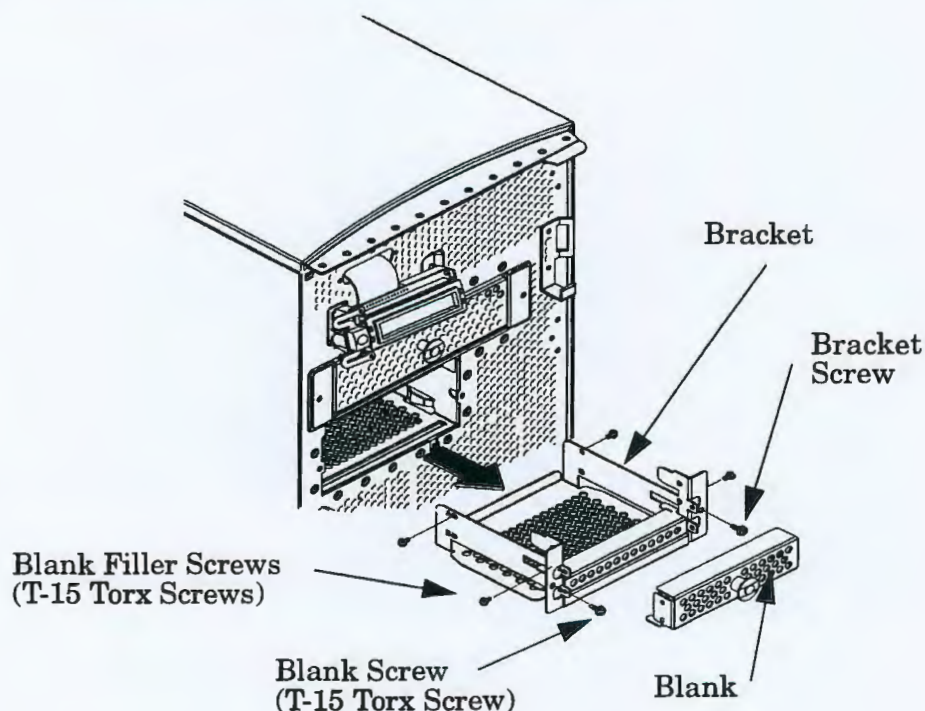


Changing Your Workstation's Hardware Configuration Removable Media Devices

4. Remove both floppy disk bracket screws (T-15 Torx/slotted screws) and pull the floppy disk bracket out of the chassis assembly as shown in Figure 4-25. Next remove the four floppy disk blank filler screws (T-15 Torx/slotted screws) as shown in Figure 4-25 and remove the blank from the bracket. You are now ready to mount the floppy disk drive into the floppy disk bracket.

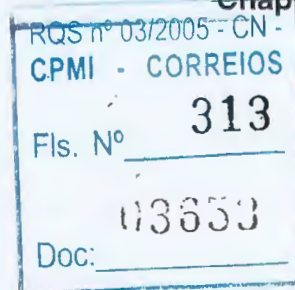
Figure 4-25

Removing the Floppy Disk Bracket and Blank



CAUTION

Floppy disk drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy disk drive kit. Always handle the drive carefully.





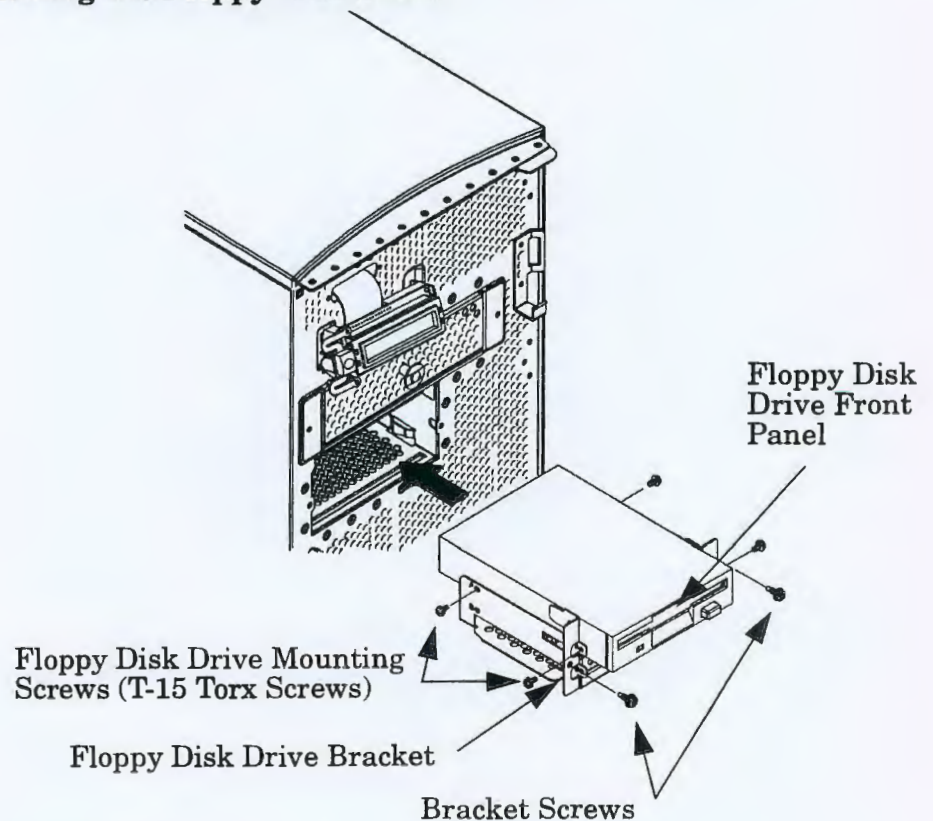
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Changing Your Workstation's Hardware Configuration Removable Media Devices

5. Remove the floppy disk drive from its shipping container. Using the four T-15 Torx/slotted blank filler screws, mount the disk drive to the bracket as shown in Figure 4-26.

To help you properly install the floppy disk drive, you need to use the floppy disk drive holes labeled "A" on the bracket sides. The first T-15 Torx screws should be inserted through the tab holes of the floppy disk drive bracket that are located on the front part of both sides of the bracket. These T-15 Torx screws should then be screwed into the screw holes located on both sides of the floppy disk drive. These holes are located near the floppy disk drive's front panel. The remaining T-15 Torx screws should be inserted through the holes labeled "A" at the back part of the floppy disk drive bracket. These screws should then be screwed into the rear screw holes located on both sides of the floppy disk drive. The front of the floppy disk drive should extend one inch from the front of the floppy disk drive bracket. See Figure 4-26.

Figure 4-26 **Installing the Floppy Disk Drive**



6. Slide the floppy disk drive and its bracket into the workstation

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chassis as shown in Figure 4-26.

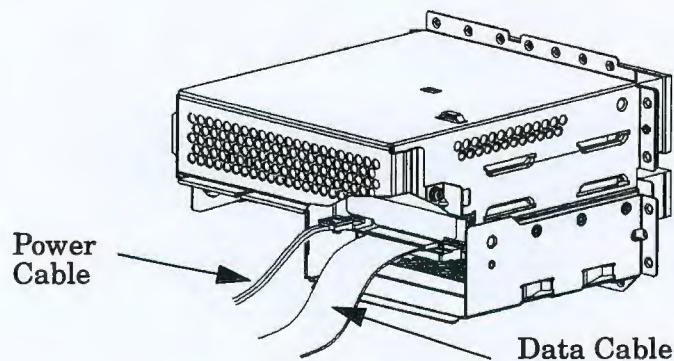
7. Plug the floppy power cable into its connector. Next, plug the data cable into its connector. Note that the connectors are keyed for proper insertion. See Figure 4-27.

NOTE

The red striped side of the floppy data cable is positioned toward the power cable.

Figure 4-27

Plugging in the Floppy Data and Power Cables

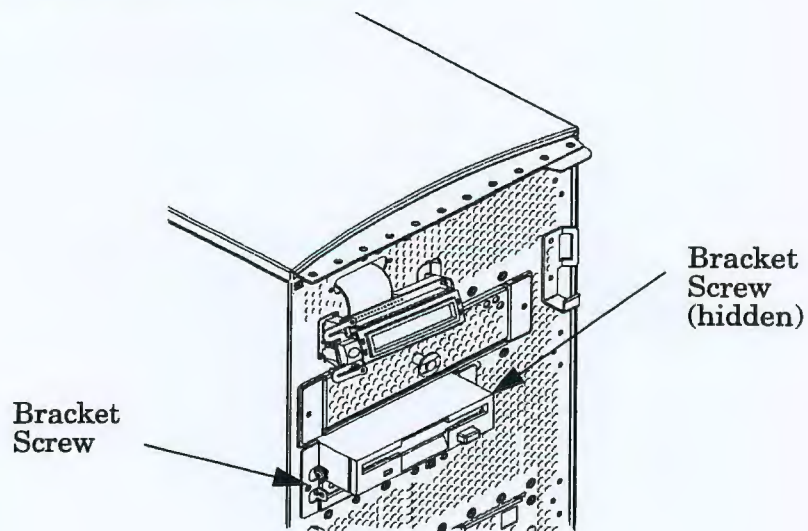


8. Tighten the two floppy disk drive bracket screws as shown in Figure 4-28.



Changing Your Workstation's Hardware Configuration
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Figure 4-28 Tightening the Bracket Screws



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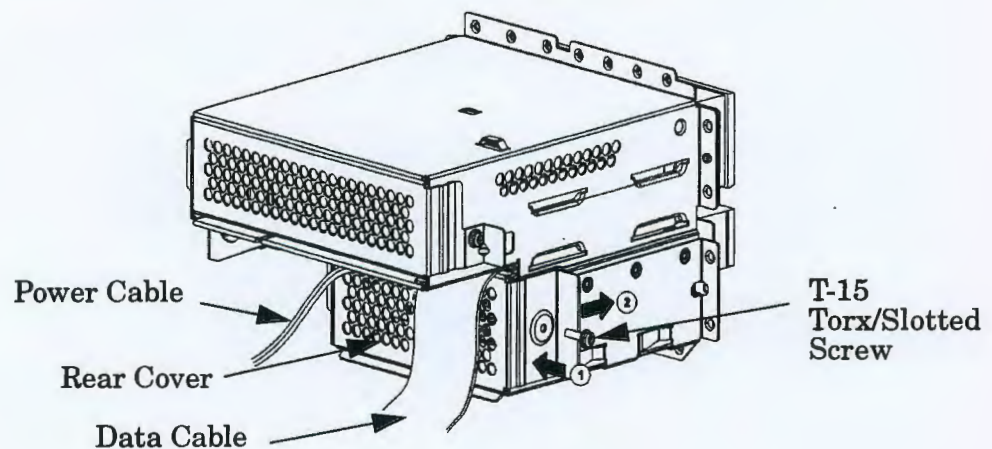
Changing Your Workstation's Hardware Configuration
Removable Media Devices



9. Make sure that the floppy data and power cables are positioned so that they come out of the top edge of the floppy disk drive bay's rear cover. This edge is rounded to prevent cutting of the cables. See Figure 4-29. Next, secure the floppy disk drive bay's rear cover using the T-15 Torx/slotted screw. You should tighten the screws using 6 inch-pounds of torque. When you replace the rear cover, the ferrite bead on the data cable must remain inside of the floppy disk drive bay's rear cover.

Figure 4-29

Replacing the Floppy Disk Drive Bay's Rear Cover



10. Remove the plastic floppy disk drive blank from the workstation's front panel.
11. Complete the installation of the floppy disk drive by replacing the front and side panels of the workstation as explained in the sections "Closing the Left Side Panel" and "Closing the Front Panel" in this chapter. You should also make sure that all cables are positioned within the workstation so that they do not hang loosely. This will prevent damage to the cables.
12. Verify that the floppy disk drive is recognized by the system. See the section "Verifying the Floppy Drive Configuration" in Chapter 3, "Using Your 3.5-Inch Floppy Disk Drive."



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Changing Your Workstation's Hardware Configuration Removable Media Devices

Removing a Floppy Disk Drive

This section explains how to remove a floppy disk drive from your workstation.

WARNING

Turn the workstation off and unplug the power cord before removing the floppy disk drive.

CAUTION

Floppy disk drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy disk drive kit. Always handle the drive carefully.

1. Perform the procedures in the sections "Opening the Front Panel" and "Opening the Left Side Panel." The front panel needs to be opened so you can remove the floppy disk drive from the workstation chassis. The left side panel needs to be opened so you can get to the floppy disk drive's data connector and its power connector.

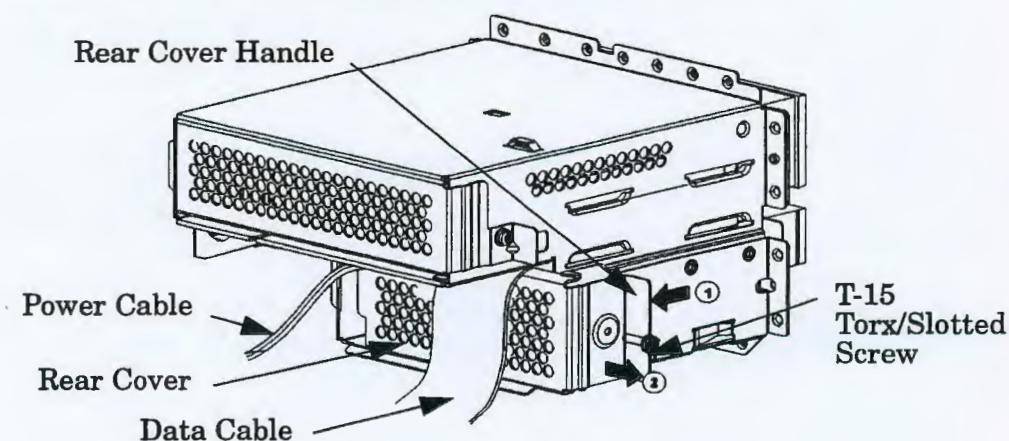


Changing Your Workstation's Hardware Configuration Removable Media Devices

2. Remove the floppy disk drive bay's rear cover by unscrewing the T-15 Torx/slotted screw as shown in Figure 4-30. Note that the floppy disk drive bay's rear cover is located on the rear of the removable media chassis inside the workstation. Push the cover handle away from the rear of the removable media chassis approximately one inch. Next pull the cover handle toward you. Remove the floppy data and power cables from their connectors.

Figure 4-30

Removing the Floppy Disk Drive Bay's Rear Cover



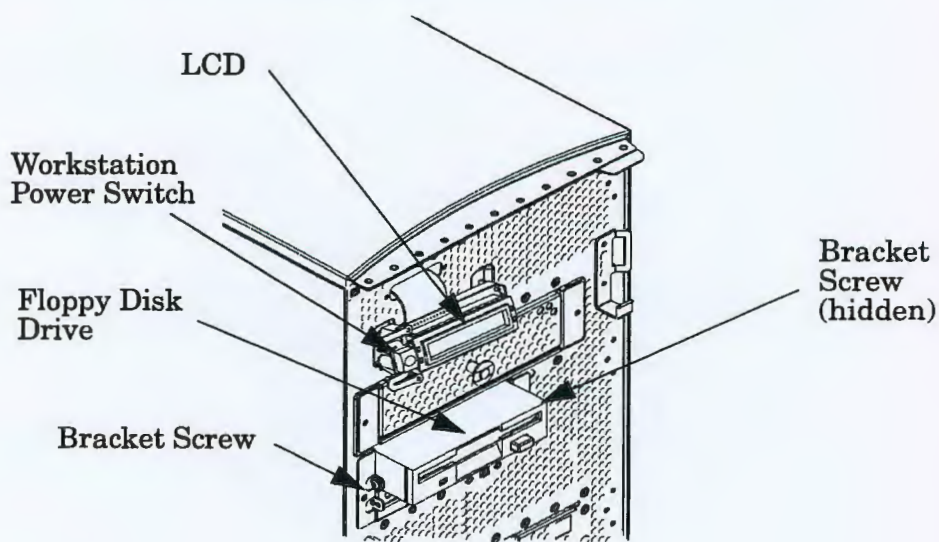


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Changing Your Workstation's Hardware Configuration Removable Media Devices

3. Rotate the workstation around until you can see the front of the workstation as shown in Figure 4-31.

Figure 4-31 Front of Workstation with the Front Panel Removed



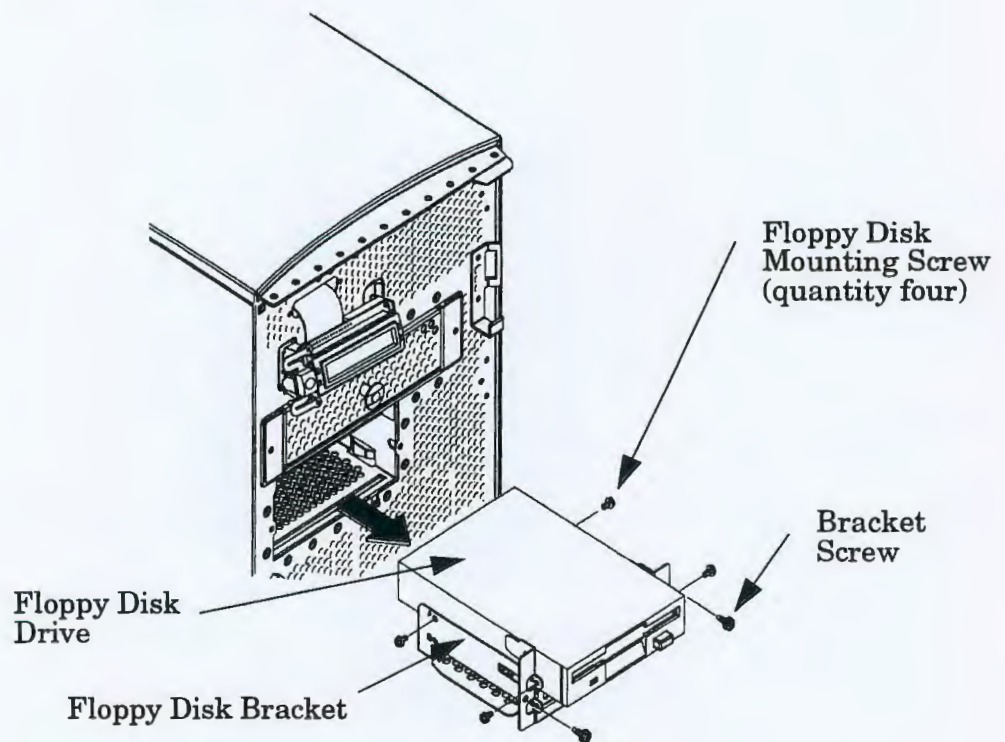
Changing Your Workstation's Hardware Configuration
Removable Media Devices



4. Remove both floppy disk bracket screws (T-15 Torx/slotted screws) and pull the floppy disk drive out of the chassis assembly as shown in Figure 4-32. Next remove the four floppy disk drive mounting screws (T-15 Torx/slotted screws) as shown in Figure 4-32 and remove the floppy disk drive from the bracket. You are now ready to attach the floppy disk drive blank to the floppy disk drive bracket.

Figure 4-32

Removing the Floppy Disk Drive



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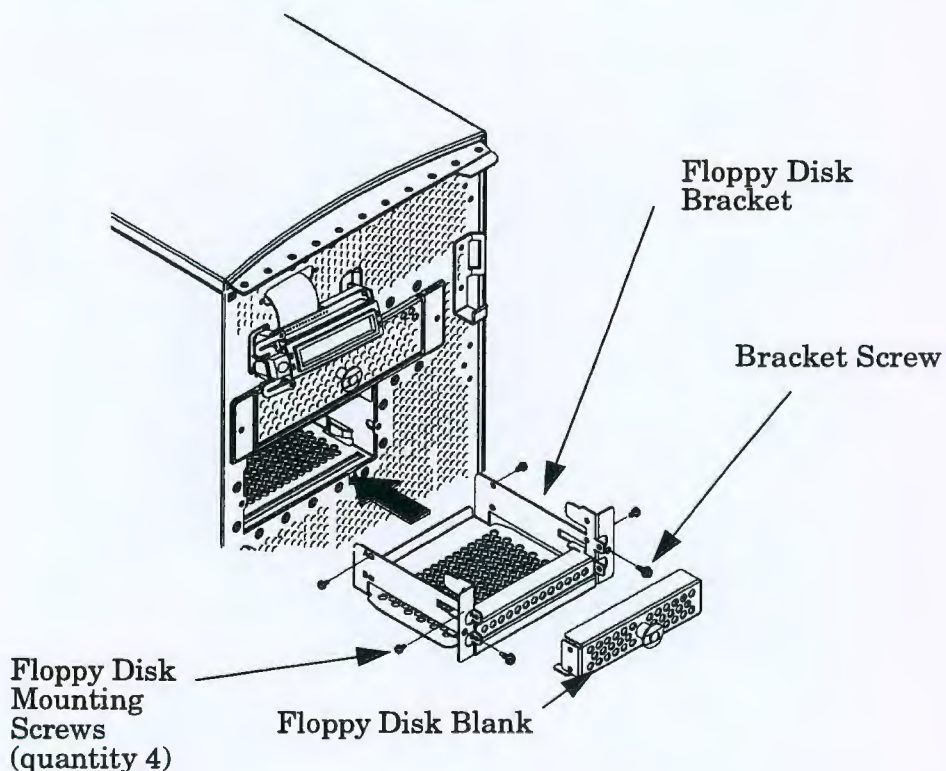


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Changing Your Workstation's Hardware Configuration Removable Media Devices

5. Place the floppy disk blank in the floppy disk bracket and insert the four floppy disk mounting screws (T-15 Torx/slotted screws) into the bracket and tighten. See Figure 4-33.

Figure 4-33 **Installing the Floppy Disk Blank and Bracket**



6. Slide the floppy disk blank and its bracket into the workstation chassis as shown in Figure 4-33.

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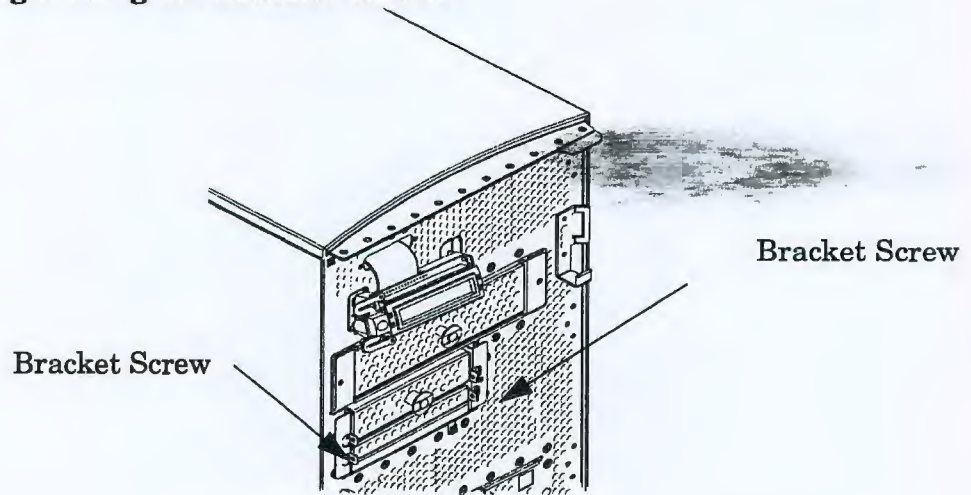
Changing Your Workstation's Hardware Configuration Removable Media Devices



7. Tighten the two floppy disk bracket screws as shown in Figure 4-34.

Figure 4-34

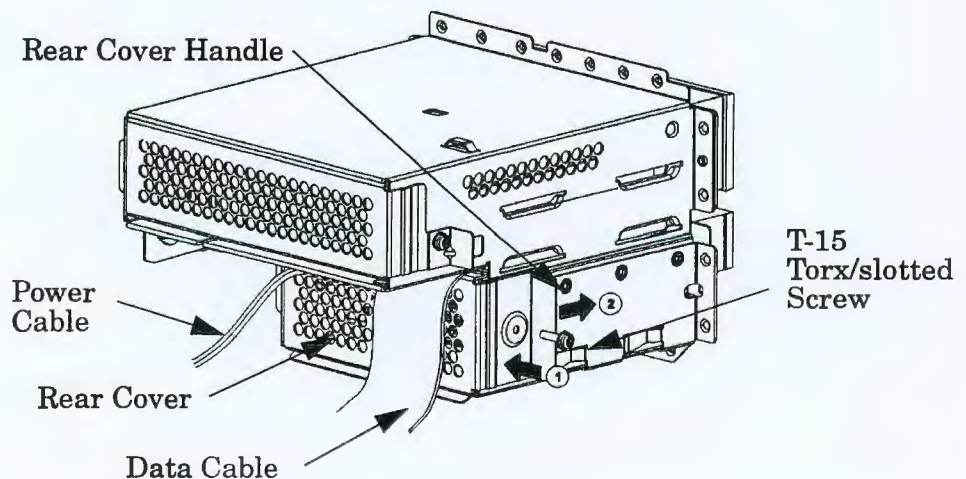
Tightening the Bracket Screws



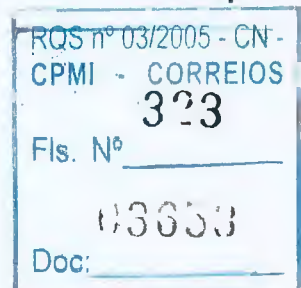
8. Make sure that the floppy data and power cables are positioned so that they come out of the top edge of the rear floppy disk drive bay's cover. This edge is rounded to prevent cutting of the cables. See Figure 4-35. Put the rear cover in place and tighten the T-15 Torx/slotted screw.

Figure 4-35

Replacing the Rear Floppy Disk Drive Bay's Cover



9. Replace the plastic floppy disk drive blank in the workstation's front





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Removable Media Devices

panel.

10. Complete the removal of the floppy disk drive by replacing the front and side panels of the workstation as explained in the sections "Closing the Left Side Panel" and "Closing the Front Panel" in this chapter. You should also make sure that all cables are positioned within the workstation so that they do not hang loosely. This will prevent damage to the cables.

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Hard Disk Drives

This section describes how to install a hard disk drive in your workstation and how to remove it from your workstation. The first section details how to install a hard disk drive. The second section details how to remove a hard disk drive. The final section explains how to configure your hard disk after it is installed.

Your workstation can have two internal hard disk drives. These internal hard disk drives are devices on the Ultra2 Wide Low-Voltage Differential SCSI bus. The hard disk drive that came with your workstation was set to SCSI ID 6 on the Ultra2 Wide Low-Voltage Differential SCSI bus. If you are adding a second internal hard disk drive, the second hard disk drive will use SCSI ID 5 on the Ultra2 Wide Low-Voltage Differential SCSI bus. Note that the two slots for the hard disk drives have SCSI ID numbers 5 and 6 preassigned to them and SCSI ID 6 is the system disk. You will not be able to change these SCSI ID numbers.

CAUTION

Hard disk drives are susceptible to mechanical and electronic shock. When handling the drive, always wear the static-grounding wrist strap that came in the disk drive kit. Always handle the drive carefully.

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Changing Your Workstation's Hardware Configuration Hard Disk Drives

Installing a Hard Disk Drive

This procedure explains how to install your hard disk drive in the slot that has been preassigned SCSI ID 5. On internal hard disk drives, the slot determines the addressing. There are no cables required when installing a hard disk drive. Note that to install the hard disk drive, your workstation must be turned off.

NOTE

If you are installing a hard disk drive, you will need to mount it and create a file system on it. See "Configuring a Hard Disk Drive as a File System" on page 127. This should be done after you have installed the hard disk drive.

To mount a hard disk drive and create a file system on it use the procedure provided in the section "Adding a Hard Disk Drive as a File System Using SAM" found in this chapter.

-
1. Remove the side panel of your workstation using the instructions found in the section "Opening the Side Panel." As you face the workstation system board, the hard disk drives are on the right side. The hard disk drive plugged into the lower SCSI connector (ID 5) is the one discussed in this section. See Figure 4-36.

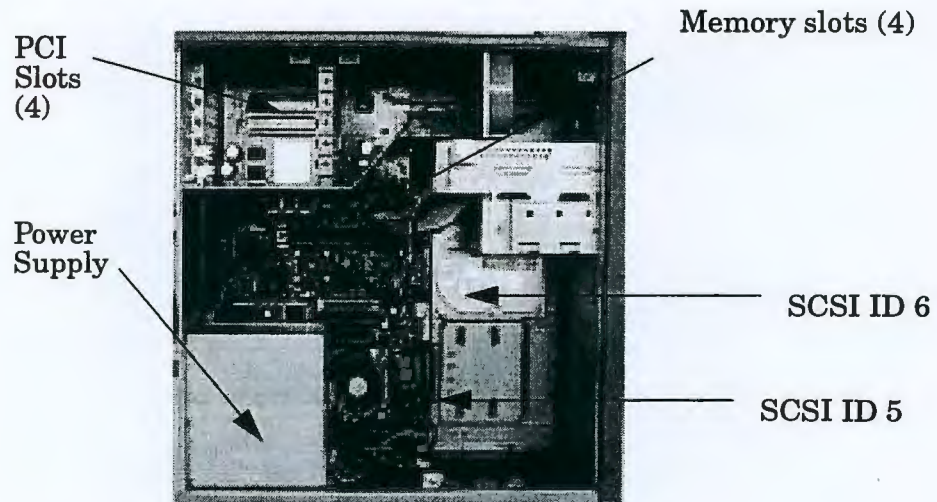


Changing Your Workstation's Hardware Configuration
Hard Disk Drives



Figure 4-36

The Hard Drive Slots



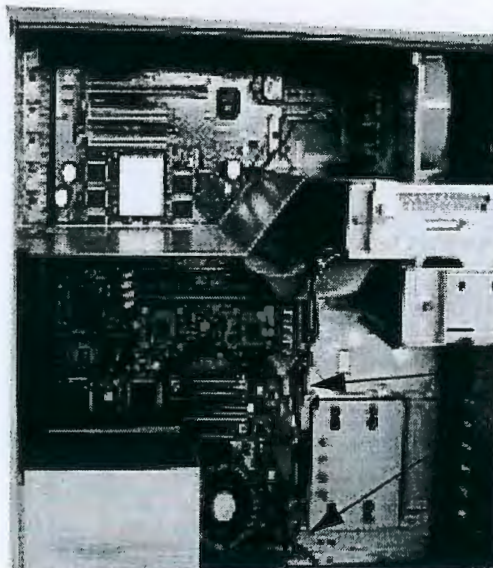
2. Loosen the captive T-15 Torx thumbscrew securing the disk drive tray to the system board. As you grasp the tray and slide to the front of the workstation, the tray will unseat from the chassis rail. See Figure 4-37. You may need to angle the disk drive tray slightly to disengage the hooks as you slide it along the rail.



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Hard Disk Drives

Figure 4-37 Removing the Hard Disk Drive Bracket



Captive T-15 Torx
Thumbscrews

3. Mount the hard disk drive on the hard drive bracket using the four T-15 Torx shoulder screws that are stored on the mounting bracket. See Figure 4-38 for location of the shoulder screws and Figure 4-39 for positioning the bracket to the hard disk drive.

Changing Your Workstation's Hardware Configuration
Hard Disk Drives



Figure 4-38

T-15 Torx Shoulder Screws

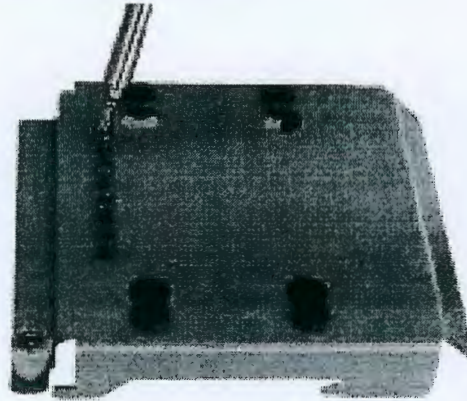
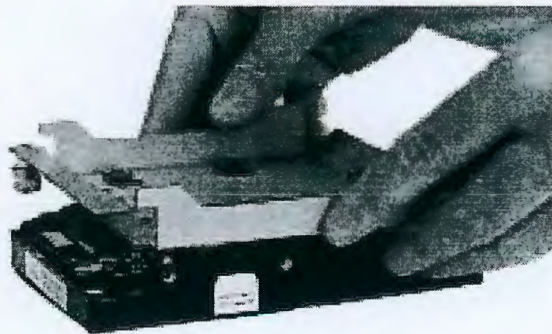


Figure 4-39

Positioning the Bracket to the Hard Disk Drive



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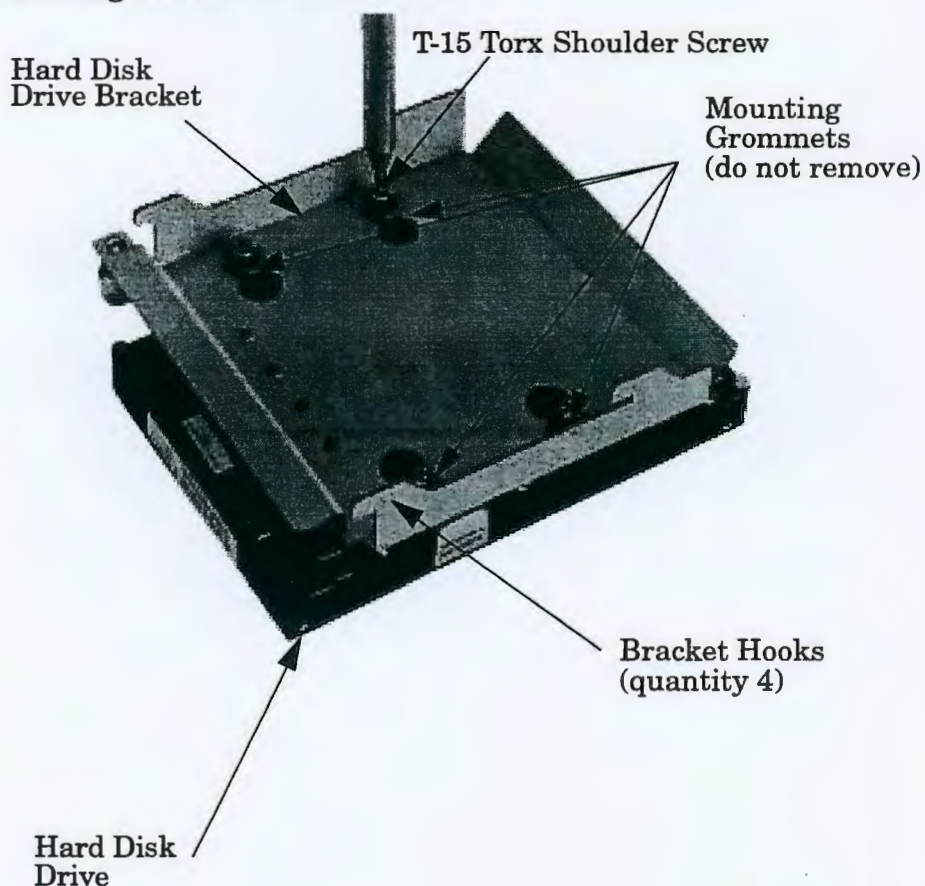


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Changing Your Workstation's Hardware Configuration Hard Disk Drives

4. Insert the T-15 Torx Hard Disk Mounting Screws through the rubber mounting grommets and into the screw holes located on the sides of the hard disk drive. See Figure 4-40.

Figure 4-40 Inserting the Hard Disk Drive



5. Slide the assembly into its hard drive slot, and push inward firmly until the front of the hard disk drive bracket is flush with the disk drive connector on the system board. See Figure 4-41. The bracket hooks will lock into the chassis rail. The side panel should now be replaced as described in the section "Closing the Side Panel" in this chapter.

Changing Your Workstation's Hardware Configuration Hard Disk Drives



Figure 4-41

Positioning the Hard Disk Drive Assembly





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Changing Your Workstation's Hardware Configuration Hard Disk Drives

Removing a Hard Disk Drive

This procedure explains how to remove your hard disk drive. Note that there are no cables to disconnect when removing a hard disk drive. To remove a hard disk drive, your workstation must be turned off.

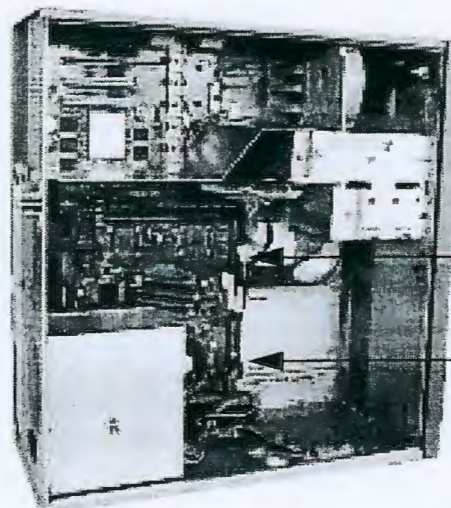
NOTE

If you are removing a hard disk drive that has a mounted file system on it, you will need to unmount it. This should be done before you remove the hard disk drive.

To unmount a file system on a hard disk drive use the procedure provided in the section "Removing a Hard Disk Drive as a File System Using SAM" found in this chapter.

1. Open the side panel of your workstation using the instructions found in the section "Opening the Side Panel." As you face the workstation system board, the hard disk drives are on the right side. The lower slot (ID5) on the right is the one discussed in this section. See Figure 4-42.

Figure 4-42 **The Hard Drive Slots**



Hard Disk Drive
SCSI slots

SCSI ID 6

SCSI ID 5

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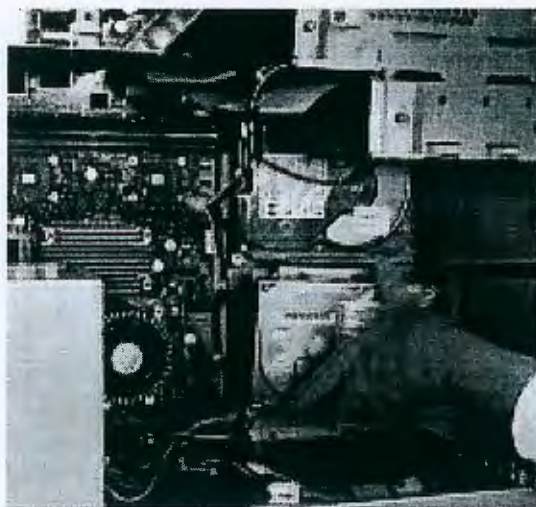


Changing Your Workstation's Hardware Configuration Hard Disk Drives

2. Loosen the T-15 Torx thumbscrew securing the disk drive tray to the system board. As you grasp the bracket and slide to the front of the workstation, the bracket will unseat from the chassis rail. See Figure 4-43. You may need to angle the disk drive bracket slightly to disengage the hooks as you slide it along the rail.

Figure 4-43

Removing the Hard Disk Drive



Captive T-15 Torx Thumbscrew

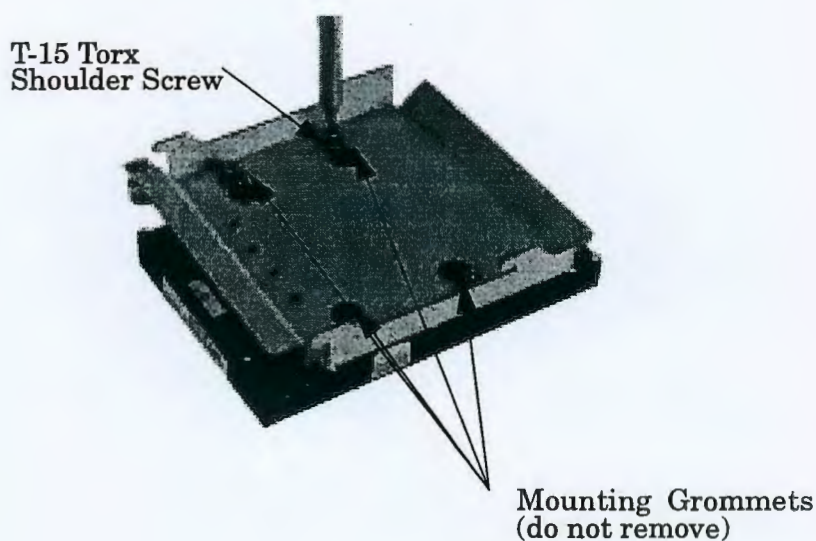
Changing Your Workstation's Hardware Configuration

Hard Disk Drives



3. Remove the four T-15 Torx shoulder screws from the hard disk drive and bracket. See Figure 4-44. You should be careful when removing the hard disk drive from its mounting bracket to avoid damaging it. Note that in order to remove the T-15 Torx screws from the sides of the hard disk drive you will have to have a T-15 Torx driver that is long enough to fit through the access holes on the sides of the hard disk drive bracket.

Figure 4-44 **Removing the Hard Disk Drive from Its Bracket**



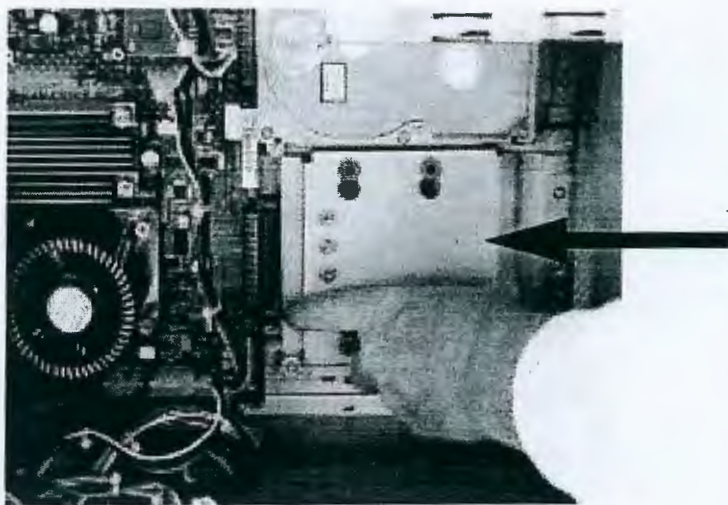


Changing Your Workstation's Hardware Configuration Hard Disk Drives

4. Replace the four mounting screws on the hard disk drive bracket to store them for future use. Slide the mounting bracket into its hard drive slot, and push firmly inward to secure the hard drive bracket to the system board connector. Tighten the T-15 Torx thumbscrew to secure the bracket to the system board. See Figure 4-45. The side panel should now be replaced as explained in the section "Closing the Left Side Panel" on page 80 in this chapter.

Figure 4-45

Replacing the Hard Disk Drive Bracket





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Changing Your Workstation's Hardware Configuration Hard Disk Drives

Configuring a Hard Disk Drive as a File System

This section describes how to add a hard disk drive to your workstation as a file system using SAM and how to remove the hard disk drive from your workstation. For more information about configuring a hard disk drive, refer to the manual *Managing Systems and Workgroups*.

The procedures in this section require you to log in as root. If you cannot log in as root, contact your system administrator.

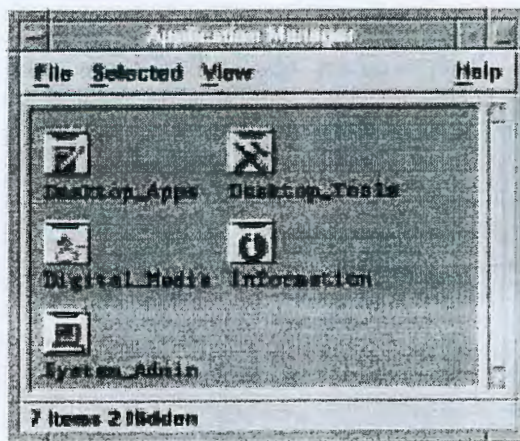
Adding a Hard Disk Drive as a File System Using SAM

Here is the procedure you need to follow to add a hard disk drive as a file system using SAM.

1. Log in as root.
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute `sam` at a terminal window command prompt and skip to step 5.



3. Double click on the **System_Admin** icon in the **Application Manager** window.

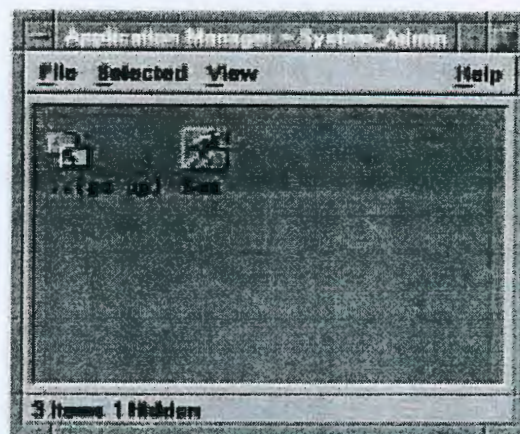


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Changing Your Workstation's Hardware Configuration Hard Disk Drives



4. Double click on the **Sam** icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Disks and File Systems** icon.



6. Double click on the **Disk Devices** icon.

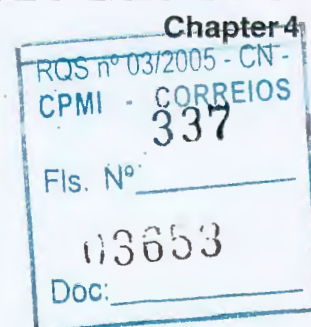


The following screen message is displayed:

Scanning the system's hardware...

The **Disk and File Systems** window opens containing a list of drives installed in this workstation. From the list of devices, choose the hard disk drive you would like to configure as a file system by clicking on the device to highlight it.

7. Click on **Add** in the **Actions** menu. For this example you will select the item **Not Using the Logical Volume Manager**. However, you can select any appropriate item from the **Actions** menu.





Changing Your Workstation's Hardware Configuration Hard Disk Drives

8. Enter the mount directory name (for example, /disk1) in the **Mount Directory** field of the **Add Disk without LVM** window.
9. Click on the **OK** button in the **Add Disk without LVM** window. You will need to wait for a short time before the new file system is created and the hard disk drive is mounted. When the **Add Disk without LVM** window disappears and HFS appears in the Use column of the **Disk and File Systems** window, your task will be complete.

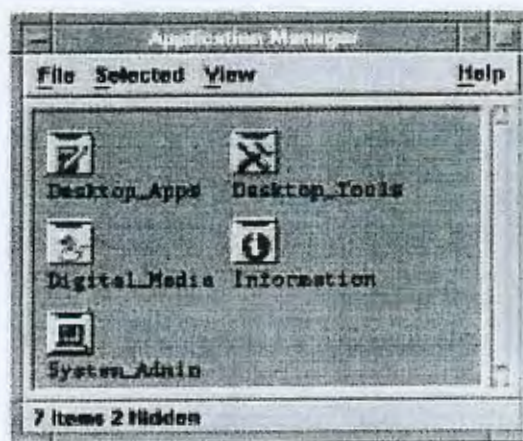
Removing a Hard Disk Drive as a File System Using SAM

Here is the procedure you need to follow to remove a hard disk drive as a file system using SAM.

1. Log in as root.
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute sam at a terminal window command prompt and skip to step 5.



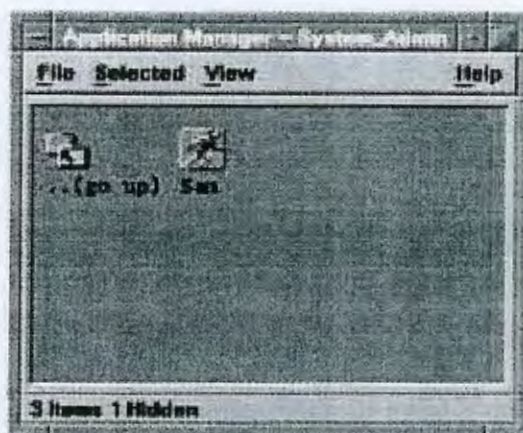
3. Double click on the **System_Admin** icon in the **Application Manager** window.



Changing Your Workstation's Hardware Configuration Hard Disk Drives



4. Double click on the Sam icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Disks and File Systems** icon.



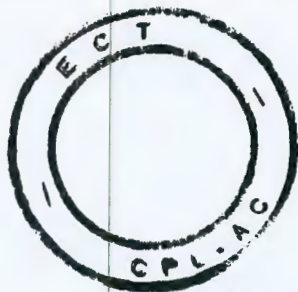
6. Double click on the **Disk Devices** icon.



The following screen message is displayed:

Scanning the system's hardware...

The **Disk and File Systems** window opens containing a list of devices installed in this workstation. From the list of devices, choose the hard disk drive you would like to remove (unmount) by highlighting that device.



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Changing Your Workstation's Hardware Configuration Hard Disk Drives

7. Click on **Remove** in the **Actions** menu. In the window that next appears, click on the **Yes** button. This will unmount the file system located on the hard disk drive you are removing from the workstation. You will need to wait for a short time before the new file system is unmounted. The file system is successfully unmounted when you see Unused in the Use column.

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Memory Cards

This section contains information regarding the installation and removal of memory (DIMM¹ cards). However, before continuing with this section, please take time to read the following list of considerations:

- Use the procedure described in Chapter 5, "The Boot Console Interface," to determine the current memory configuration for this workstation. This should be done before trying to install additional memory DIMMs in your workstation.
- Read over the steps in the section "Installing Additional Memory" before you begin the installation of your DIMM cards.

Installing Additional Memory

Perform the following steps to add memory (DIMM cards) to your workstation.

WARNING

Turn the workstation off and unplug the power cord before installing additional memory.

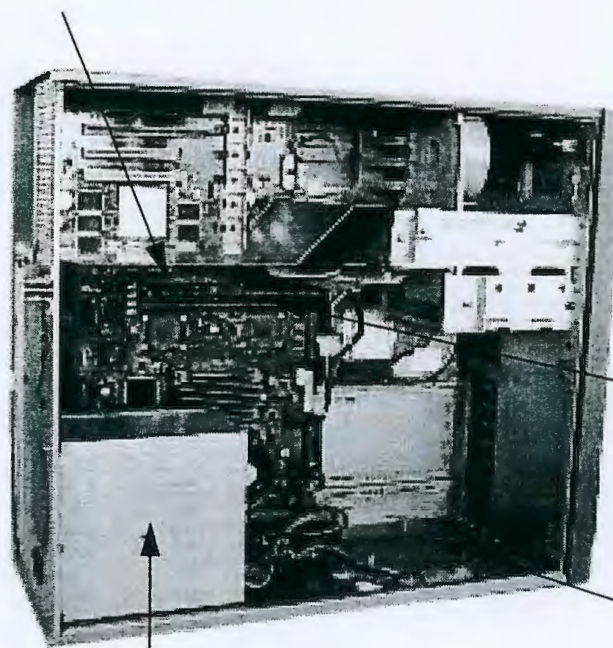
1. Open the side panel of the workstation as explained in the section "Opening the Left Side Panel" on page 78 in this chapter.

1. Dual In-Line Memory Module

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Figure 4-46 View of System Board

DIMM Card



DIMM Connector

B2000 System
Label

Power Supply

NOTE

Reference the B2000 system label for the correct memory loading sequence.

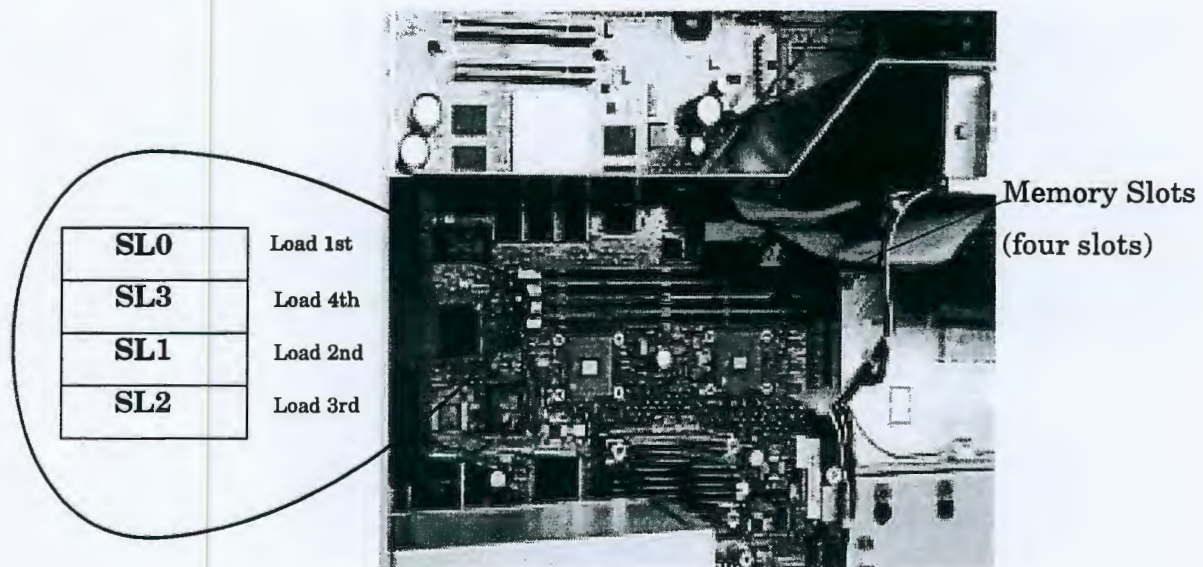


Changing Your Workstation's Hardware Configuration

Memory Cards

2. Position the memory slots so they face you as shown in Figure 4-47. Note that Figure 4-47 also provides the loading sequence for the DIMM cards. This loading sequence must be maintained when you install the DIMM cards, but the size of the DIMM card put in each slot can vary. For example, you can install a 256Mbyte card before a 512Mbyte card and then follow the installation of the 512Mbyte card with another 256Mbyte card. The B2000 workstations supports 128 Mbyte, 256 Mbyte and 512 Mbyte DIMM cards.
3. Locate the four internal memory slots, and load the DIMM cards in the slots using the loading sequence provided in Figure 4-47. Note that the label located on the floor of the chassis describes the installation sequence.

Figure 4-47 Memory Card Slot Numbers and Loading Sequence





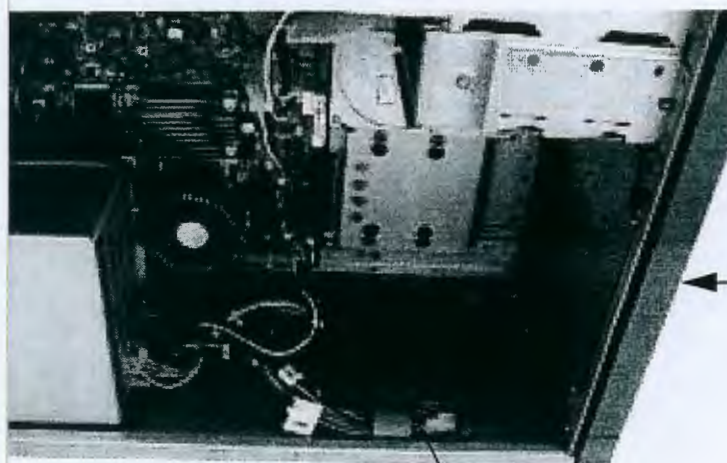
Changing Your Workstation's Hardware Configuration Memory Cards

NOTE

When installing memory, you need to orient the notches on the bottom edge of the DIMM card so that they are aligned with the keys on the DIMM connector. See Figure 4-49. The keyed DIMM connectors prevent you from installing the DIMM cards backwards.

For referencing the DIMM loading sequence see the label on the chassis floor. See Figure 4-48.

Figure 4-48 B2000 System Label



Front of the
B2000
workstation

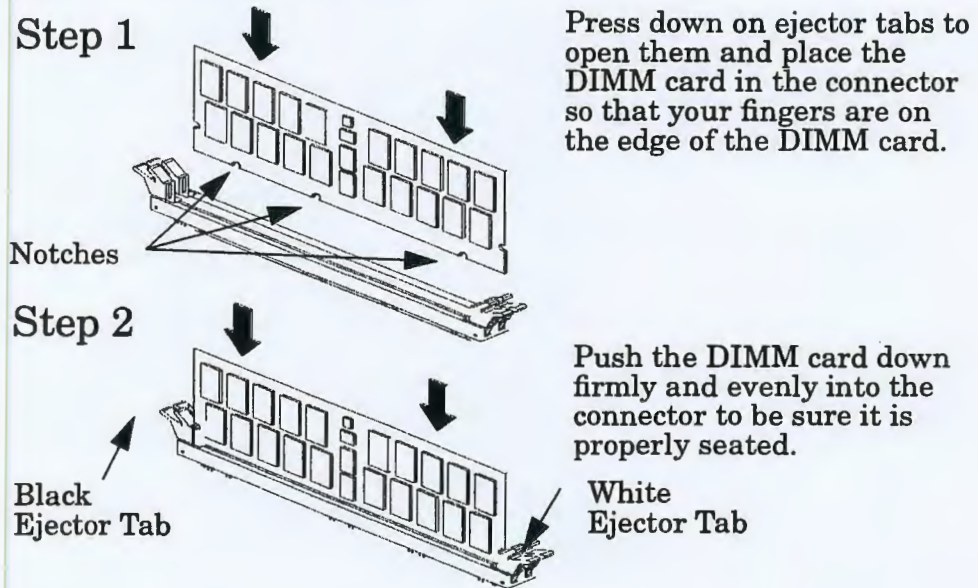
Memory Loading Sequence on
B2000 System Label

Changing Your Workstation's Hardware Configuration Memory Cards



4. Press downward on the ejector tabs located on both sides of the DIMM connector. See Figure 4-49. This opens the connector for DIMM card insertion.

Figure 4-49 Installing Memory Cards



5. Place the DIMM card in the connector, lining it up with the guides. Make sure you align the notches on the bottom edge of the DIMM card with the DIMM connector keys. See Figure 4-49.
6. Press firmly and evenly on the DIMM card to ensure that it seats properly.

NOTE

The ejector tabs will return to the locked position when the DIMM card is fully seated in the connector.

7. Replace the left side panel as explained in the section "Replacing the left side panel" in this chapter. Plug the power cord back in to the electrical outlet.
8. Verify that this installation was successful by following the steps in the section "Displaying the Current Memory Configuration" on page 173 in Chapter 5, "The Boot Console Interface."



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Changing Your Workstation's Hardware Configuration Memory Cards

Once you have completed the steps listed above, your DIMM cards are properly loaded.

Changing Your Workstation's Hardware Configuration Memory Cards



Removing Memory

Perform the following steps to remove memory (DIMM cards) from your workstation.

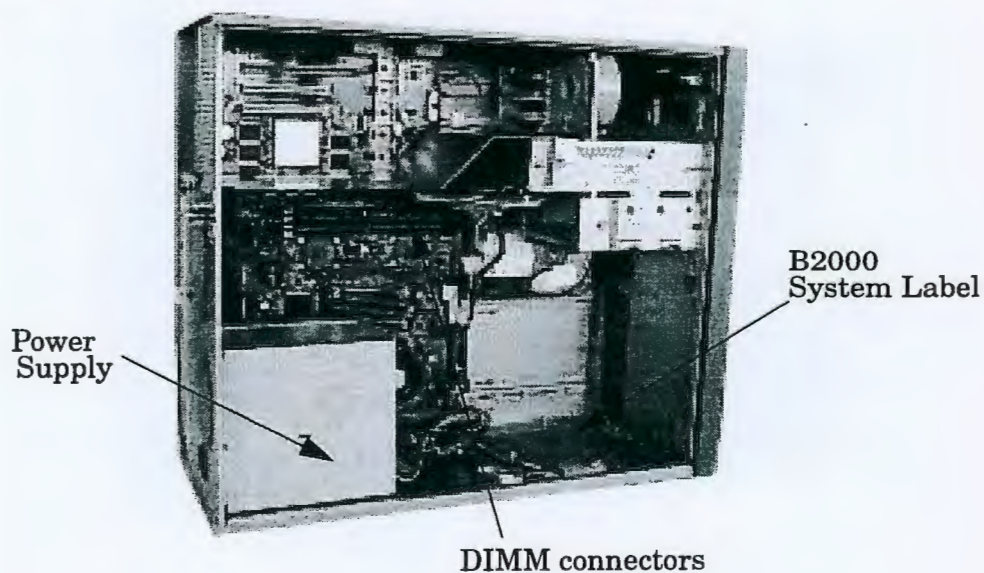
WARNING

Always unplug the workstation's power cord from the electrical outlet or power source before opening the workstation.

1. Open the side panel of the workstation as explained in the section "Opening the Left Side Panel" on page 78 in this chapter.

Figure 4-50

System Board View

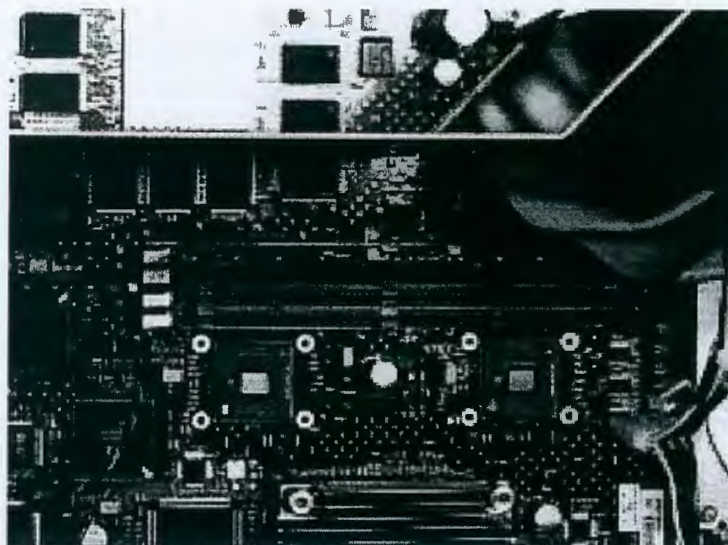




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Changing Your Workstation's Hardware Configuration
Memory Cards

Figure 4-51 DIMM Slot Close-Up on System Board



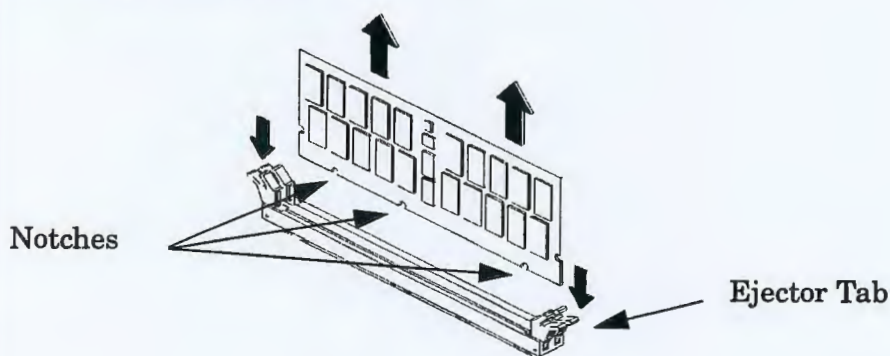
DIMM Connectors
(4 slots)



Changing Your Workstation's Hardware Configuration Memory Cards

2. Press downward on the ejector tabs located on both sides of the DIMM connector. See Figure Figure 4-52. This raises the DIMM card for easy extraction.

Figure 4-52 Removing Memory Cards



3. Lift up evenly on the outside edges of the DIMM card to remove it. See Figure 4-52.
4. Install the remaining DIMM cards in the correct order. See Figure 4-47 or the system label.
5. Replace the left side panel as explained in the section "Replacing the Left Side Panel" in this chapter. Plug the power cord back in to the electrical outlet.
6. Verify that this removal was successful by following the steps in Chapter 5, "The Boot Console Interface." Note that you can also use SAM and select the **Performance Monitor** icon, then the **System Properties** icon, and in the window that appears, select the tab labeled **Memory**.



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Changing Your Workstation's Hardware Configuration

Monitor Type

Monitor Type

Your workstation ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your monitor with a different type, you must reconfigure your workstation to support it.

There are three ways to configure your workstation to support a different monitor type. They are discussed in the subsequent sections.

Setting the Monitor Type at Power On

If you replace your workstation's monitor with a different type of monitor, and you have not set the workstation's graphics parameters by using the Boot Console Interface's monitor command, you can still configure your workstation's new monitor type when you reboot the workstation.

To set the monitor type, you will need to:

1. Press the **Tab** key after your keyboard's Num Lock light comes on during the boot process to initiate the automatic monitor selection process. Your system will query you for a new monitor type. Note that if you have waited more than 2 minutes for a monitor type to appear, go to the section "Troubleshooting Monitor Problems" in this chapter.
2. Select one of the monitor types listed on the screen and press **Enter**. If your monitor is not listed in the section "Monitors" in Chapter 1, "Overview," a common monitor type to select is 12.
3. Answer yes, by pressing **Y**, to the system query to confirm your selection. Note that if you do not make a selection, the workstation cycles through a limited number of monitor types continuously until you do make your selection. See the section "Displaying and Setting the Monitor Type" on page 163.

Changing Your Workstation's Hardware Configuration Monitor Type



Setting the Monitor Type from the Boot Console Interface

To change your system's graphics parameters before you replace your monitor, go to the section "Displaying and Setting the Monitor Type" on page 163 in Chapter 5.

Setting the Monitor Type Using SAM

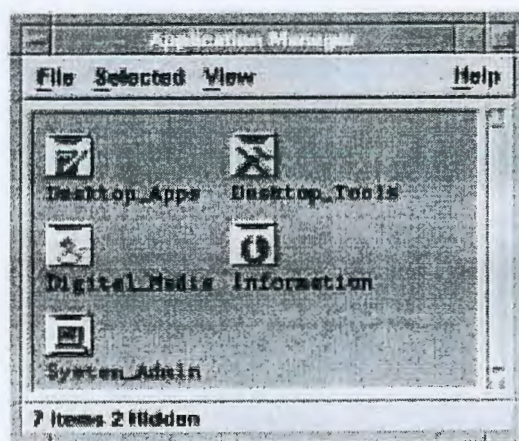
This method for setting the monitor type requires the use of the HP CDE interface. This means that you should have already set your monitor type using one of the methods defined in a previous section, or you have an Instant Ignition workstation that boots up using the HP CDE interface.

To use the **System Administration Manager (SAM)** to set the monitor type, follow the steps in this procedure:

1. Log in as root.
2. Move the mouse pointer to the Application Manager control for tools and click the left mouse button. Alternatively you can execute `sam` at a terminal window command prompt and skip to step 5.



3. Double click on the **System_Admin** icon in the **Application Manager** window.

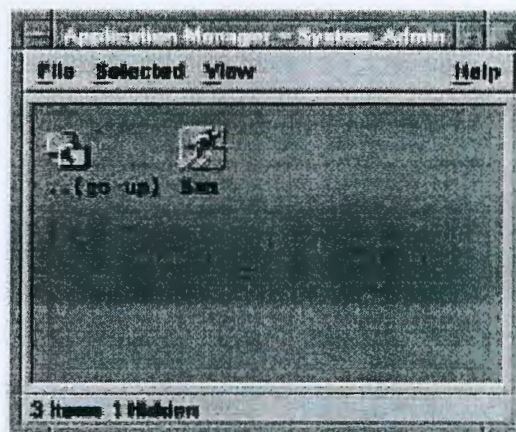




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Changing Your Workstation's Hardware Configuration Monitor Type

4. Double click on the **Sam** icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.



5. Double click on the **Display** icon.

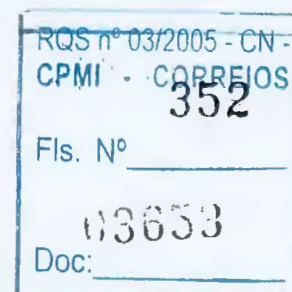


6. Double click on the **Monitor Configuration** icon in the **Display** window.



The **Monitor Configuration** window will have a monitor icon(s) in it that is/are associated with the graphics card(s) in your workstation's I/O card slot(s).

7. Click on the monitor icon in the **Monitor Configuration** window whose monitor type you want to set.





Changing Your Workstation's Hardware Configuration Monitor Type

8. Select the action **Modify Monitor Type** from the **Action** menu. You will see a window with a list of monitor type selections in it. Here is an example of a monitor type entry you may see:

Entry	Width	Height	Hz	Font	Description
1	1280	1024	75	10x20	PCI

9. Select an entry from the list in the **Modify Monitor** window. In that same window, select the check box labeled **Make monitor type 'n' the default** where *n* is the number of the entry you selected. To finish your monitor type selection, select the **Modify Monitor** window's **OK** button. A pop-up window will appear to confirm your monitor type selection. Press the **Yes** button in that pop-up window. This causes the monitor to reset, possibly hiding existing windows. You will then be given 15 seconds after the monitor type changes to configure this setting. Press the **OK** button to configure the setting. This completes the process for setting the monitor type. Note that this change takes effect immediately.
10. Connect your monitor cable to the graphics card you selected.





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Changing Your Workstation's Hardware Configuration Monitor Type

Troubleshooting Monitor Problems

In the event that your console stops displaying to your graphics device, use the following procedure to set the console for displaying to an external terminal.

Here are the steps to follow:

1. Power off the workstation.
2. Disconnect the workstation's keyboard connector from the rear panel.
3. Connect a serial terminal emulator to the Serial 1 connector (the left serial connector) on the rear panel.
4. Power on the workstation. The workstation will now display the console to the terminal connected to Serial 1 port. Note that you can use a 9-pin to 9-pin serial cable (HP F1044-80002) to connect an HP OminiBook serial port to the workstation.
5. Set the monitor type and path using the Boot Console Interface. For information see Chapter 5, "Displaying and Setting the Monitor Type" on page 163.



Changing Your Workstation's Hardware Configuration
Monitor Type



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5

The Boot Console Interface

This chapter describes the different features of the boot console interface and how to use them with your HP VISUALIZE B2000 workstation.

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The Boot Console Interface



This chapter contains the following topics:

- Accessing the Boot Console Interface
- Boot Console Interface Features
- Booting Your System
- Searching for Bootable Media
- Resetting Your System
- Displaying and Setting Paths
- Displaying and Setting the Monitor Type
- Changing the Console to an External Terminal
- Displaying the Current Memory Configuration
- Displaying the Status of the System I/O
- Setting the Auto Boot and Auto Search Flags
- Displaying and Setting the Security Mode
- Displaying and Setting the Fastboot Mode
- Displaying the LAN Station Address
- Displaying System Information



Accessing the Boot Console Interface

If the workstation has crashed or power was turned off for some reason, press the power switch and proceed to step 3. Otherwise, to access the boot console interface, follow these steps:

NOTE

This procedure should be done by a system administrator or superuser with root login permissions.

-
1. Close any files and applications on your workstation.
 2. Press the power switch on the front panel of the workstation.

NOTE

There is no need to login as root and execute the shutdown -q command to shut down the HP-UX operating system on your workstation before powering it off. When you turn off the power switch, your workstation automatically shuts down the operating system before terminating the power.

Make sure you do not unplug the system's power cord or otherwise interrupt power to the workstation at this time.

When the operating system has been properly shut down, the following message will appear:

Shutdown complete

3. Power on your workstation after your system has completely shut down.

If auto boot is turned off, the boot sequence automatically stops at the boot console Main Menu.

If auto boot is turned on, you will see the following message:

Processor is starting auto boot process. To
discontinue, press any key within 10 seconds.

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The Boot Console Interface

Accessing the Boot Console Interface

If auto boot and auto search are both turned on, you will see the following message:

Processor is booting from first available device. To discontinue, press any key within 10 seconds.

NOTE

If you are using a power-saving monitor, you will have less than 10 seconds from the time this message appears to press a key.

4. Press a key. You will then see the message:

Boot terminated

The Main Menu of the boot console appears.

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Boot Console Interface Features

There are times when you want to interact directly with the hardware of your workstation before it boots the operating system. Your workstation provides a menu-driven boot console interface that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

- Boot your system
- Search for bootable media
- Reset your system
- Display and set boot paths
- Display and set your monitor type
- Display memory configuration information
- Display the status of the PCI slots
- Set Auto Boot, Auto Search and Auto Start
- Set Fastboot
- Display LAN information
- Display system information

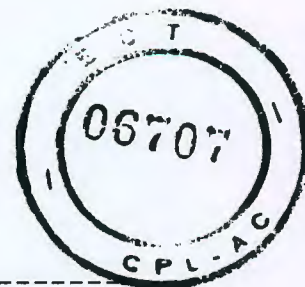
The boot console menus follow, showing the various tasks you can perform and the available information.

The shortened version of each command is indicated by the uppercase letters.

Help is available for all the menus and commands by using either **help**, **he**, or **?** and the menu or command for which you want help.

The Boot Console Interface

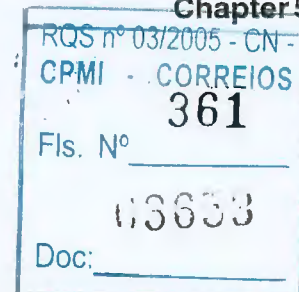
Boot Console Interface Features



----- Main Menu -----

Command	Description
-----	-----
BOot [PRI ALT <path>]	Boot from specified path
PAth [PRI ALT CON KEY [<path>]	Display or modify a path
SEArch [DISplay IPL] [<path>]	Search for boot devices
COntfiguration [<command>]	Access Configuration menu/commands
INformation [<command>]	Access Information menu/commands
SERvice [<command>]	Access Service menu/commands
Display	Redisplay the current menu
HElp [<menu> <commands>]	Display help for menu or command
RESET	Restart the system

Main Menu: Enter command >





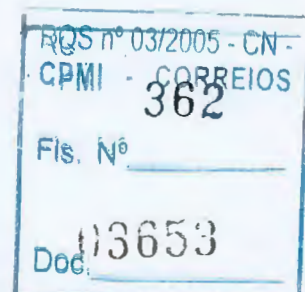
The Boot Console Interface

Boot Console Interface Features

----- Configuration Menu -----

Command	Description
AUto [BOot SEARch] [ON OFF]	Display or set specified auto flag
BootID [<proc>] [<boot ID>]	Display or modify processor boot ID
BootINfo	Display boot-related information
BootTimer [0 - 200]	Seconds allowed for boot attempt
CPUconfig [<proc>] [ON OFF]	Config/deconfig processor
Default	Set the system to predefined values
FastBoot [ON OFF]	Display or set boot tests execution
LanConfig	Display or set LAN Configuration
MOonitor [LIST <path> <type>]	Change the current monitor type
PAth [PRI ALT CON KEY] [<path>]	Display or modify a path
SEARch [DISplay IPL] [<path>]	Search for boot devices
SECure [ON OFF]	Set/show security mode
TIme [c:y:m:d:h:m:s]	Read or set real time clock in GMT
PreviousPower [ON OFF]	Set previous power state
BOot [<menu> <command>]	Boot from specified path
DISplay	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESET	Restart the system
MAin	Return to Main Menu

Configuration Menu: Enter command >





The Boot Console Interface

Boot Console Interface Features

----- Information Menu -----

Command -----	Description -----
ALL	Display all system information
BootINfo	Display boot-related information
CACHE	Display cache information
ChipRevisions	Display revisions of VLSI and firmware
COProcessor	Display coprocessor information
FwrVersion	Display firmware version
IO	Display I/O interface information
LanAddress	Display built-in system LAN address
MEmory	Display memory information
PROcessor	Display processor information
SysConfig	Display the system configuration
WARNings	Display selftest warning messages
Boot [PRI ALT <path>]	Boot from specified path
Display	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESET	Restart the system
MAin	Return to Main Menu

Information Menu: Enter command >



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The Boot Console Interface Boot Console Interface Features

----- Service Menu -----

Command -----	Description -----
ChassisCodes [<proc> ON OFF]	Display/enable/disable chassis codes
CLEARPIM	Clear (zero) the contents of PIM
EepromRead [<addr>] [<len>]	Read EEPROM locations
MemRead <addr> [<len>] [<type>]	Read memory locations
PCIDelay [<value>]	Display or set PCI delay value
PDT [CLEAR]	Display or clear the Page Deallocation Table
PIM [<proc> [HPMC LPMC TOC]]	Display PIM information
ScRoll [ON OFF]	Display or change scrolling ability
BOot [PRI ALT <path>]	Boot from specified path
Display	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESET	Restart the system
MAIn	Return to Main Menu

Service Menu: Enter command >

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Booting Your System

You usually start your system by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual boot sequence to occur.

For example, you may want to start your system from an operating system that is stored on a device that is different from your usual boot device. If your normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps another type of device, such as a CD drive.

Here are some possible booting scenarios you may encounter:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt:

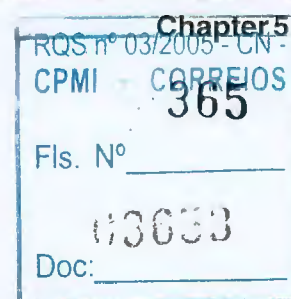
Main Menu: Enter command > boot *device*

where *device* is the hardware path to the device, specified in Mnemonic Style Notation. For example, if you wish to boot an operating system that is stored on a DDS-format tape drive that is located at the hardware path `scsi.1.0`, you would type the following command at the prompt and press **Enter**:

Main Menu: Enter command > boot `scsi.1.0`

- If you do not know which device or the hardware path for the device you want to boot from, then type the following at the prompt and press **Enter**:

Main Menu: Enter command > search





The Boot Console Interface Booting Your System

A message similar to the following will be displayed:

Path Number	Device Path	Device Type
-----	-----	-----
P0	IDE	TEAC CD-532E-B
P1	SCSI.6.0	SEAGATE ST39102LC

At the prompt, you might type the following and press **Enter**:

Main Menu: Enter command > boot P1

Note that the operating system on the specified device (P1) is used to boot your system (also see the section "Searching for Bootable Media").

- If you wish to interact with the Initial System Loader (ISL) before booting your system, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt:

Main Menu: Enter command > boot device

The following prompt will appear:

Interact with ISL (Y,N,Q)>

Answering yes (Y) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your screen:

ISL>

ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system. If you do not want to interact with ISL, you must enter no (N).



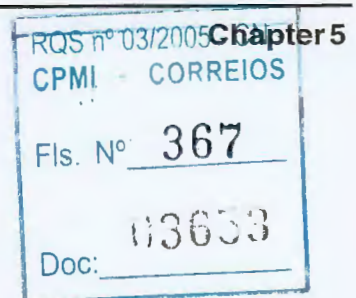
The Boot Console Interface

Booting Your System

For example, if the usual kernel (/stand/vmunix) on your root disk (scsi.6.0) has become corrupted, and you wish to boot your system from the backup kernel (/stand/vmunix.prev), type the following at the ISL> prompt and press Enter:

```
ISL> hpux /stand/vmunix.prev
```

- If you do not know which media in your file systems have bootable operating systems, you can find them with the search ipl command. See the subsequent section "Searching for Bootable Media."





Searching for Bootable Media

To list devices that contain bootable media, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter `command> search ipl`

The search command searches all buses. The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal's keyboard by using these keystrokes:

Ctrl S Temporarily suspends the search.

Ctrl Q Continues the search.

Any Other Key Stops the search.

These flow-control keystrokes do not work with a bitmapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of just one type that actually contain bootable media, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter `command> search ipl device_type`

where *device_type* is one of the following:

<code>scsi</code>	Is the built-in Ultra2 Wide LVD SCSI bus.
<code>lan</code>	Is all connections to the built-in LAN.
<code>pcin</code>	Is an optional SCSI interface in slot number <i>n</i> .
<code>ide</code>	Is a built-in IDE bus.
<code>disk</code>	Is all connections except LAN (ex. built-in SCSI, PCI cards, etc.)



Resetting Your System

To reset your system to its predefined values, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> co

When the Configuration Menu appears, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> default

When the Configuration Menu appears again, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> reset



Displaying and Setting Paths

A path is the hardware address of a device that is attached to the I/O system of your system. The path command sets the system paths shown in Table 5-1.

The path command sets and displays the hardware address of a specified device attached to the I/O bus of your system.

Table 5-1

System Paths

Path Type	Device
primary or pri	Your system's default boot device (usually the root disk)
alternate or alt	Your system's alternate boot device (usually a DDS-format tape device)
console or con	Your system's primary display device
keyboard or key	Your system's primary input ASCII device

To display the current settings for the system paths, type the following at the prompt and press **Enter**:

Main Menu: Enter `command> path`

The paths are displayed in Mnemonic Style Notation, as shown in Table 5-2.

Table 5-2

Mnemonic Style Notation for Boot Paths

I/O Type	Specification Format
Built-in LVD SCSI	<code>fwscsi.scsi_address.logical_unit_number</code>
Plug-in device	<code>pcin.scsi_address.logical_unit_number</code>
Built-in LAN	<code>lan.server_address.init_timeout.io_timeout</code>
Built-in IDE	<code>ide</code>



The Boot Console Interface

Displaying and Setting Paths

To display the current setting for a particular system path, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

```
Main Menu: Enter command> path path_type
```

where *path_type* is one of the path types listed in Table 5-1.

For example, to get the path to the primary boot device, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

```
Main Menu: Enter command> path primary
```

To set a system path to a new value, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

```
Main Menu: Enter command> path path_type path
```

where *path_type* is one of the path types listed in Table 5-1 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table 5-2). For example, to set the primary boot path to a SCSI disk with ID of 6.0, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

```
Main Menu: Enter command> path pri scsi.6.0
```

NOTE

The default B2000 paths are:

```
pri scsi.6.0  
alt scsi.5.0
```



Displaying and Setting the Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your workstation's monitor with a different type of monitor, you may have to reconfigure your system to support the new monitor.

The Monitor Command

The monitor command lets you change your system's graphics configuration. This command is available in the Configuration Menu of the boot console interface.

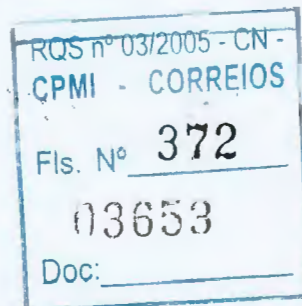
NOTE

The monitor command lets you change your system's graphics configuration before you replace your monitor. For information about changing the configuration after you replace your monitor, refer to "Changing Your Monitor Type" in Chapter 4.

To display the current graphics and console information, type the following set of commands and press **Enter** at the prompt:

Main Menu: Enter command> configuration

Configuration Menu: Enter command> monitor





The Boot Console Interface

Displaying and Setting the Monitor Type

The correct usage for setting the graphics configuration is:

```
monitor graphics_path type
```

where valid *graphics_path* parameters are:

- `graphics(0)` Built-in (or core) graphics adapter (primary slot)
- `graphics(1)` Graphics adapter installed in slot 1 (secondary slot)
- `graphics(2)` Graphics adapter installed in slot 2
- `graphics(3)` Graphics adapter installed in slot 3
- `graphics(4)` Graphics adapter installed in slot 4

and *type* is the numerical monitor type. See "Setting the Monitor Type" in a subsequent section for a list of types. For example, an HP VISUALIZE *fxe* graphics card (A4982A) installed in option slot 2 would be `graphics(2)`. Note that you can have `graphics(0)` through `graphics(4)` for your *graphics_path*.





The Boot Console Interface Displaying and Setting the Monitor Type

Displaying the Current Monitor Configuration

To display the current monitor configuration for your system from the Configuration Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter. Once you are in the Boot Console Interface Main Menu, type the following command and press **Enter**:

Main Menu: Enter command> configuration

This places you in the Configuration Menu. From here, type the following command at the prompt and press **Enter**:

Configuration Menu: Enter command> monitor

The message on your display is a list of the current graphics adapters and their monitor types configured for your workstation.

MONITOR INFORMATION

Path	Slot	Head	HPA	Resolution	Freq	Type	Class
GRAPHICS(2)	2	1	fffa000000	1280x1024	75Hz	1	PCI

Configuration Menu: Enter command>

In this example, only the graphics adapter (located in slot 2) GRAPHICS(2) is configured. The monitor type for GRAPHICS(2) is set to type 1, which is a 1280x1024 monitor that uses a frequency of 75 Hz.





The Boot Console Interface

Displaying and Setting the Monitor Type

Setting the Monitor Type

You can set the monitor type for a graphics adapter by typing the following at the prompt and pressing Enter:

Configuration Menu: Enter command> monitor graphics(*n*) *tt*

where *n* is the number of the graphics adapter and *tt* is the monitor type. To display a list of supported monitors that are used by your graphics card, type the following command at the prompt and press Enter:

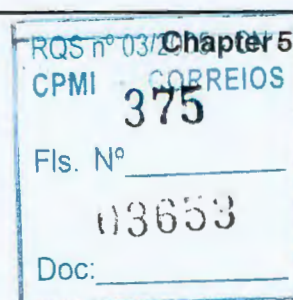
Configuration Menu: Enter command> monitor list

A list of valid monitor types similar to the following is displayed:

MONITOR INFORMATION

Path	Slot	Head	Type	Size	Freq	Class
GRAPHICS(0)	0	1	1	1280x1024	75Hz	VESA
GRAPHICS(0)	0	1	2	1024x768	75Hz	VESA
GRAPHICS(0)	0	1	3	1600x1200	75Hz	VESA
GRAPHICS(0)	0	1	4	1600x1200	75Hz	VESA

Configuration Menu: Enter command>



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The Boot Console Interface Displaying and Setting the Monitor Type

To set the monitor type for GRAPHICS(2) to monitor type 1, type the following at the command prompt and press Enter:

Configuration Menu: Enter command> monitor graphics(2) 1

This will take effect on the next reboot or reset of the system.

MONITOR INFORMATION

Path	Slot	Head	HPA	Resolution	Freq	Type	Class
GRAPHICS(0)	0	1	fffa000000	1280x1024	75Hz	1	VESA

Configuration Menu: Enter command>

The boot console displays a message that tells you that your new monitor selection will take effect the next time you reboot your system. The boot console also displays the new monitor information.

Trying to change the monitor type to a number not listed for that graphics device fails and gives you the following warning message:

Value of monitor type n out of range (n - nn)

Trying to change the monitor type on an empty slot fails and gives you the following warning message:

No such graphics card.

Setting the Monitor Type with SAM

The System Administration Manager (SAM) allows you to change the monitor type after the HP-UX 10.20 operating system with the 9912 Additional Core Enhancements (ACE) software bundle (December 1999) have been installed on your workstation. This section provides a brief explanation on how to set the monitor type using SAM. Note that you will need to be logged in as root to run SAM.

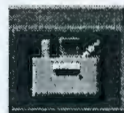
Here are the steps for setting your monitor type with SAM:

1. Log in as root.

The Boot Console Interface

Displaying and Setting the Monitor Type

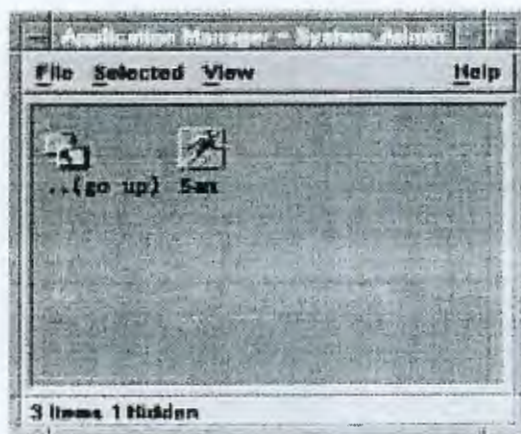
2. Move the mouse pointer to the **Application Manager** control for tools and click the left mouse button. Alternatively you can execute sam at a terminal window command prompt and skip to step 5.



3. Double click on the **System_Admin** icon in the **Application Manager** window.



4. Double click on the Sam icon in the **Application Manager -- System_Admin** window. If you are root, the **System Application Manager (SAM)** will appear on your screen.





The Boot Console Interface Displaying and Setting the Monitor Type

5. Double click on the **Display** icon.



6. Double click on the **Monitor Configuration** icon in the **Display** window.



The **Monitor Configuration** window will have a monitor icon(s) in it that is/are associated with the graphics card(s) in your workstation's I/O card slot(s).

7. Click on the monitor icon in the **Monitor Configuration** window whose monitor type you want to set.
8. Select the action **Modify Monitor Type** from the **Actions** menu. You will see a window with a list of monitor type selections in it. Here is an example of a monitor type entry you may see:

Entry	Width	Height	Hz	Font	Description
1	1280	1024	75	10x20	VESA

9. Select an entry from the list in the **Modify Monitor** window. In that same window, select the check box labeled **Make monitor type 'n' the default** where *n* is the number of the entry you selected. To finish your monitor type selection, select the **Modify Monitor** window's **OK** button. A pop-up window will appear to confirm your monitor type selection. Press the **Yes** button in that pop-up window. This causes the monitor to reset, possibly hiding existing windows. You will then be given 15 seconds after the monitor type changes to configure this setting. Press the **OK** button to configure the setting. This completes the process for setting the monitor type. Note that this change takes effect immediately.
10. Connect your monitor cable to the graphics card you selected, and your screen contents will appear. You are now done selecting your monitor type.



Setting the Monitor Type at Power On

If you replace your workstation's monitor with a different monitor type, you need to let the workstation's firmware know you made this change. To do this, reboot the system and use either the automatic monitor selection process or the boot console interface's monitor command. The monitor command is described in the section "Setting the Monitor Type" in this chapter. The automatic monitor selection process is described in this section.

Once you have rebooted the system by turning it off, wait for a short time for the hard disk drive's disk to stop spinning. Next, turn the workstation on and watch for the Num Lock light to come on.

NOTE

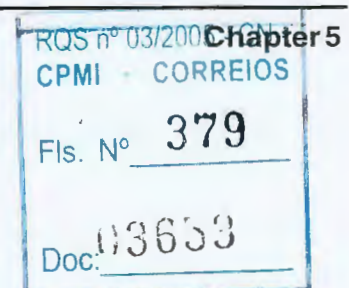
It takes a short amount of time (approximately 40 seconds) after powering on the workstation before the Num Lock light comes on.

Wait two seconds after the Num Lock light comes on, which is near the end of the boot sequence, then press **Tab** to initiate the automatic monitor selection process. If your screen remains blank after two minutes of waiting for something to be displayed, see the section "Troubleshooting Monitor Problems" in this chapter. Otherwise, if you see information similar to the following displayed on your screen and it is the correct monitor type, press the **Enter** key to select it.

Path	Slot	Head	Type	Size	Freq	Class
GRAPHICS(0)	0	1	n	nnnnxn timer	nnHz	VESA

Press [Return] to select this monitor type (type n of n types).

Note that if you do not select this monitor type, the system cycles through a limited number of monitor types one at a time until you find one that meets your needs.





The Boot Console Interface Displaying and Setting the Monitor Type

Once you have made your monitor type selection, the system queries you to confirm your selection. Press **Y** to save this monitor type.

If you press any key other than **Y**, the following message is displayed:

Monitor type not saved.

At this point, the new monitor type is active, but not saved. Because you did not save the monitor type, the next time you reboot the system the original monitor type will be used.

Next, the following message is displayed:

To select a new Graphics Monitor Type press the <TAB> key now, otherwise EXIT by entering any other key (or will time out in 15 seconds)...

To restart the monitor selection process, press **Tab**.

Troubleshooting Monitor Problems

In the event that your console stops displaying to your graphics device, use the following procedure to set the console for displaying to an external terminal.

Here are the steps to follow:

1. Turn system power off.
2. Disconnect the workstation's keyboard connector from the rear panel.
3. Connect a serial terminal emulator to the Serial 1 connector (the left serial connector) on the system rear panel. Configure the terminal for: 9600 baud, No Stop Bits, No Parity, 8 Bits.
4. Power on the system. The system will now display the console to the terminal connected to Serial 1 port. Note that you can use a 9-pin to 9-pin serial cable (HP F1044-80002) to connect an HP OmniBook serial port to the workstation.
5. Set the monitor type and path using the Boot Console Interface. For information on doing this see the section "Setting the Monitor Type with SAM."





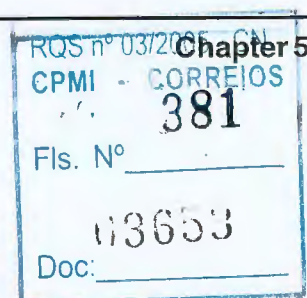
The Boot Console Interface
Changing the Console to an External Terminal

Changing the Console to an External Terminal

In the event that your console stops displaying to your graphics device, use the following procedure to display the console to an external serial terminal so that you can configure the graphics console:

1. Turn the system's power off.
2. Disconnect the USB keyboard connector from the system rear panel.
3. Connect a serial terminal to the "Serial 1" connector on the system back panel. Configure the terminal for: 9600 baud, No Stop Bits, No Parity, 8 Bits.
4. Power on the system.

The system will now display the console to the terminal connected to Serial 1 port.





Displaying the Current Memory Configuration

The following sample screen output uses the memory command to show a memory configuration table with properly-installed and configured memory.

To display the current memory configuration for your system, from the Information Menu of the boot console interface, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter. Once you are in the Boot Console Interface Main Menu, type the following at the prompt and press **Enter**:

```
Main Menu: Enter command> information
```

This places you in the Information Menu. From here, type the following at the prompt and press **Enter**:

```
Information Menu: Enter command> memory
```

The screen displays status and configuration information for the memory DIMMs installed in your workstation. See the section “Memory Information Sample.”



The Boot Console Interface
Displaying the Current Memory Configuration

Memory Information Sample

The following example shows the memory information when memory modules are properly installed and configured:

MEMORY INFORMATION

MEMORY STATUS TABLE

Slot	Size	Status
0	256MB	Active
1	256MB	Active
2	128MB	Active

TOTAL MEMORY = 640MB

MEMORY FAULT TABLE

Slot	Size	Status
---	---	-----

Active, Installed Memory	:	640MB of SDRAM
Deallocated Pages	:	0 Pages
Available Memory	:	640MB
Good Memory Required by OS	:	0 (Not Initialized)

Memory	
HVERSION	SVERSION
-----	-----
0x0860	0x0900



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The Boot Console Interface Displaying the Status of the System I/O

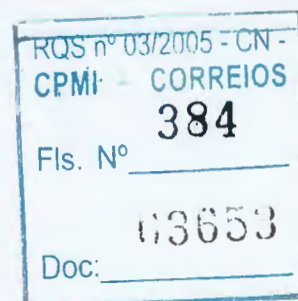
Displaying the Status of the System I/O

The `io` command lets you identify all built-in I/O devices and optional I/O devices installed in the option slots. It is available in the Information Menu.

To use the IO command from the Information Menu of the boot console, type the following command at the prompt and press **Enter**:

```
Information Menu: Enter command> io
```

Information about the built-in and optional I/O devices is displayed.





Setting the Auto Boot and Auto Search Flags

The auto boot and auto search flags are variables stored in your system's nonvolatile memory. (Nonvolatile memory retains its contents even after power is turned off.) If you reset these flags to new values, the change takes effect the next time you reboot the workstation.

The auto boot flag boots the operating system whenever your workstation is turned on.

If auto boot is set to on, your system automatically attempts to boot the operating system when turned on. If auto boot is set to off, your system enters the boot administration mode of the boot console user interface.

The state of the auto search flag determines how your system seeks a boot device during auto boot. If auto search is set to on, your system will search for other boot devices if the primary boot device is not available. If auto search is off, your system will default to the boot administration mode if it can't see the primary boot device.

To examine the state of the auto boot and auto search flags, type the following at the prompt and press **Enter**:

```
Configuration Menu: Enter command> auto
```

To change the state of the auto boot or auto search flags, type the following at the prompt and press **Enter**:

```
Configuration Menu: Enter command> auto boot state
```

or

```
Configuration Menu: Enter command> auto search state
```

where *state* is on or off.



The Boot Console Interface Setting the Auto Boot and Auto Search Flags

The auto search command searches for devices in the following order:

- Primary boot path (can be set by the user)
- Alternate boot path (can be set by the user)
- PCI 1 through PCI 4 (plug-in interface cards)
- Low-voltage differential SCSI (built-in)
- LAN (built-in)
- IDE (built-in)





Displaying and Setting the Security Mode

The secure flag is a variable stored in non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset this flag to a new value, the change takes effect the next time you reboot the workstation.

When the secure flag is set to on, auto boot and auto search are enabled and cannot be stopped. The system boots from the default boot paths regardless of user intervention.

Note that the secure command must be executed from within the Boot Console Interface. To get into the Boot Console Interface, follow the procedure in the section "Accessing the Boot Console Interface" earlier in this chapter. Once the Main Menu is present, you can type the following command at the prompt and press **Enter**:

```
Main Menu: Enter command > configuration
```

From the Configuration Menu, you can execute the secure command and preform the subsequent tasks in this section.

To display the current setting for the secure flag, type the following command at the prompt and press **Enter**:

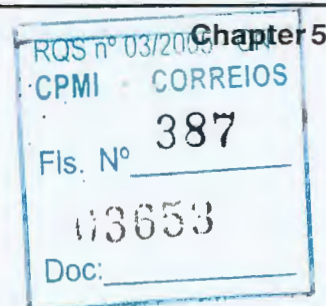
```
Configuration Menu: Enter command > secure
```

To set the secure flag on, type the following command at the prompt and press **Enter**:

```
Configuration Menu: Enter command > secure on
```

To set the secure flag off, you need to disconnect the boot disk to interrupt the boot-up sequence and force the prompt to the Boot Console Interface. Next, type the following command at the prompt and press **Enter**:

```
Configuration Menu: Enter command > secure off
```





Displaying and Setting the Fastboot Mode

When fastboot is enabled (set to on), your system does a quick check of the memory and skips I/O interface testing during its power-on self tests. This enables your system to complete its boot process quicker. The default factory setting is for fastboot to be enabled (set to on). Note that fastboot can be set using the Boot Console Interface's Configuration Menu.

When fastboot is disabled (set to off), more extensive memory testing and I/O interface testing is performed during the self tests, causing the boot process to take longer.

If you are experiencing difficulty in booting your system, set fastboot to off and reboot the system. More extensive testing may reveal the error condition.

To display the status of fastboot, type the following at the prompt and press **Enter**:

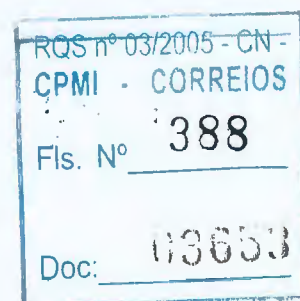
Configuration Menu: Enter command> fastboot

To disable fastboot, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> fastboot off

To enable fastboot, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> fastboot on





Displaying the LAN Station Address

It is sometimes necessary to supply the LAN station address of your workstation to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster. Note that your LAN station address can be determined using the Boot Console Interface's Information Menu.

A LAN station address for your workstation is the label that uniquely identifies the LAN connection for your workstation at the link level (the hardware level).

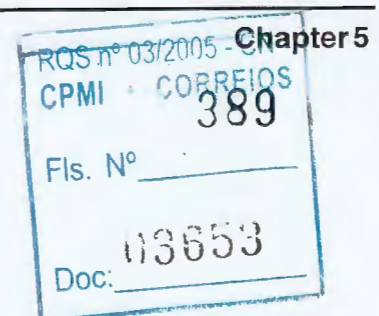
To display your workstation's LAN station addresses, type the following at the prompt and press **Enter**:

Information Menu: Enter command> lanaddress

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

LAN Station Address: 001083-000429

The address is for the system's built-in LAN.





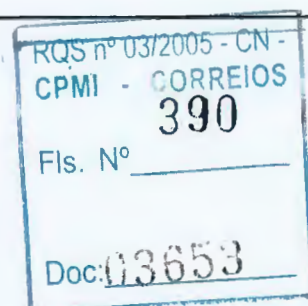
The Boot Console Interface Displaying System Information

Displaying System Information

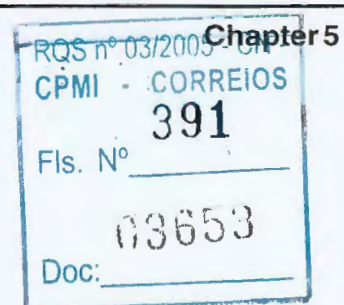
The `all` command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information for the Information Menu, type the following at the prompt and press **Enter**:

Information Menu: Enter command> `all`

This information is paged to allow you to view it as necessary unless the service `ScRoll` command has been used to disable scrolling.



The Boot Console Interface
Displaying System Information





6

Solving Problems

This chapter contains information to help you determine what is wrong with your system when you have problems. If you have a problem that is not listed in this chapter, or if your problem persists, contact your designated service representative.

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Solving Problems

To help speed up your service request, have your system's model number and serial number available. Your service representative will always ask for these numbers.

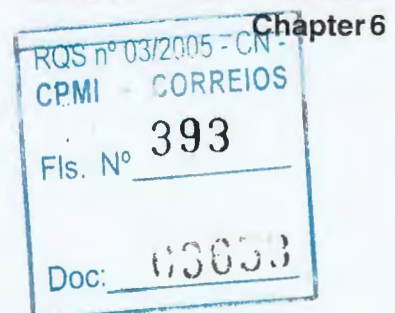
The instructions in this chapter assume you are using the HP-UX 10.20 operating system and the Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999) with the HP CDE graphical interface. When using HP CDE, you will have to use command line options in a terminal window to perform tests.

Here are the topics covered in this chapter:

- Common Problems and Solutions
- Dealing with a Boot Failure
- Memory Failures
- LCD Information
- Running System Verification Tests.

NOTE

This chapter requires you to log in as root. If you cannot log in as root, contact your system administrator.





Common Problems and Solutions

The tables in this section lists common problems you may encounter with your computer. The tables also tell you what to do to help solve the problems.

Table 6-1

Problems Powering Up the System

Problem	Solution
The LCD screen does not light up.	Make sure all AC power cables are connected securely to the system. Make sure the power cord is plugged into a working AC outlet. Make sure the power is turned ON.
The LCD screen lights up , but the screen is blank	Make sure the LCD control cable is properly connected inside the system unit.
LCD messages	See "LCD Information" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Solving Problems
Common Problems and Solutions



Table 6-2

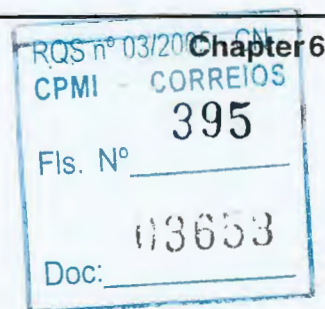
Problems Loading and Booting the Operating System

Problem	Solution
The LCD screen is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.	Check that all SCSI devices are correctly cabled. Check that any external SCSI devices (ex. PCI) are correctly terminated.
The system stops or hangs while booting.	Follow the instructions in "Dealing with a Boot Failure" later in this chapter. If the LCD displays a DIMM error, follow the instructions in "Memory Failures" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-3

Problems with the 802.3 Network

Problem	Solution
Cannot reach other systems on the network. Applications that rely on the network will not run.	Check the network connector on the back of the system unit. Make sure the network cable or transceiver is fastened securely to the connector. The link LED should be lit solid, and the activity LED should be solid or flashing.
If problems persist, contact your system administrator or call your designated service representative.	





Solving Problems Common Problems and Solutions

Table 6-4

Problems Using a Hard Disk Drive

Problem	Solution
The disk drive is not accessible or does not respond.	Make sure that all SCSI devices are set to the proper SCSI ID. Check that all SCSI devices are connected and/or cabled. Follow the instructions in "Dealing with a Boot Failure" later in this chapter. If the disk drive is external to the system unit, make sure that its power is turned ON.
If problems persist, contact your system administrator or call your designated service representative.	

Table 6-5

Problems Using the CD Drive

Problem	Solution
The CD drive does not respond to commands (for example, mount or swinstall).	Re-enter the commands and make sure you have typed them correctly. See the section "Running System Verification Tests" later in this chapter to verify that the CD drive is functioning properly. Make sure power and data cables are connected.
If problems persist, contact your system administrator or call your designated service representative.	

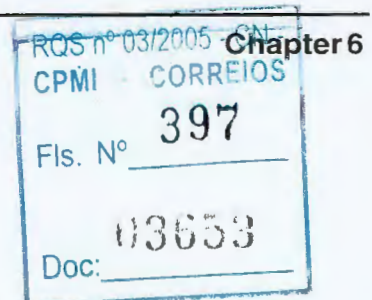
Solving Problems
Common Problems and Solutions



Table 6-6

Problems Using the Floppy Disk Drive

Problem	Solution
The floppy drive does not respond to commands.	Re-enter the commands and make sure you have typed them correctly. Make sure you specified the device file <pre>/dev/floppy/c0t1d0</pre> for commands that require a device file name. Make sure the write-protect tab is set to write if you are trying to copy data to a floppy diskette. Follow the instructions in the section "Running System Verification Tests" later in this chapter to verify that the floppy disk drive is functioning properly. Make sure cables (power, data, etc.) are connected.
The floppy drive is not recognized by SAM in the Disks and File Systems window.	A patch is available from HP that adds the proper IDE choices to the SAM screen. You may load this patch from the HP Electronic Support Center. Reference the following URL: http://us-support.external.hp.com/
If problems persist, contact your system administrator or call your designated service representative.	





Dealing with a Boot Failure

If your usual boot device (typically a disk) is not responding as it should, you must try to boot from the disk (or another boot device) by selecting it manually. Note that you must be superuser (root) to perform the steps in this section.

To boot a device manually, follow these steps:

1. Follow the directions in "Accessing the Boot Console Interface," in Chapter 5 of this document.

NOTE

Your computer automatically shuts down the operating system before it terminates the power.

2. At the Main Menu prompt, type the following and press **Enter**:

Main Menu: Enter command > search ipl

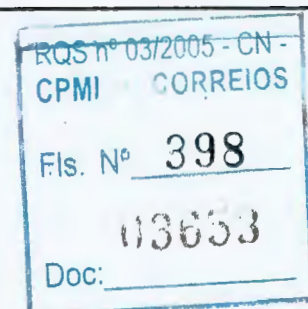
This causes you computer to search exhaustively for bootable media.

3. Boot from one of the listed devices by typing the following at the prompt and press **Enter**:

Main Menu: Enter command > boot *device*

where *device* is the hardware path to the device, specified in mnemonic style notation, such as SCSI.5.0.

4. Answer "N" to the question, INTERACT WITH IPL (Y,N,Q) ?





Solving Problems

Dealing with a Boot Failure

5. If your computer still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual *Using HP-UX* for help on dealing with file system failures. If you think that something is wrong with the hardware, continue reading this chapter for more troubleshooting information.

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Memory Failures

A memory failure will show up in the LCD on your system unit's front panel as a DIMM error. Your system's Boot Console Interface will never appear.

A possible solution to the memory failure problem is to perform the procedure in the section "Installing Additional Memory" in the chapter "Changing Your Computer Hardware Configuration." If the problem persists, contact your system administrator or call your designated service representative.





LCD Information

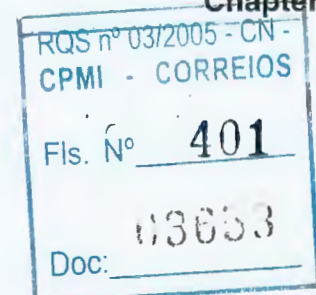
Your computer uses an LCD panel to display firmware/OS progress codes. The codes, referred to as chassis codes, consist of one of the mnemonics listed below, followed by a 4-digit hexadecimal number identifying the code module being executed. The mnemonics and their meanings are:

FLT	A hardware error has been detected
TST	Hardware being tested
INI	Hardware being initialized
SHU	System being shutdown
WRN	A non-optimal or unusual operating condition exists
RUN	Computer is running operating system

In general, the LCD display has the following format:

MMM CCCC: FFFFFFFF	← Line 1
DDDDDDDDDDDDDDDDDD	← Line 2

MMM	Three character mnemonic
CCCC	Four digit hexadecimal code
FFFFFFF	Six character field replaceable unit description
DDDDDDDDDDDDDDDDDD	Description of the chassis code





Solving Problems LCD Information

If the system encounters a FLT code while the system is booting, the FLT code is interpreted and a message is displayed. For example, you may have information similar to the following in the LCD:

FLT	Three character chassis code
30FC	Four digit hexadecimal code
SYS BD	Six character field replaceable unit description
bad sys bd id	Description of the chassis code

LCD Fan Failures and Warnings

This section provides the failure and warning messages you will see in your computer's LCD if there is a problem with a fan in your system unit.

Table 6-7 lists the fan numbers and their names. The fan numbers will appear in the description of the chassis code in your computer's LCD.

Table 6-7

Fan Numbers and Their Names

Fan Number	Name of the Fan
2	I/O Fan
4	System Fan
5	Processor Fan

Here is an example of a failure message for the I/O fan:

```
WRN D014 SYS BD
fan failed: # 4
```

Here is an example of a warning message for the processor fan:

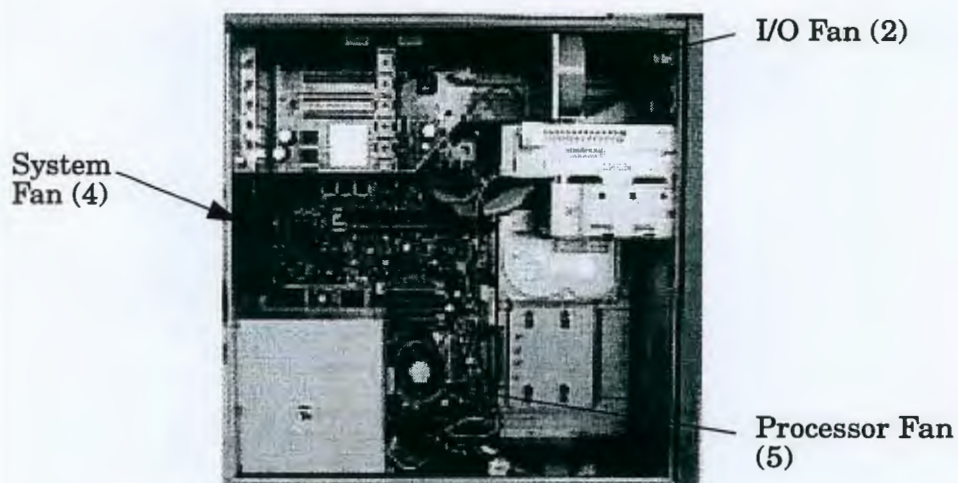
```
WRN D025 SYS BD
fan warning: # 5
```

Figure 6-1 will help you locate the problem fan within your system unit.



Figure 6-1

Fan Locations



If you should receive a failure or warning in you LCD, you should record the information on a piece of paper and call in the problem to your local HP Support Representative. The representative will want the LCD failure or warning message you record for determining the course of action to take regarding possible repairs.



Troubleshooting Monitor Problems

In the event that your console stops displaying to your graphics device, use the following procedure to set the console for displaying to an external terminal.

Here are the steps to follow:

1. Turn system power off.
2. Disconnect the computer keyboard connector from the system rear panel.
3. Connect a serial terminal to the Serial 1 connector (the left serial connector) on the system rear panel. Configure the terminal for: 9600 baud, No Stop Bits, No Parity, 8 Bits.
4. Power on the system. The system will now display the console to the terminal connected to Serial 1 port. Note that you can use a 9-pin to 9-pin serial cable (HP F1044-80002) to connect an HP OminiBook serial port to the workstation.
5. Set the monitor type and path using the Boot Console Interface. The most common monitor type is 1280×1024 at 75 Hz in VESA mode. For information on doing this see the chapter "The Boot Console Interface" in this document.



Running System Verification Tests

HP-UX uses a diagnostics product called Support Tools Manager (STM), which allows system operation verification. To use STM, you need to be on an HP-UX 10.20 operating system and to load the Workstation Additional Core Enhancements for HP-UX 10.20 (December 1999) HP-UX Support Plus Media on your computer.

There are three interfaces that allow you access to the Support Tools Manager: a command line interface (accessed through the `cstm` command), a menu-driven interface (accessed through the `mstm` command), and the graphical user interface (accessed through the `xstm` command).

For more information on these user interfaces, see the online manual pages by entering one of the following command at the command line prompt and pressing **Enter**:

`man cstm`

`man mstm`

`man xstm`



A

Safety and Regulatory Statements

This appendix contains safety and regulatory statements pertaining to your HP VISUALIZE B2000 workstation.

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Safety and Regulatory Statements



Here are the topics covered in this appendix:

- Declaration of Conformity
- Emissions Regulations
- Third Party Emissions Regulations Compliance
- Special Regulatory and Safety Information
- Warnings and Cautions

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Doc: _____



Safety and Regulatory Statements Declaration of Conformity

Declaration of Conformity

according to ISO/IEC Guide 22 and EN 45014

Manufacturer: Hewlett-Packard Company
3404 East Harmony Road
Fort Collins, CO 80528
USA

Declares, that the:
Product Name: HP VISUALIZE Workstation
Model Numbers: B1000 / B2000/ C3000
Base Product Number: A4985A / A5983A/ A4986A
Product Options: all

conforms to the following specifications:

Safety IEC 950:1991+A1+A2+A3+A4+A11/ EN 60950:1992+A1+A2+A3+A4+A11
IEC 60825-1:1993/EN60825-1:1994+A11 Class 1 for LED's
USA 21CFR Subpart J - for FC Laser module
China GB4943-1995
Russia GOST R 50377-92

EMC CISPR 11: 1990 / EN 55011: 1991 Class B
CISPR 22: 1993 / EN 55022: 1994 +A1+A2 Class B
EN 50082-1:1992
IEC 1000-3-2: 1995 / EN 61000-3-2: 1995
IEC 1000-3-3: 1995 / EN 61000-3-3: 1995
IEC 1000-4-2: 1995 / EN 61000-4-2: 1995 - 4kV CD, 8 kV AD
IEC 1000-4-3: 1995 / EN 61000-4-3: 1995 - 10 v/m
IEC 1000-4-4: 1995 / EN 61000-4-4: 1995 - 2 kV Signal, 4 kV Power Lines
US FCC Part 15, Class B
Japan VCCI Class B
Australia/New Zealand AS/NZS 2046.1/2:1992, AS/NZS 3548:1995, and
AS/NZS 4251.1:1994
China GB9254-1988
Taiwan CNS13438 Class A
Russia GOST R 29216-94

and is certified by:

UL Listed to UL1950, 2nd edition, File E146385
cUL Listed to CSA 22.2 No.950-M93
TUV Certified to EN60950 2nd edition with A1+A2+A3+A4+A11
HP Fort Collins CCQD HQE

supplementary information:

The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly:
- the EMC directive 89/336/EEC and 92/31/EEC and 93/68/EEC
- the Low Voltage Directive 73/23/EEC and 93/68/EEC

This product was tested in a typical Hewlett Packard workstation configuration.
Original signed by Ruth Lutes, Site Quality Manager Fort Collins, CO, USA

For Compliance Information ONLY, contact:

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE
Standards Europe, Herrenberger Straße 130, D-71034 Böblingen (FAX: +49-7031-14-3143)

Americas Contact: Hewlett-Packard, Fort Collins Site Quality Manager, mail stop 46, 3404 E. Harmony Rd., Ft. Collins, CO 80528, USA

Appendix A

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Emissions Regulations

The HP VISUALIZE B2000 workstation is FCC Class B compliant. Note that if a video out cable is connected to your Video Out card, then your workstation is no longer FCC Class B compliant as stated in the subsequent section "Special Video Configuration Statement."

For FCC B Applications:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules and the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), you should try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Ask the dealer or an experienced radio/television technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP-shielded cables, such as those you receive with your workstation. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.





**Safety and Regulatory Statements
Emissions Regulations**

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept interference received, including interference that may cause undesired operation.
- Cables used with this device must be properly shielded to comply with the requirements of the FCC.

EMI Class A RRL (Korea)

사용시 안내문 (A급 기기)

이 기기는 업무용으로 전자파장애경정을 받은
기기이오니, 만약 잘못 구입하셨을 때에는 구입
한 곳에서 비입무용으로 교환하시기 바랍니다.

VCCI Class B ITE (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取り扱い説明書に従って正しい取り扱いをして下さい。

Safety and Regulatory Statements
Emissions Regulations



EMI Class A (Taiwan)

警告使用者：
這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Special Video Configuration Statement

When a Video Out card has a cable connected to its video out connector, the HP VISUALIZE B2000 workstation no longer meets FCC Class B regulations. The workstation now becomes FCC Class A compliant. This statement applies only to those applications which include a cable connected to the video out connector on a Video Out card. No modification to the regulatory statements is necessary for applications which include cables connected to other connectors on the card but not to the Video Out connector.





Safety and Regulatory Statements
Third Party Emissions Regulations Compliance

Third Party Emissions Regulations Compliance

Any third-party I/O device installed in HP system(s) must be in accordance with the requirements set forth in the preceding Emissions Regulations statements. In the event that a third-party noncompliant I/O device is installed, the customer assumes all responsibility and liability arising therefrom.

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Special Regulatory and Safety Information

This section covers regulatory and safety information for acoustics, lasers, and LEDs.

Acoustics

Table A-1 Regulation On Noise Declaration For Machines -3. GSGV

Lpa <70dB operator position normal operation per ISO 7779	Lpa <70dB am Arbeitsplatz normaler Betrieb nach DIN 45635 T.19
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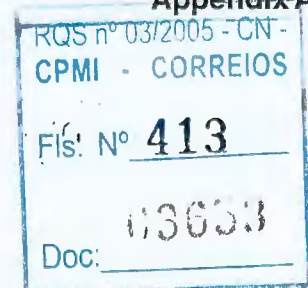
Laser Safety Statement (U.S.A. Only)

The CD-ROM mass-storage system is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

This means that the mass-storage system does not produce hazardous laser radiation. Because laser light emitted inside the mass-storage system is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

LEDs

The LEDs on this product are classified as "Class 1 LED PRODUCT" in accordance with EN 60825-1.





Safety and Regulatory Statements
Warnings and Cautions

Warnings and Cautions

WARNING:

Removing device cover may expose sharp edges in equipment chassis. To avoid injury, use care when installing customer add-on devices.

WARNUNG:

Das Entfernen der Geräteabdeckung legt die scharfen Kanten im Inneren des Gerätes frei. Um Verletzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

AVERTISSEMENT:

Des bords tranchants du châssis de l'équipement peuvent être exposés quand le cache de l'unité n'est pas en place. Pour éviter des blessures, faire très attention lors de l'installation de modules supplémentaires par le client.

WARNING:

Disconnect power plug from wall outlet or source power before moving or removing the device, or installing add-on components.

WARNUNG:

Entfernen Sie die Stromzuführung von der Steckdose oder der Stromquelle bevor Sie das Gerät bewegen, abbauen, oder zusätzliche Bauteile installieren.

AVERTISSEMENT:

Débrancher la fiche de la prise de courant ou de la source d'alimentation électrique avant de déplacer ou de retirer l'unité, ou avant d'installer des modules supplémentaires.

Safety and Regulatory Statements
Warnings and Cautions



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Glossary



A

Absolute pathname The full pathname of a file, including all the directories leading to it, starting with the root directory ("/") and ending with the filename itself. *See also file, filename, pathname.*

Access permissions Settings that allow or prevent a user or group of users to read, write, or execute files. *See also file access permissions.*

Active window The window that is receiving input from the keyboard at the present time. If there is no active window, anything you type is lost. Only one window can be the active window.

ANSI The American National Standards Institute, a non-profit organization made up of various expert committees that publishes standards for use by national industries. ANSI has adopted the IEEE standards for local area networks.

Argument A part of a command line or line of source code that identifies the file, directory, or other data to be used; a parameter.

Attachment unit interface (AUI) A transceiver cable that conforms to IEEE 802.3 specifications.

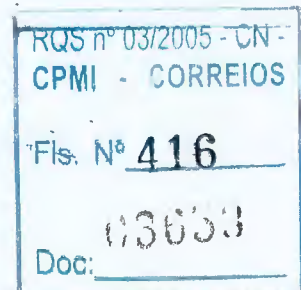
B

Backup v. To make a copy of one or more files on a tape or disk that can be stored separately from the original files.

Backup n. A spare copy of one or more files on a tape or disk that can be used to restore data into its original location.

Bitmap Generally speaking, an array of data bits that define a graphical image. Strictly speaking, a bitmap is a pixmap whose depth is one bit, capable of representing two-color (black-and-white) images.

Boot Short for "bootstrap," from the phrase "pulling oneself up by one's bootstraps." Indicates the beginning of a process from the lowest possible level. A boot service is provided by a short program, stored in the boot ROM (read-only memory) of your workstation, that loads the operating system (or any complex program) into main memory. Partner workstations provide bootstrap service to





diskless workstations. *See also boot ROM.*

Boot console interface The interactive firmware that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console interface allows you to perform special tasks, display information, and set certain system parameters.

Boot ROM A read-only memory that is incorporated into a workstation for the purpose of loading and starting the operating system, and modifying the configuration or changing the booting behavior.

Bootstrap service *See boot.*

Byte A fundamental character-code unit, usually consisting of 8 bits.

C

CD-RAM Compact Disk Random-Access Memory. *See also CD-RAM disk, CD-RAM drive.*

CD-RAM disk CD-RAM (CD-RW) disks are identical to the audio compact disks (CDs) used to record stereo music, except computer data

is read from and written to these disks. CD-RAM disks are 120 mm (4.7 inches) in diameter, use one data surface, and have a capacity of about 650 MB. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant linear speed.

CD-RAM drive A random-access, read/write, mass-storage device that uses removable CD-RAM disks. The drive contains a semiconductor laser for reading and writing data optically and an embedded controller.

CD-ROM Compact Disk Read-Only Memory. *See also CD-ROM disk, CD-ROM drive.*

CD-ROM disk CD-ROM disks are identical to the audio compact disks (CDs) used to record stereo music, except that they store computer data. CD-ROM disks are 120 mm (4.7 inches) in diameter, use one data surface, and have a capacity of about 650 MB. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant linear speed.

CD-ROM drive A random-access, read-only, mass-storage device that



Glossary



uses removable CD-ROM disks. The drive contains a semiconductor laser for reading data optically and an embedded controller.

Central Processing Unit (CPU)

The part of a workstation that interprets and executes instructions; the "brain."

Child directory *See subdirectory.*

Click To press and immediately release a mouse button. The term comes from the fact that pressing and releasing most mouse buttons makes a clicking sound. Compare to drag and drop.

Cluster A group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, acts as a file-system server for the cluster clients. *See also cluster client, cluster node, cluster server.*

Cluster client. A cluster node that does not have a local HP-UX file system. Its file system resides on the cluster server. *See also cluster, cluster node, cluster server.*

Cluster node A member of a

group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, acts as a file server to the other machines in the cluster. *See also cluster, cluster client, cluster server.*

Cluster server A workstation that provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also cluster, cluster client, cluster node, host.*

Cold install. A process that requires the booting of an install kernel from an install server over a network or from a CD-ROM and answering some configuration questions.

Command. An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also shell command.*

Command argument

Information you provide on a command line to describe the object (often a file or directory) to be operated on by the command.



Glossary



Command interpreter A program that reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute commands or programs. An HP-UX command interpreter is called a shell. *See also shell.*

Command option Information you provide on a command line to indicate any special action you want the command to take, or mode in which to operate. *See also default.*

Configuration The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term "configuration" may refer to a hardware configuration or a software configuration.

Console. The tty (terminal) the system was booted from. The console is associated with the monitor where all system messages are displayed. The system administrator sends messages to other system users from this tty.

Control key sequence. A keystroke combination used as a shorthand way of specifying

commands. To enter a control key sequence, hold down the "Ctrl" key while pressing another key.

CPU *See Central Processing Unit.*

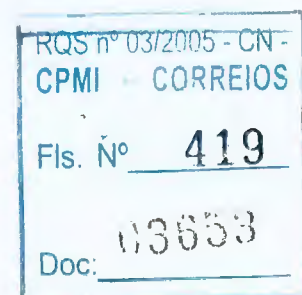
Current directory *See current working directory.*

Current session The work and processes that have been created since you logged into the system (and before you log out again).

See also session.

Current working directory The directory from which a relative-pathname search begins, as well as the directory in which you are currently working. It is also called the "working directory" or "current directory."

Cursor The small, usually blinking, box or underline displayed in whatever screen or window is active at any particular time. The cursor marks your current typing position on the screen and indicates which program (HP CDE terminal window or shell) will receive your typed commands.



Glossary



D

Daisy-chaining A method of connecting devices in which the signal passes from one device to the next in serial fashion along a bus.

DDS tape drive A device that stores data on Digital Data Storage (DDS) cassettes.

Default Most commands give you a choice of one or more options. If you don't specify an option, the command automatically assigns one. This automatic option is called the "default." *See also command option.*

Dialog box A special type of HP CDE screen that contains controls and settings, and with which the user can carry on an interactive "dialog" in the process of setting whatever parameters the dialog box requests. To display an example of a dialog box, click the Style Manager button on the Workspace Manager's front panel, then click on Color.

DIMM *See Dual In-line Memory Module.*

Dual In-line Memory Module A memory board whose connectors

on each side of the board are connected to different chips. This allows for a wider data path as more modules can be accessed at the same time.

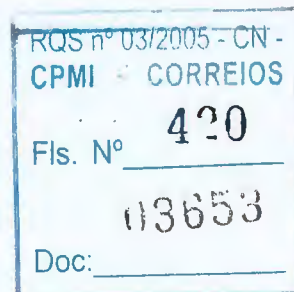
Directory A special type of "container" object that contains information about the objects beneath it in the HP-UX organizational structure. Basically, it is a file that stores names and links to files and other directories. *See also file.*

Disk A thin, round plate with a magnetic or optical surface coating on which data is stored by magnetic or optical means. *See also floppy diskette, hard disk, CD-ROM disk.*

Disked workstation A workstation that has its own hard disk drive.

Diskette *See floppy diskette.*

Double click To press and release a mouse button twice in rapid succession. The amount of time that discriminates between a double click and two single clicks is usually user-configurable. Double clicking usually invokes a different, but related, function than single clicking.



Glossary



Drag To move the mouse (and hence the pointer on the screen) while holding down one or more of its buttons. This process specifies two separate locations on the screen for those operations that require two: the location when the mouse button is pressed, and the location when it is released. This is used, for example, to initiate a file-copy by pressing the mouse button on the file to be copied, dragging the file's icon to the destination window, and releasing the mouse button there. Another common using of dragging is to specify the upper-left and lower-right corners of a new window or similar rectangle. *See also drop.*

Drive *See CD-ROM drive, DDS tape drive, floppy drive, hard disk drive.*

Drop To release the mouse button after having moved the mouse with its button held down, in order to position an icon or other object that has been "dragged" to a new position. *See also drag.*

E

EEPROM. Electronically erasable read-only memory. Usually bytes or words can be erased and

reprogrammed individually during system operations. The EEPROM is used for storing configuration information that will be "remembered" after a reboot and AC power loss.

Environment The conditions in which your commands or programs are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also environment variables.*

Environment variables The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, and HOME) that define the conditions in which, or values with which, your commands are executed. These conditions and values include your workstation characteristics, home directory, and default search paths. *See also environment.*

Ethernet The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

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F

File The basic named unit of data stored on disk. *See also directory, filename.*

File access permissions The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it) *See also access permissions.*

File manager The HP CDE application that allows you to manage your files and directories, and to set viewing preferences.

File name The name given to a particular file. *See also absolute path name, file, path name.*

File server A workstation whose primary task is to control the storage and retrieval of data from hard disks. Any number of other workstations can be linked to the file server via a LAN in order to use the file server to access data.

File system The hierarchically organized set of files and directories on a hard disk.

Firmware The control software that is embedded in ROM and is always resident regardless of the status of the operating system. It handles the booting of the system, initialization of I/O, and starts the loading of the operating system.

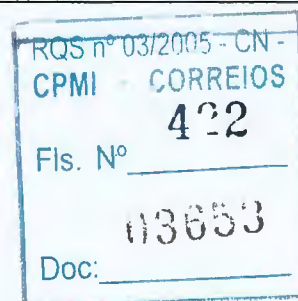
Floppy diskette A thin, flexible, disk-shaped sheet of plastic that magnetically stores data on its coated surfaces. Floppies are contained within stiff plastic "envelopes" to protect them from dust, fingerprints, and abrasion. The floppy drive uses heads (similar to heads in tape recorders) to read and write data on concentric disk tracks.

Floppy drive A device that stores data on a floppy diskette.

H

Hard disk A type of disk that is rigid—often aluminum—as opposed to a thin plastic diskette, which is flexible.

Hard disk drive A device that stores data on a hard disk. The hard disk can be a permanent part of the drive and thus be unremovable, or it can be removable. If it is removable, it is contained in a protective cover that





is opened by the drive when access is needed.

Help manager The HP CDE application that provides online help.

\$HOME The environment variable that contains the name of a user's home directory. This is the directory in which you are placed upon logging in. Typically, this is /home/login, where login is your username. *See also home directory.*

Home directory A shorthand way of referring to a frequently used directory, almost always the login directory.

Host A computer that offers one or more services; may be local or remote (accessible via a network). *See also cluster server.*

Host name *See internet protocol address.*

HP CDE *See HP Common Desktop Environment.*

HP Common Desktop Environment A user interface that draws a graphical layer over the complexities of the other layers of the system (the hardware,

operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command-line prompt.

HP-UX. This is Hewlett-Packard's version of the UNIX® operating system.

HP-UX cluster *See cluster node, cluster server.*

I

Icon A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

Iconify *See iconize.*

Iconize To turn a window or shell into an icon. *See also icon.*

Initial System Loader (ISL)

The program that actually controls the loading of the operating system.



Glossary



Input device Any of several pieces of hardware equipment used to give information to a system. Examples include the keyboard and the mouse. *See also output device.*

Input window The window that displays a program's prompt and any commands typed but not yet executed.

Instant Ignition. When the user's computer is turned on and it automatically boots up and is ready for use. Instant Ignition is the result of the computer's operating system being preloaded at the factory.

Install server. This is a networked computer from which file sets and operating systems can be installed.

Internet protocol address (IP address) A string of characters, in the format nnn.nnn.nnn.nnn, that uniquely identifies a workstation in a network. The nnn in the format specifier above is a one- to three-digit decimal integer between 0 and 255, inclusive, in which leading zeroes are optional. The internet protocol address is also referred to as the "IP address."

Invisible file name A filename in which the first character is a period (.). Invisible filenames are not displayed by the listing commands such as ls and ll without additional options, such as -a.

IP address *See internet protocol address.*

ISL *See Initial System Loader.*

K-L

Kernel The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

LAN *See local area network.*

LAN station address *See local area network station address.*

Link n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

Link v. To establish a relationship between two objects such that one of the objects contains only the

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Glossary



information required to associate it with the other, "real," object.

Local area network (LAN) A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters that share data, hardware, and software resources via Networking Services software.

Local area network system address The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level. This 48-bit number is preassigned by HP on their computers and it must never be changed.

Log in *v.* To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also username.*

Login *n.* A session. Or, a string of characters that uniquely identifies a user of the system. *See also session, user account, and username.*

Login directory The directory in which you are placed when you log in, usually your home directory.

See also home directory.

Login manager The program that controls the initial startup of HP CDE and accepts the user's username and password.

Login script The shell program that runs at each login, and sets the login environment for your system.

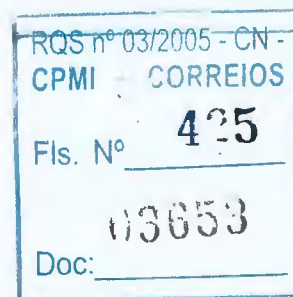
M

Menu bar An area at the top or bottom of a window that contain the titles of the pull-down or pop-up menus for that application.

Minimize button In HP CDE, a push-button on the window frame that turns a screen into an icon. *See also icon, iconize.*

Monitor type. A monitor path name (graphics(1) through graphics(6)) that is associated with a particular resolution and refresh frequency at which you want your monitor to operate. The monitor type is selected using the Boot Console Interface. *See Chapter 5.*

Mouse pointer. *See pointer.*



Glossary



N

Name A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character. *See also pathname.*

Network Two or more workstations sharing information. *See also cluster, workstation.*

Network controller A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

Node A computer that is on a network. Each node in the network can use the data, programs, and devices of other network nodes, assuming permissions are set up properly. Each node contains main memory and has its own disk or shares one with another node.

See also disked workstation, diskless workstation, workstation.

Node name A unique identifying

name given to a workstation in a cluster. *See also cluster, node.*

Nonvolatile memory System memory that retains its contents even after workstation power is turned off.

O

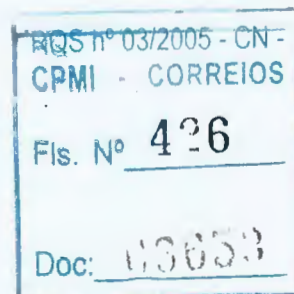
Object Any file, directory, or link in the network. *See also directory, file, link, pathname.*

Operating system The program that supervises the execution of other programs on your workstation. For example, the entire HP-UX system, including the kernel and all HP-UX commands. *See also kernel.*

Option *See command option.*

Output device Any of several pieces of hardware used for receiving messages from the computer and storing them, or making them perceptible by humans. Disks and tapes, computer monitors, printers, plotters are examples of output devices. *See also input device.*

Output window The window that displays a process response to your command.



Glossary



P

Parent directory A directory that contains other directories, each of which is then called a subdirectory. *See also subdirectory.*

Password The secret word you enter next to the password prompt at login time to permit only authorized access. Keep your password secret and change it occasionally in order to protect your account from unauthorized use. *See also user account.*

Path The hardware address of a device that is attached to the I/O system of your workstation.

Path name A slash-separated series of zero or more directory names followed by a filename, that together describe the path within the file system from some starting point to a destination object. Pathnames (other than the degenerate empty case) begin with the name of the starting point, and include every directory name between the starting point and the destination object. A pathname ends with the name of the destination object. *See also name, object.*

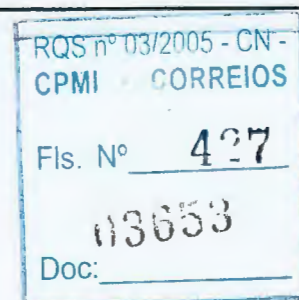
Permissions A set of rights (read, write, execute) associated with an object in the file system. Determines who may use the object and how.

PID Process Identifier. Also referred to as a process ID. *See also process ID.*

PIM. Processor Internal Memory. The pim command is a command used by the Boot Console Interface for determining specific system faults. *See also processor internal memory.*

Pointer Sometimes called the "mouse pointer," the pointer's location on the display corresponds to the mouse's location. The pointer's shape often depends on the object its hot-spot covers (this is used as a visual feedback mechanism from a program to the user). In the HP CDE Workspace, the default pointer is an X; on a window frame, it is either a simple arrow, or an arrow with one or more straight lines touching it (to indicate any of the eight window-resizing regions).

Process A computing environment in which you may execute programs; a program currently running in the system.



Glossary



Process ID A unique identification number assigned to all processes by the operating system. Also referred to as a PID. *See also PID.*

Processor internal memory. A storage area in a processor's internal memory (for example, EEPROM) that is set at the time of a high-priority machine check (HPMC), low-priority machine check, soft boot or TOC, and is composed of the architected state save error parameters, and hardware version-dependent regions.

Program. A unit of executable code, in source-code or binary form. Most HP-UX commands and routines consist of programs.

Prompt A message or symbol displayed by the system to let you know that it is ready for your input.

Push button A graphic control that simulates a real-life push button. Use the pointer and mouse to push the button and start an action or set a state.

R-S

RAM Random-access memory.

ROM Read-only memory.

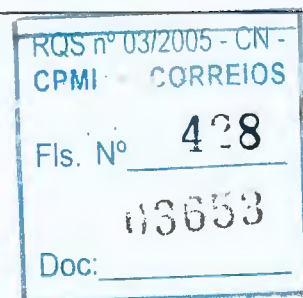
root *See superuser.*

Scroll bar A vertical or horizontal bar located on the side or bottom of a window that allows the user to view information that does not fit within the window.

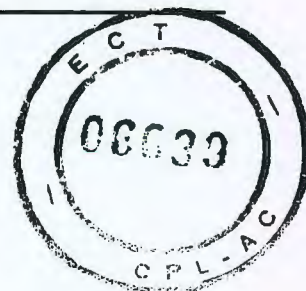
SCSI *See Small Computer System Interface.*

Server. A program that controls all access to input and output devices.

Session The time between when you log in and when you log out. Also called a "work session" or a "login session." *See also current session.*



Glossary



Shell A command-line interpreter program used to invoke programs. Some examples of HP-UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a "command interpreter." *See also command interpreter.*

Shell command An instruction you give the system to execute a utility program or shell script.

See also shell script, utility program.

Shell script A file that contains commands that the system can interpret and run in a shell.

Shutdown The process of taking the system from multi-user state to system administration state.

Slider One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause the window's contents to move, exposing previously hidden content.

Small Computer System Interface (SCSI) An IEEE standard for interfacing a computer to multiple, disparate high-speed peripherals such as a disk drive, a CD-ROM drive, or a scanner, etc., singly or in

combination.

SPA. Soft Physical Address. *See also soft physical address.*

Soft physical address (SPA).

This is a location in system memory associated with the DIMM cards.

Standalone A workstation that is not part of a cluster. *See also cluster.*

Style manager The HP CDE application that provides the ability to customize various user-interface aspects of your system, including colors, fonts, keyboard and mouse attributes, session start-up and termination behavior, and access to other workstations.

Subdirectory A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the "parent directory." A subdirectory is also referred to as a "child directory." *See also parent directory.*

Superuser A user with permission to enter any directory and make changes to files and



Glossary



programs that typical users are not allowed to change. To "become superuser" or "become root" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system as user root, or by typing su (switch user) at a command-line prompt. You must know the root password to become root.

System administrator The person responsible for system and network installation, updating, maintenance, and security at your site.

System call Invocation of a kernel process by a user program.

System name *See internet protocol address.*

T-U

Terminal window A terminal window is a type of HP CDE window that emulates a complete display terminal. Terminal windows are typically used to fool window-dumb programs into believing they are running in their favorite terminal. When not running programs or executing operating system commands,

terminal windows display the command-line prompt. *See also HP Common Desktop Environment.*

Title bar The rectangular area, between the top of the window and the window frame, that contains the title of the window object.

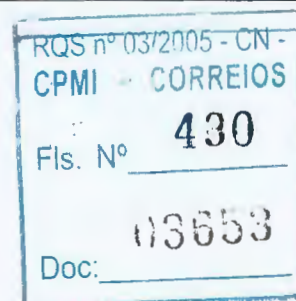
TOC. *See transfer of control.*

Transceiver. A device that transmits and receives signals.

Transfer of control. Saves the state of the processor in Processor Internal Memory (PIM) and pending I/O operations are not disturbed.

User account. The system administrator defines a user account for every person authorized to use the system. Each user account contains the name the computer uses to identify the person (user ID), and the person's password. User accounts also contain project and organization names, to help the system determine who can use the system and what resources each person or organization is authorized use.

See also user ID, password.



Glossary



User ID The name the computer uses to identify you. Your system administrator assigns you a user ID. Enter your user ID during the login procedure when the system displays the login prompt. *See also user account.*

Username The name that the system recognizes as uniquely yours. Also known as your "login name." The username is also the name that identifies you to the mail system and other software requiring secure entry.

Utility *See utility program.*

Utility program A program provided with the operating system to perform a frequently required task, such as printing a file or displaying the contents of a directory. *See also command, shell command.*

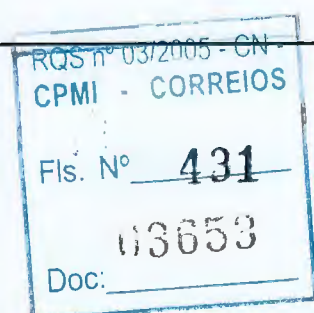
W

Window A rectangular area of the screen for viewing information. HP CDE allows you to create several types of windows on the screen. Each window is a separate computing environment in which you may execute programs, edit text, display graphical images,

etc. *See also Workspace Manager.*

Window manager The HP CDE program that controls the size, placement, and operation of windows.

Working directory *See current working directory.*



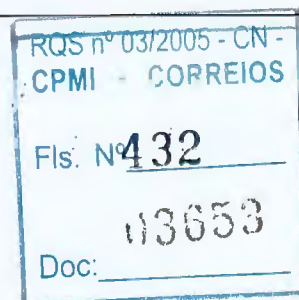
Glossary



Workspace What the screen becomes when you start HP CDE. Although you can hide the workspace under terminal windows or other graphic objects, you can never position anything behind the workspace. All windows and graphic objects appear stacked "on top of" the workspace. *See also HP Common Desktop Environment, terminal window.*

Workspace manager The program that controls the size, placement, and operation of windows on the HP CDE Workspace. The Workspace Manager is a special Window Manager. *See also Window Manager.*

Workstation A compact, graphics-oriented computer having high speed and high memory capacity. A workstation usually includes a computer, a keyboard, and a monitor. *See also node, disked workstation, diskless workstation.*





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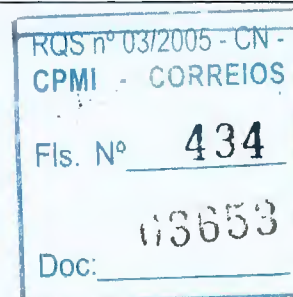
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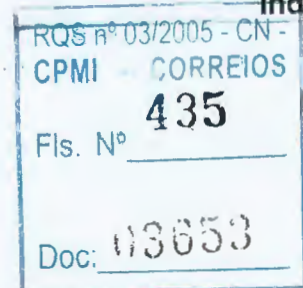
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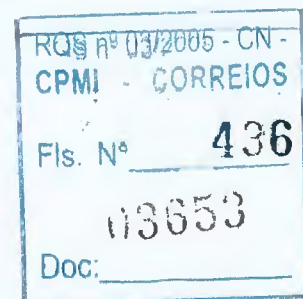
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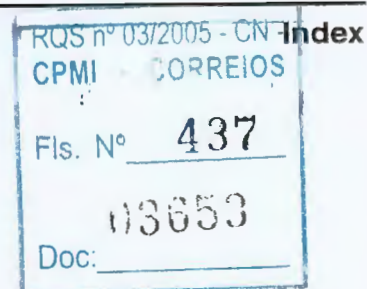
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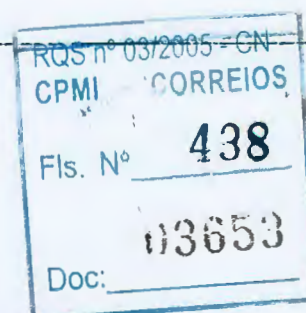
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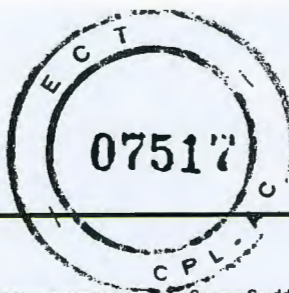
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Verify Contents

Unpack and verify the contents of the shipping box against the Contents Checklist included with your HP NetServer. If anything is missing or damaged, contact your reseller.



Tools Required

Installation of some accessories require a T25 TORX® and T15 TORX® or a 1/4-inch flat blade screwdriver, depending on the accessory.

ESD Warning

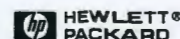
This HP NetServer contains sensitive electronic devices that can be damaged by electrostatic discharge (ESD). ESD hazards are a result of installation or service personnel failing to ground themselves properly. To be properly grounded, use a proper ESD wrist strap and work surface grounded to the HP NetServer chassis.

Audience Assumptions

This road map is intended for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes that you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

NetServer LH 4 Installation Road Map

1. Verify Contents
2. Overview of NetServer Features
3. Obtain HP NetServer Navigator CD-ROM Release History
4. Connect Monitor, Keyboard, and Mouse
5. Preparation
6. Removing and Replacing the Covers
7. Install All Accessory Boards
8. Install Additional Memory
9. Install Additional Mass Storage Devices
10. Replace Covers and Cables
11. Verify Installed Accessories (Optional)
12. Configure the HP NetServer



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HP NetServer

LH 4 Installation Road Map

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2 Overview of NetServer Features

Non-Hot-Swap Shelves:

- Shelf 1 (Flexible Disk Drive)
- Shelf 2 (CD-ROM Drive)
- Shelf 3 (Empty)
- Shelf 4 (Empty)

Hot-Swap
Mass Storage
Expansion
Bay (Empty)

Front Panel Display
Bezel Lock
Power Switch
Reset Switch
Keyboard Lock Switch
Status Lights
Display Control Buttons

Hot-Swap
Mass Storage
Cage

Front View

I/O Connectors:

Remote Management

Serial B
Serial A
Parallel
Mouse
Keyboard
Monitor

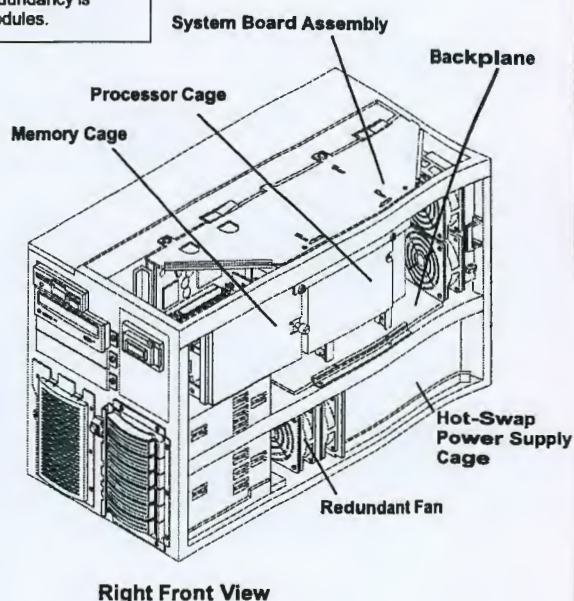
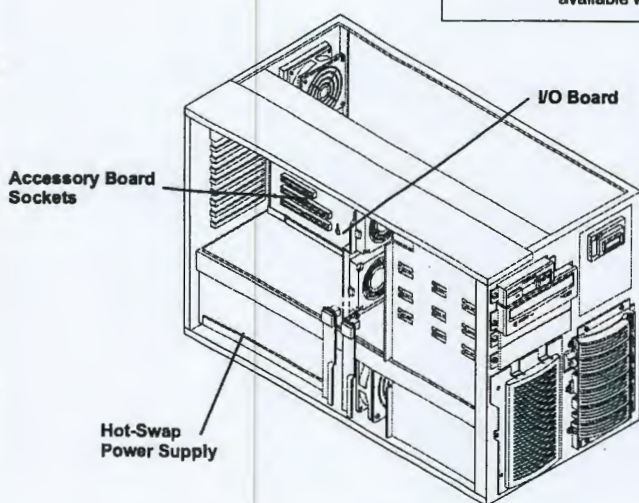
Hot-Swap
Power Supply
Modules
AC Power
Connectors

Accessory Board
Slot Covers

Hot-Swap
Power Supply
Modules

Rear View

NOTE Power redundancy requires four power supply modules. No redundancy is available with three modules.



3 Obtain HP Navigator CD-ROM Release History

Before you begin installing your HP NetServer, ensure that you have the latest version of the software by obtaining the current HP NetServer Navigator CD-ROM release history. It describes the latest software updates to each release of the Navigator CD-ROM, as well as instructions for obtaining the current release.

- Fax—Call HP's fax system at 1-800-333-1917 (or 1-208-344-4809 from your fax machine), and request document number 6005
- Internet WWW—<http://www.hp.com/netserver/servsup>
- Internet FTP—<ftp://ftp.hp.com/pub/servers>
- CompuServe—GO HPPC; download 6005.txt from the NetServer library

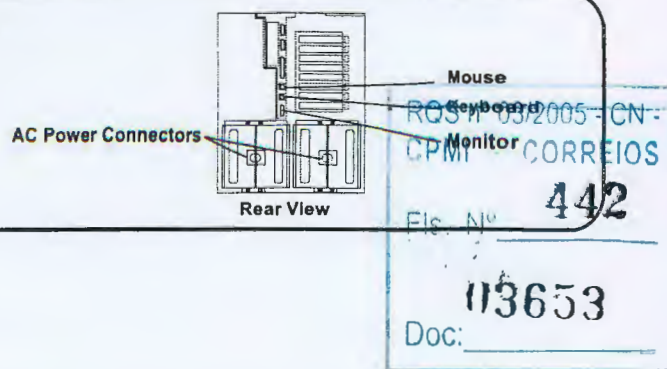
You can obtain the release history from one of the HP NetServer information resources listed here.

To obtain drivers and utilities for the non-HP components of your system, follow the directions provided by the component or network operating system (NOS) manufacturer to access the necessary Internet, BBS, or CompuServe site containing the drivers and software.

4 Connect Monitor, Keyboard, and Mouse

1. Connect cables: Connect the monitor, keyboard, and mouse cables and the AC power cords to the appropriate connectors on the rear of the chassis.

2. Connect UPS: If you have an uninterruptible power supply (UPS), refer to the instructions supplied with it. Install and turn on the UPS.



5 Preparation

1. **Boot the HP NetServer Navigator CD-ROM:** Turn on the monitor. Press the power-on button on the HP NetServer, and press the eject button on the CD-ROM drive. Place the HP NetServer Navigator CD-ROM in the drive, and close the drive. Press the Reset button. If the system fails to restart, follow the instructions on the screen.

When HP Navigator starts, you can set the time and date, and change the display language.

2. **Read the Readme File:** Select "Readme File" from the HP Navigator Main Menu. The Readme file contains the latest information to help you install your HP NetServer.

3. **Run DiagTools (Optional):** To verify the HP NetServer hardware as shipped, copy Diag Tools from the HP NetServer Navigator CD-ROM to diskette. Refer to the online

documentation HP NetServer DiagTools Error Reference and User Guide for more information.

4. **Install Information Assistant:** Information Assistant will help you install your HP NetServer. It is easier to use from a stand-alone system, rather than from the HP NetServer you are installing. Install Information Assistant from the HP NetServer Online Documentation CD-ROM onto the client system that you will be using to manage your HP NetServer.

5. **Visit Order Assistant (optional)** on the Internet at <http://www.hp.com/go/netserver>

Order Assistant lists HP accessories, cables, and connectors for your HP NetServer.

6 Removing and Replacing the Covers

If you are installing accessory cards or mass storage devices, remove the front bezel and cover 1. If you are installing memory, remove the front bezel and cover 3.

To install some options, you will need a flat 1/4-inch screwdriver and a T15 TORX® driver.

WARNING Before removing cover(s), always disconnect the power cord and unplug telephone cables.

Note that the power switch does not turn off the standby power. Disconnect the power cord to turn off standby power. If the backlight on the LCD display is on, standby power is on.

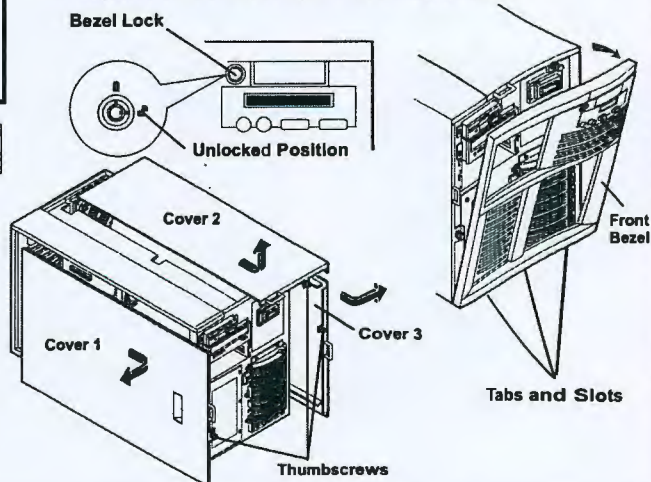
CAUTION Wear a wrist strap and use a static-dissipating work surface connected to the chassis at all times.

To remove a cover:

1. **Turn off the HP NetServer** and disconnect the power cord and telephone cord.
2. **Unlock the bezel lock** with the key from the key bag located on the rear of the HP NetServer.
3. **To remove the front bezel**, pull the top of the bezel away from the chassis, and then lift the bezel up and off of the chassis.
4. **Loosen the thumbscrew** at the front of the cover and pull the cover forward, using the handle on the cover, and then lift it off the chassis.

To replace a cover:

1. **To replace a cover**, insert the tabs inside the rear of the cover into the slots at rear of the chassis and slide the side cover toward the rear. Tighten the thumbscrew at the front of the cover.
2. **To replace the bezel**, insert the tabs at the bottom of the bezel into the slots at the bottom of the chassis front and press the top of the bezel to the chassis until it snaps into place. Lock the bezel lock with the key provided.
3. **Replace all power, telephone, and I/O cables.**



7 Install All Accessory Boards

1. **Remove cover 1** as described in panel 6: "Removing and Replacing the Covers."
2. **Read the documentation** included with each accessory board. Follow any special instructions and installation recommendations. Some boards have preferred slot locations. If not, consider the boot order (see below) when choosing the accessory board socket in which to install the board.
3. **Remove the slot cover** for each slot to be used, and store it for future use. If you are installing any full-length PCI boards, also remove the accessory board retainer. Push on the button on the retainer to release it, and then slide it out of the board guide.
4. **Install the boards:** Insert each board in the desired slot and fasten the board's mounting screw at the slot opening at the rear of the chassis. Connect any required cables to the boards. If you removed the board retainer, reinstall it.

NOTE

If you install an ISA non-Plug-and-Play board, you must reserve system resources (some or all of: memory addresses, I/O addresses, IRQs, and DMA channels) for it. Write down that information now for reference when you reserve system resources in Panel 12: "Configure the HP NetServer."

Boot Device Priority

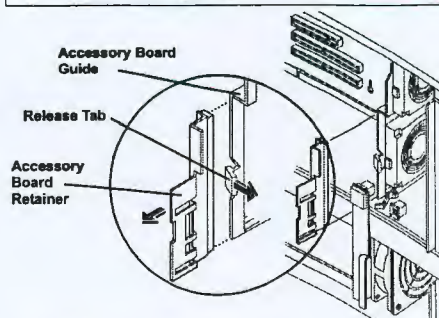
Boot order for PCI controllers is determined by slot location. The system searches for a bootable device in the following order:

1. IDE CD-ROM drive with a bootable CD-ROM.
2. Flexible disk drive with a bootable flexible disk.
3. Embedded SCSI controller or embedded DAC.
4. PCI boards in slots in the following order: 8, 7, 6, 5, 4, 3, 2, 1.

This boot order can be changed using the SETUP utility (press [F2] during the boot process).

NOTE

For a list of boards HP has tested, see Help topic "Tested Parts List" on the HP Navigator CD-ROM.



Slot 1 16-bit ISA or 32-bit PCI

- Slot 2 32-bit PCI
- Slot 3 32-bit PCI
- Slot 4 32-bit PCI
- Slot 5 32-bit PCI
- Slot 6 32-bit PCI
- Slot 7 64-bit PCI
- Slot 8 64-bit PCI

PCI Board- Left-Side Offset



ISA Board-Right-Side Offset

Doc.

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Install Additional Memory

NOTE

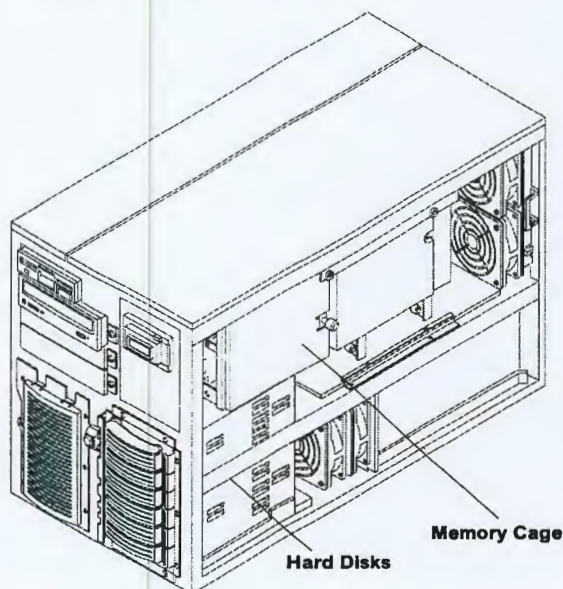
Use only HP DIMMs listed in HP Information Assistant or in HP Order Assistant.

1. Remove cover 2.

Remove the cover as described in panel 6, "Removing and Replacing the Covers."

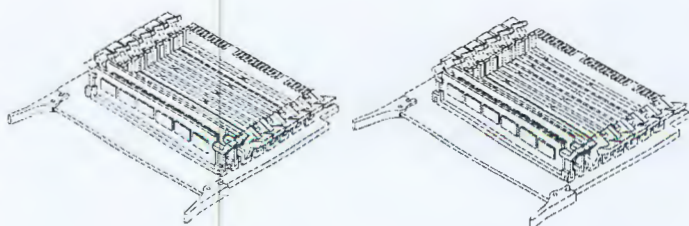
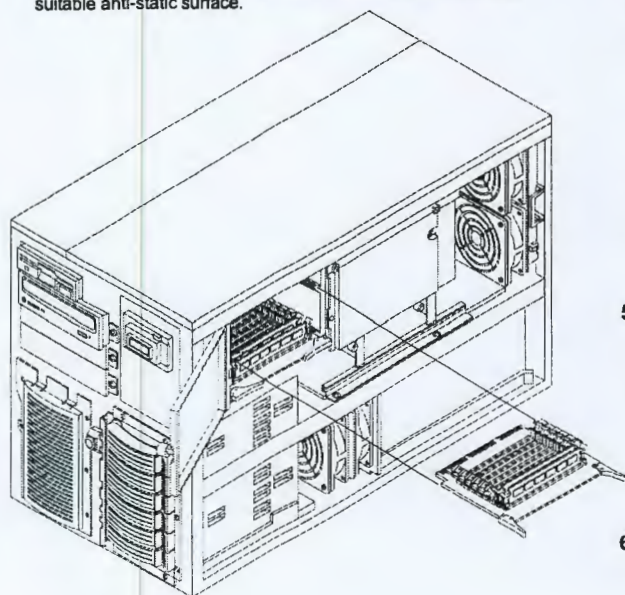
2. Open the memory cage cover.

Loosen the cover screw. Swing the cover open.



3. Remove both memory boards.

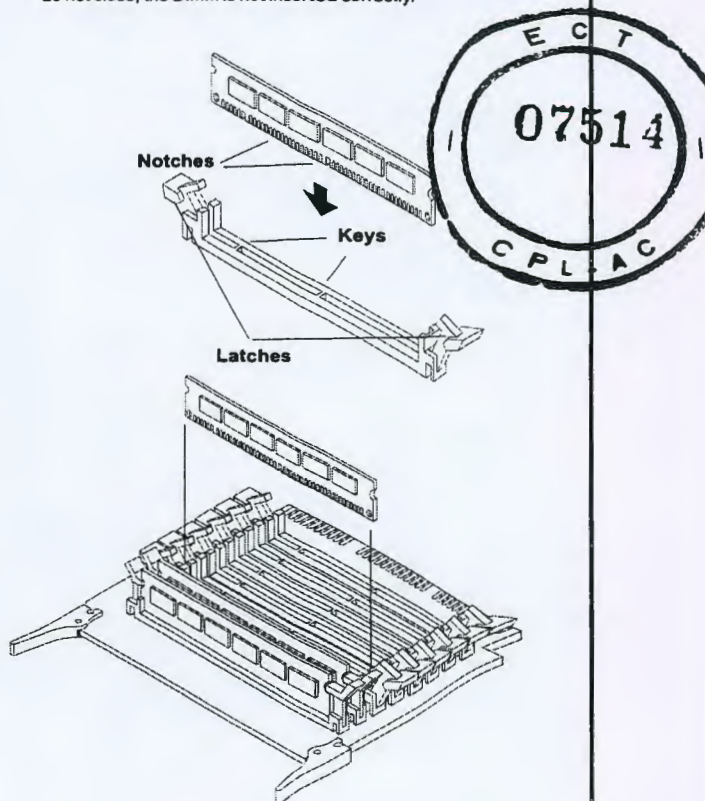
Release the latches and remove both boards. Place them on a suitable anti-static surface.



4. Install DIMMs.

Align the notches on the DIMM with the keys on the Memory board socket.

Holding the DIMM at 90 degrees to the system board, press the DIMM fully into the socket until the retaining clips close. If the clips do not close, the DIMM is not inserted correctly.



Memory Rules:

DIMMs must be installed four at a time, two per card.

DIMMs must be installed in banks, from 1 to 4.

J1 and J2 of memory A and B are bank 1.

J3 and J4 of memory A and B are bank 2.

J5 and J6 of memory A and B are bank 3.

J7 and J8 of memory A and B are bank 4.

DIMM types cannot be mixed per bank.

DIMMs are 64 or 256 MB.

DIMMs are EDO buffered TSOP at 50 ns.

5. Replace the memory boards.

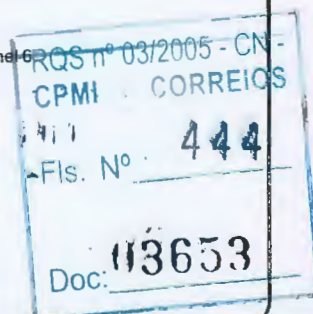
Insert each memory board, one at a time, into its guide, and press it into its socket. The retaining clips flip along the sides of the board when it seats. The memory boards need to be identical, so it does not matter which board is Memory A or B.

6. Close memory cage cover.

Swing the memory cage cover closed, and tighten the screw.

7. Replace cover 2.

Replace cover 2 as described in panel 6.



9 Install Additional Mass Storage Devices

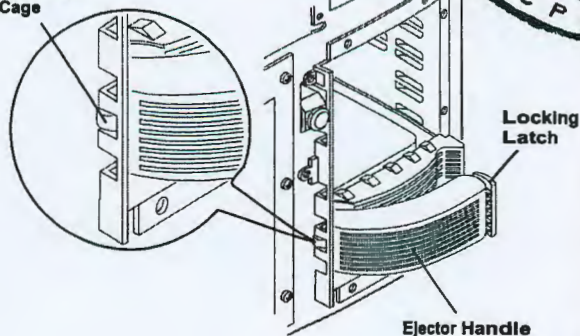
This HP NetServer supports both hot-swap SCSI devices, installed in the hot-swap mass storage cage, and non-hot swap SCSI devices, installed in shelves 3 and 4 (located below the CD-ROM drive).

Use only Ultra2 (LVD), SCA-2 connector hot-swap devices in the hot-swap mass storage cage. You can use any standard (non-Ultra2) wide, 68-pin single-ended SCSI device in non-hot-swap shelves 3 and 4, such as a removable hard disk or a tape backup drive. Narrow (50-pin) SCSI devices are supported in the non-hot-swap shelves, but require a 68-to-50-pin cable adapter for connecting the data cable to the device. (One adapter is provided on the SCSI cable behind shelf 3.)

CAUTION

Do not mix Ultra2 devices with other SCSI devices. Use only Ultra2 devices in the hot-swap mass-storage cages. Use only non-Ultra2 (wide or narrow) devices in the non-hot-swap shelves (shelves 3 and 4).

Pin Engages Hole in Edge of Cage



Ejector Handle

SCSI Addressing

Different form-factor hot-swap disk drive modules can be mixed and matched within the hot-swap mass storage cage. Because so many different configurations are possible, SCSI addresses assigned to the modules will be different depending on the particular configuration.

See "Non-Hot-Swap SCSI Addressing," below, for addressing restrictions on non-hot-swap devices.

Inserting a Hot-Swap Disk Drive Module

1. Open the drive by pressing in on the locking latch at the end of the drive ejector handle and pulling open the handle.
2. Choose a location in the hot-swap mass-storage cage and gently slide the drive into the cage. Stop when you feel resistance.
3. Verify that the locking pin behind the pivot end of the handle engages the hole in the chassis. (See figure, at right).
4. With even pressure, gently close the ejector handle until the locking latch clicks shut.

Removing a Hot-Swap Disk Drive Module

1. Let the drive spin down completely before removing it.
2. Press in on the locking latch at the end of the drive ejector handle and gently open the handle.
3. Slowly pull the drive out of the cage.

CAUTION

Do not operate this NetServer — even for short periods — without a tray, filler panel, or drive spacer in every hot-swap and non-hot-swap mass storage location. Otherwise, damage to components may result due to improper cooling airflow.

Hot-Swap Module Configurations and SCSI Addresses

Both half-height (1.6-inch) and low-profile (1-inch) form-factor devices may be installed in the hot-swap mass-storage cage. There are two different height hot-swap trays available to accommodate drives of different form factors.

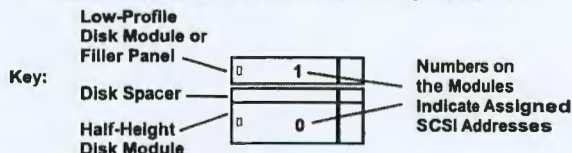
Six low-profile devices or four half-height devices, or combinations of these two devices may be installed in the hot-swap mass-storage cage.

NOTE

For maximum storage density and to avoid configuration problems, install hot-swap drives in consecutive locations only, beginning with the lowest location in the mass-storage cage.

Because of the height difference between half-height and low-profile devices, some combinations of the two types of trays will require spacers to take up space between devices. The figure below shows the different combinations of hot-swap devices possible. SCSI addresses are assigned automatically depending on the location of a drive module within the mass storage cage.

SCSI addresses listed here are for SCSI A only. Refer to the



9	9	8	8	9	8	9	8	8	
8	8			8					8
3	3	3	3	3	3	3	3	3	
2	2	1	1	1	2	1	2	3	
1					1		1	1	
0	0	0	0	0	0	0	0	0	

Non-Hot-Swap SCSI Addressing

SCSI Addresses

Each SCSI device must have a unique SCSI address. Devices connected to the SE connector (those located on the non-hot-swap shelves) and to the SCSI B connector (not used in the factory-configured models) share one SCSI bus. Therefore each device connected to either of these connectors must have a unique address (narrow devices may use addresses 0-6; wide devices may use addresses 0-15, except address 7).

Jumper Settings

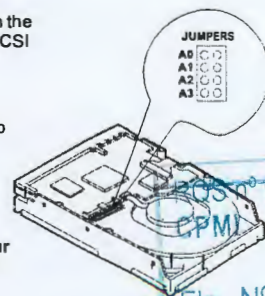
The figure to the right is typical of a SCSI hard disk drive that may be used in this NetServer. Use this as a general reference for jumper locations and settings. Typically, jumpers A0, A1, A2, and A3 determine the SCSI address.

Refer to the documentation that came with the SCSI device for the jumper location and settings. Refer to

the Technical Reference Card, located in the pouch on the inside of the NetServer cover, for the recommended SCSI addresses.

SCSI Termination

The NetServer SCSI cable is terminated. Verify that no added devices are terminated.



(Drive typical; your model may differ)

Jumpers:

Address:

A0	A1	A2	A3	0	1	2	3	4	5	6	8	9	10	11	12	13	14	15

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10 Replace Covers and Cables

1. **Replace all covers** as described in panel 6: "Removing and Replacing the Covers."
2. **Connect the AC power cord** and all other cables.

CAUTION

Replace all covers before operating the NetServer, even for a short time. Otherwise, damage to system components may result due to improper cooling air flow.

11 Verify Installed Accessories (Optional)

If you wish, you may now verify accessories you have installed. Turn on power to the HP NetServer and the monitor, and observe the boot screen.

The boot screen lists the hardware, as it is detected, such as CPU, memory, and accessory boards. If the system fails to boot, follow the instructions on the screen.

NOTE

SCSI devices connected to a disk array controller board (DAC), or the integrated NetRAID controller cannot be displayed at boot time, nor can an ISA non-Plug-and-Play board be displayed at boot time.

12 Configure the HP NetServer

1. **Turn on the HP NetServer and monitor**, insert the HP Navigator CD-ROM into the drive, and press the Reset button. If the system fails to boot, follow the instructions on the screen.

NOTE

If you have installed an ISA non-Plug-and-Play accessory board, you must reserve system resources for it by using the Setup Utility. Start the Setup Utility by pressing function key [F2] when prompted during the boot process.

When the Setup Utility starts, select "Configuration," and then select "ISA non-Plug-and-Play Devices." Use the arrow keys to highlight a selection, press ENTER to display its options, and use the +/- keys to change values. When you've finished, save the changes and exit the utility.

For more information about reserving system resources, refer to Information Assistant and to "Configuring an ISA Non-Plug-and-Play Board" in the *HP NetServer LH 4 / LH 4r User Guide*.

(If the system hangs before the Setup Utility starts, remove the ISA non-Plug-and-Play board, run the Setup utility to reserve system resources for it, then reinstall the board.)

2. **Run Configuration Assistant and Installation Assistant:** If you want to change the language, select "Set Preferences" from the HP Navigator main menu and choose a language. Select "Configuration and Installation Assistant." Select "Express" from the next screen to begin the "Express" mode of configuration.

"Custom" configuration mode and "Replication" configuration mode are also available. Refer to the *HP NetServer LH 4 / LH 4r User Guide* for details.
3. **Choose a NOS:** Select the NOS you will install, and the version, if necessary. Installing the optional Novell® IntranetWare® NOS, which is part of the HP NetServer Software Option Package, requires a decryption key, obtained in panel 5: "Preparation."
4. **Select the NOS installation mode:** If you select certain versions of Novell® NetWare® / IntranetWare® or Microsoft® Windows® NT Server, you will be asked, "Would you like to use HP's automated mode of NOS installation?"
 - Select "Yes" to choose automated NOS installation for first-time installation of Novell NetWare / IntranetWare or Microsoft Windows NT Server on a factory-configured HP NetServer.
 - Use the manual NOS installation if you are installing a NOS other than Novell NetWare / IntranetWare or Microsoft Windows NT Server, or if you have replaced accessory components (for example, if you replaced an HP network interface controller board with a third-party board that is not on HP's Tested Products List, use the manual NOS installation).
5. **View Configuration Advisories:** Read the Configuration Advisories and print them if necessary. Make any changes suggested in the advisories.
6. **Configure Remote Management:** If you plan to manage the HP NetServer LH 4 remotely, refer to the *HP NetServer Remote Administrator Guide* for instructions. Select "Configure Remote Management" on the Navigator screen to configure Integrated Remote

Assistant.

7. **Show System Information:** Select "View System Information" to get information about accessory boards and devices. Select "View Resources" to view used and available system resources.
8. **Configure Mass Storage.** This NetServer is shipped with the hot-swap mass storage device(s) unconfigured. To configure the drive(s), do one of the following:
 - Run HP NetRAID Assistant to configure one or more RAID logical drives. To run HP NetRAID Assistant, select "Execute" from the Configure Disk Array screen.
 - Exclude SCSI A Channel from the integrated HP NetRAID controller, as follows:
 - a. Restart the HP NetServer.
 - b. Press function key [F2] when prompted.
 - c. When the SETUP utility menu is displayed, use the up and down arrow keys to highlight the "Include SCSI A Channel [Yes]" selection.
 - d. Use the + and - keys to change it to "Include SCSI A Channel [No]."
 - e. Press function key [F10] to save the configuration and exit the utility program.
 - f. Answer "Yes" to the question "Save Configuration and Exit Now?" The HP NetServer will reboot, and HP Navigator will restart.
9. **Install the NOS:** If you selected the HP automated NOS installation process, you will be guided through the process by a series of HP display screens:
 - Install Utility Partition: This step creates a disk utility partition on the server boot hard disk drive where HP Navigator will copy troubleshooting and other utilities. The utility partition is not available under SCO® UNIX. Select "Execute" on the Install Utility Partition screen to install the partition.
 - Execute Card Utilities: Select "Execute" on the Execute Card Utilities screen to run the accessory board configuration utilities.
 - Follow the instructions on the screen and in the network operating system's installation instructions to perform the manual NOS installation.
 - For Manual NOS Installation Only: Before you perform a manual NOS installation, print out instructions and create NOS-specific drivers diskette(s), as follows:
 - A. Create Drivers Diskette(s): On the Create Drivers Diskette(s) screen, select Create Drivers Diskette(s) to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
 - B. Print and Read Instructions: On the Show NOS Installation Instructions screen, select "Save to Disk" to copy the NOS installation instructions to disk. Then print them from disk. Read the instructions first, and then follow them to manually install the NOS.
 - Install NOS:
 - A. Automated NOS Installation: For certain versions of Novell NetWare / IntranetWare or Microsoft Windows NT Server, Configuration Assistant formats and partitions the hard disk drive. Installation Assistant then guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration or for network interface cards on HP's Tested Products List.
 - B. Manual NOS Installation: Follow the instructions on the screen and the network operating system installation instructions that you printed.
10. **Install HP TopTools:** Refer to the *HP NetServer Server Management Reference Guide*, and install HP TopTools.
11. **Refer to Information Assistant on the HP NetServer Online Documentation CD-ROM**, for further information about your HP

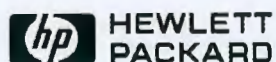
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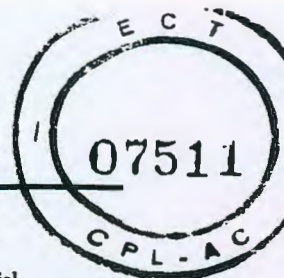
HP NetServer LC 2000/2000r Installation Guide



HP Part Number D8514-90000
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Audience Assumptions

The guide is for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels and are familiar with weight and stability precautions for rack installations.

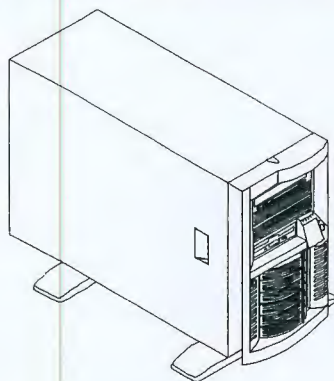


1 Setting Up the HP NetServer

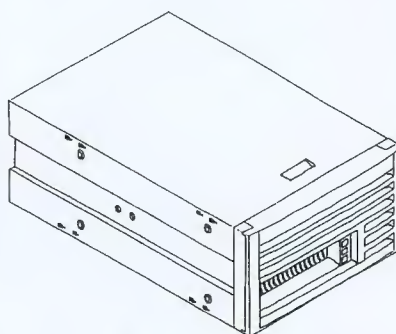
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Installation Guidelines

This Installation Guide is for the HP NetServer LC 2000 pedestal model, and the HP NetServer LC 2000r rack-optimized model.



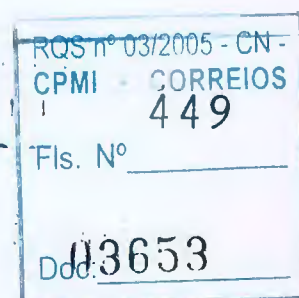
**LC 2000
(Pedestal Model)**



**LC 2000r
(Rack-mounted Model)**

Figure 1-1. HP NetServers

- For a trouble-free installation, read this chapter before taking the HP NetServer out of its box. This chapter lists what to do, and in what order. Choose either:
 - ◊ HP NetServer LC 2000 for pedestal installation
 - ◊ HP NetServer LC 2000r for rack-mounted installation
- Observe all warnings and cautions.
- Unique to the LC 2000r are the:
 - ◊ Universal bezel that fits HP System/E and System/U racks, as well as some third-party racks
 - ◊ Unique Bezel hinge and latch
 - ◊ Rack slides
 - ◊ Cable Management Arm



- Use the removable and reusable rack-mounting handles to move and place the LC 2000r in the rack. Remove the handles only when you have secured the HP NetServer to the rack slides.
- The height at which you install the HP NetServer in the rack determines how you will service the HP NetServer.

Pedestal Installation

Follow the setup steps in the exact order shown below for a successful pedestal installation. Skip any steps that do not apply to your installation.

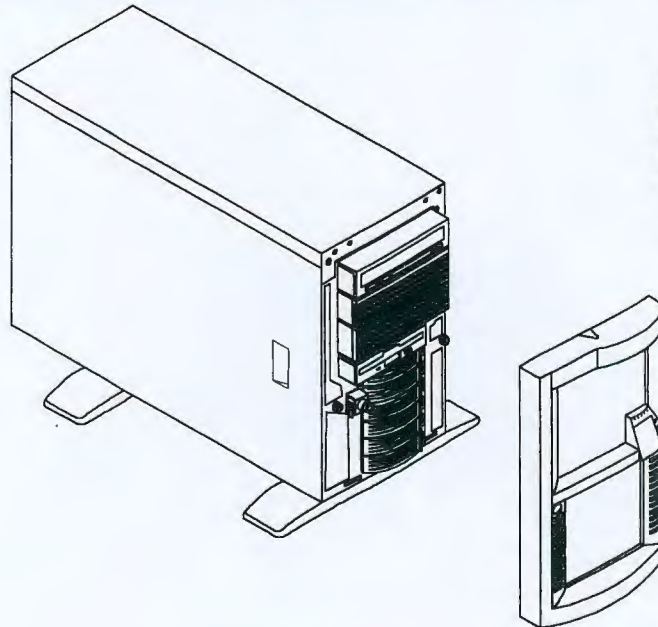


Figure 1-2. HP NetServer LC 2000

1. Unpack the shipping box and verify the contents against the Contents List included with your HP NetServer.
 - a. If anything is missing or damaged, call your reseller.
 - b. Store the empty boxes and packing material in a safe place.

This is especially important if you plan to ship the HP NetServer elsewhere for final installation.



CAUTION

The HP NetServer LC 2000 weighs approximately 80 lbs. (36 kg), which may be more than one person should lift. Do not attempt to lift the HP NetServer by yourself. Failure to observe this warning could result in serious injury, or damage to the HP NetServer.

English



2. Familiarize yourself with the HP NetServer's controls, ports, and indicators.

Refer to Chapter 2, "Controls, Ports, and Indicators."

3. If you have optional items to add to the HP NetServer (memory, accessory boards, or processors), remove the front bezel and the left cover.

◊ If there are no optional items to install, skip to step 8.

◊ Refer to Chapter 3, "Opening and Closing the HP NetServer."

4. If you have items such as a processor, DIMMs, and accessory boards to install, do so at this time.

All these items are installed on the system board without removing it and can be installed at the same time.

Refer to Chapter 5, "Installing Additional Memory," Chapter 6, "Installing Additional Boards," and Chapter 7, "Installing Additional Processors."

5. Install internal non-hot-swap mass storage devices such as hard drives and tape back-ups into the front of the HP NetServer.

Refer to Chapter 4, "Installing Mass Storage Devices."

6. Reconnect all internal cables.

7. Replace all covers, including the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

8. Install all Hot Swap disk drives into the front of the NetServer.

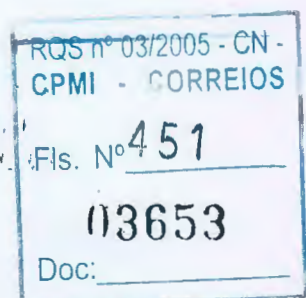
Refer to Chapter 4, "Installing Mass Storage Devices."

9. If a second power supply (optional) is needed, install it into the rear of the HP NetServer.

Refer to the Power Supply accessory guide.

10. Hook up the monitor, keyboard, and mouse to the rear of the HP NetServer.

Refer to Chapter 9, "Connecting Monitor, Keyboard, Mouse, and UPS."



11. Connect all other external cables to the rear of the HP NetServer.
12. Obtain the release history of the *HP NetServer Navigator CD-ROM* provided with the HP NetServer to ensure you have the latest Navigator CD-ROM.
Refer to Chapter 10, "Configuring the HP NetServer."
13. Power up the HP NetServer.
Refer to Chapter 2, "Controls, Ports, and Indicators."
14. Insert the Navigator CD-ROM and reboot the HP NetServer.
15. Check the Navigator README file for important installation information.
Refer to Chapter 10, "Configuring the HP NetServer."
16. Configure the HP NetServer with Configuration Assistant from the Navigator CD-ROM, using the Express Configuration option.
Refer to Chapter 10, "Configuring the HP NetServer."

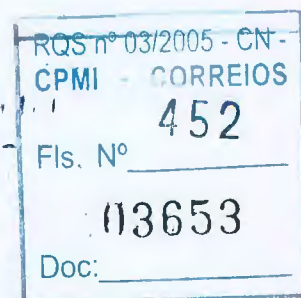
**NOTE**

To fully configure the HP NetServer, all external components should be cabled and online.

17. Verify the HP NetServer's operation and troubleshoot if necessary.
Your HP NetServer installation should be complete. If not, refer to Chapter 12, "Troubleshooting."
18. If you plan to ship the fully-configured HP NetServer LC 2000 to a different destination:
 - a. Label each cable and component to facilitate re-assembly.
 - b. Repack the components in the original packing material, and prepare each one for shipment.

CAUTION

It is critical to disassemble and rebox all electronic components before reshipment. Electronic components (especially hard disk drives) can sustain damage when shipped in rack enclosures.



Rack Mount Installation

Follow the setup steps in the exact order shown below for a successful rack installation. Skip any steps that do not apply to your installation.

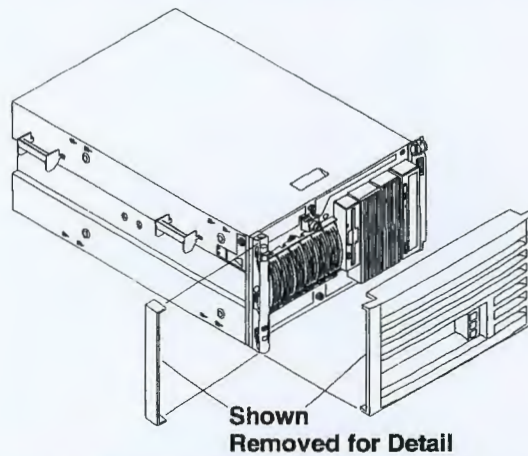


Figure 1-3. HP NetServer LC 2000r

1. Unpack the shipping box and verify the contents against the Contents List included with your HP NetServer.
 - a. If anything is missing or damaged, call your reseller.
 - b. Store the empty boxes and packing material in a safe place.

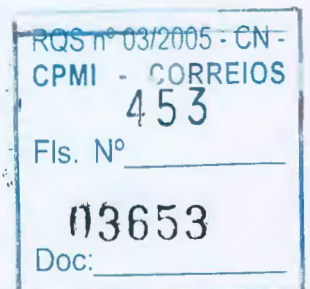
This is especially important if you plan to ship the HP NetServer elsewhere for final installation.

WARNING

To prevent serious injury or damage to the HP NetServer, do not attempt to lift the HP NetServer by yourself. The HP NetServer LC 2000r weighs approximately 80 lbs. (36 kg) and requires more than one person to lift it.

2. Familiarize yourself with the HP NetServer's controls, ports, and indicators.

Refer to Chapter 2, "Controls, Ports, and Indicators."



3. If you have optional items to add to the HP NetServer (memory, accessory boards, mass storage, or processors), remove the bezel and the top cover.
 - ◊ If there are no optional items to install, skip to Step 12.
 - ◊ Refer to Chapter 3, "Opening and Closing the HP NetServer."

4. If you have items such as a processor, DIMMs, and accessory boards to install, do so at this time.

All these items are installed on the system board without removing it and can be installed at the same time.

Refer to Chapter 5, "Installing Additional Memory," Chapter 6, "Installing Additional Boards," and Chapter 7, "Installing Additional Processors."

5. If you are adding internal mass storage devices such as hard drives or tape back up devices into the front of the HP NetServer, do so next.

Refer to Chapter 4, "Installing Mass Storage Devices."

6. Reconnect internal cables as needed.

7. Install the HP NetServer LC 2000r into the rack.

Refer to Chapter 8, "Rack-Mounting the HP NetServer," for the Rack System/E or System/U, or Chapter 13, "Alternative Rack Mounting," for the HP Systems Rack.

8. If the rack-mount system accepts the Cable Management Arm, install it onto the rear of the rack and the HP NetServer.

Refer to Chapter 8, "Rack-Mounting the HP NetServer," for a Rack System/E or System/U, or Chapter 13, "Alternative Rack Mounting," for the HP Systems Rack.

9. If a cover was removed earlier, replace the cover, but not the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

10. Install the SCSI Hot-Swap hard drives into the front of the HP NetServer.

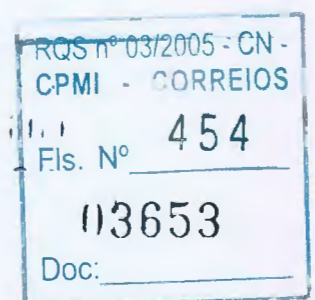
The bezel must be removed to install the SCSI Hot-Swap drives. Refer to Chapter 4, "Installing Mass Storage Devices."

11. Replace the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

12. If a second power supply (optional) is required, install it into the rear of the HP NetServer.

Refer to the Power Supply accessory guide.



13. Connect the monitor, keyboard, and mouse to the rear of the HP NetServer.
Refer to Chapter 9, "Connecting Monitor, Keyboard, Mouse, and UPS."
14. Connect all other external cables to the rear of the HP NetServer.
15. Obtain the release history of the *HP NetServer Navigator CD-ROM* provided with the HP NetServer, to ensure you have the latest Navigator CD-ROM.
Refer to Chapter 10, "Configuring the HP NetServer."
16. Power up the HP NetServer.
Refer to Chapter 2, "Controls, Ports, and Indicators."
17. Insert the Navigator CD-ROM and reboot the HP NetServer.
18. Check the Navigator README file for important installation information.
Refer to Chapter 10, "Configuring the HP NetServer."
19. Configure the HP NetServer with Configuration Assistant from the Navigator CD-ROM, using the Express Configuration option.
Refer to Chapter 10, "Configuring the HP NetServer."

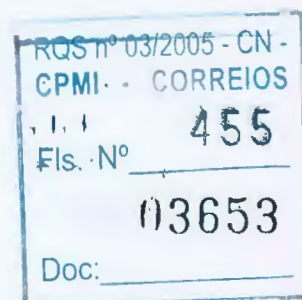
NOTE

To fully configure the HP NetServer, all the rack components should be cabled and online (though not necessarily installed in the rack.) Use the *HP NetServer LC 2000r Rack Cabling Reference Guide* for more details.

20. Verify the HP NetServer's operation and troubleshoot as necessary.
Your HP NetServer installation should be complete. If not, refer to Chapter 12, "Troubleshooting."
21. If you plan to ship the fully-configured HP NetServer LC 2000r to a different destination:
 - a. Label each cable and component to facilitate re-assembly.
 - b. Remove all components from the rack, including external mass storage.
 - c. Repack the components in the original packing material, and prepare each one for shipment.

CAUTION

It is critical to disassemble and rebox all electronic components before reshipment. Electronic components (especially hard disk drives) can sustain damage when shipped in rack enclosures.





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2 Controls, Ports, and Indicators

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Front of HP NetServer

This chapter describes the controls, ports and indicators on the front and rear of the HP NetServer LC 2000 and LC 2000r. Figures 2-1 and 2-2 below show the HP NetServers LC 2000/LC 2000r as pedestal and rack models respectively.

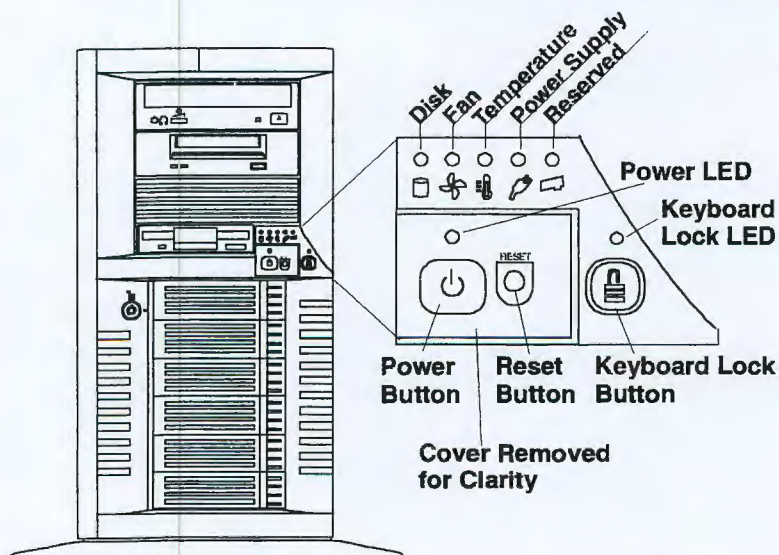


Figure 2-1. HP NetServer LC 2000 (front view)

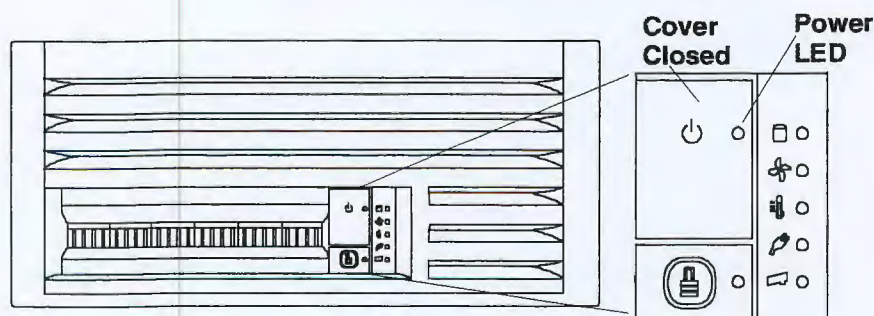


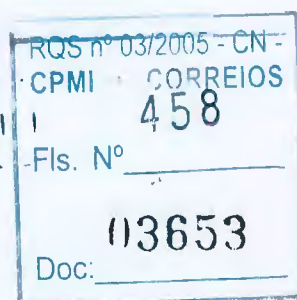
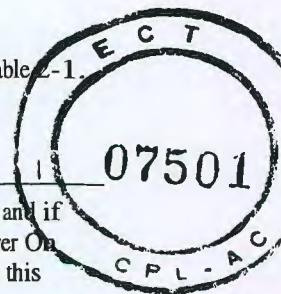
Figure 2-2. HP NetServer LC 2000r (front view)

Power, Reset, and Keyboard Lock Buttons

The control buttons shown in Figures 2-1 and 2-2 are described in the Table 2-1.

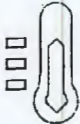
Table 2-1. Power, Reset, and Keyboard Lock Buttons and LEDs

Control/LED	Description
Power On/Off/ Sleep Button 	This button turns the HP NetServer power On or Off, and if available, also transitions the NetServer between Power On and sleep states. If sleep states are not available, then this button only turns power On or Off. The sleep states are NOS dependent and not available if your NOS does not support power management based on the ACPI (Advanced Configuration and Power Interface) standard. Refer to "Applying Power to the HP NetServer" and "Sleep States (ACPI)" later in this chapter.
Power On/Off/ Sleep LED 	This LED glows steady green when power is on, and goes dark when the NetServer is powered off. If the NetServer is under ACPI control, this LED will flash green on and off when in an inactive sleep state.
Reset Button 	Performs a system (hard) reset.
Keyboard Lock Button 	Puts the NetServer in a locked mode, which locks the keyboard, if the NetServer was configured for keyboard lock or Network Server mode in the Setup Utility. This includes keyboard lock, power button lock, and video blanking. The reset button is also disabled.
Keyboard Lock LED 	This LED glows solid green when the HP NetServer's keyboard is locked, and is dark at all other times.

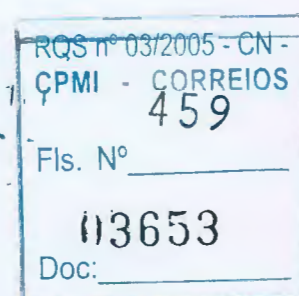


Front Panel LED Indicators

Table 2-2. Component Indicators

LED ICON	Description
Disk LED 	This Disk LED has two distinctive states: • off for inactive operation • blinking Green for SCSI drive activity.
Temperature LED 	This Temperature LED has three distinctive colors: • steady Green for normal operation • blinking Red at 1 Hz blink rate for an overheated condition inside the HP NetServer • blinking Amber at 0.5 Hz blink rate for a warning condition.
Fan LED 	This Fan LED has three distinctive colors: • steady Green for normal operation • blinking Red at 1 Hz blink rate for a non-operational fan condition inside the NetServer • blinking Amber at 0.5 Hz blink rate for a warning condition indicating one of the fans may be turning too slowly.
RPS LED 	This RPS (Redundant Power Supply) LED has three distinctive colors: • steady Green for normal operation • blinking Red at 1 Hz blink rate for a bad power supply • blinking Amber at 0.5 Hz blink rate for a warning condition indicating a power supply may not be working correctly.
Reserved 	This LED is reserved and not used in this release.

English



Hot Swap Disk Drive Indicators

Each of the Hot Swap hard disk drives has two LED indicators, one for operational status and one for activity status. Light pipes on each drive module transmit light to the front from the LEDs on the inside rear of the hot-swap mass storage cage. See Table 2-3 and Figure 2-3.

Table 2-3. Hot Swap Hard Disk Drive LED Indications

Status LED	Activity Status LED
Off: Disk not present, or not connected to the cage	Off: No disk activity
Green (solid): Disk present	Green (flashing): Accessing disk
	Green (solid for more than one minute): Disk spinning up, or "hung"
Amber (flashing): Disk failure predicted	
Red (flashing): Disk failed	
Red (solid): No +12 volt power	

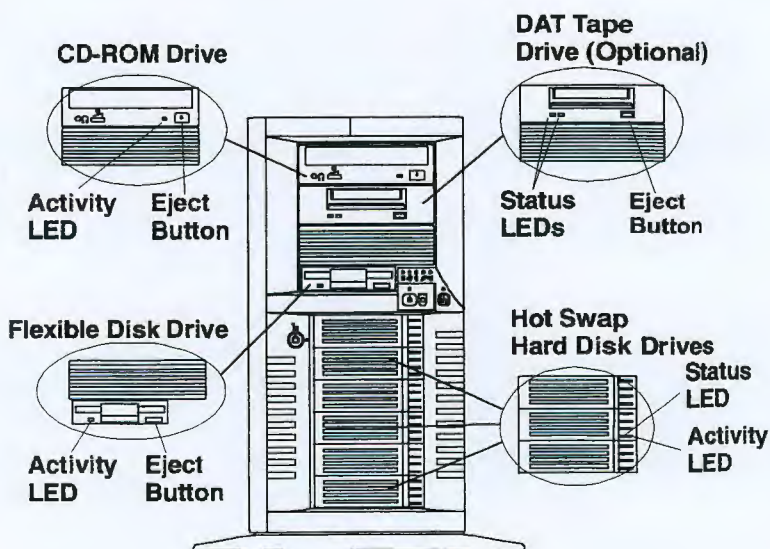
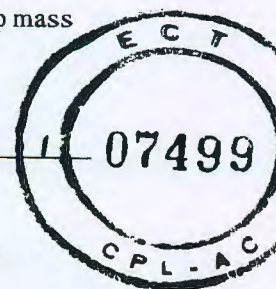
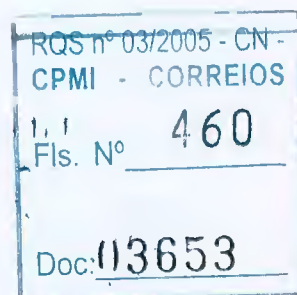


Figure 2-3. Drive LED Indicators



Non-Hot Swap Device Indicators

The indicators for non-Hot Swap devices, which provide operational status, are also shown in Figure 2-3. The indicators shown in Figure 2-3 also apply to the rack-mount model (LC 2000r). See Table 2-4 for Backup Tape drive LED Codes.

Table 2-4. Backup Tape Drive LED Codes

Left LED	Right LED	Definition
Off	Off	No Power
On	Off	Cartridge Loaded, but No activity
Flashing*	Off	Cartridge Loaded and Active
Pulsing**	Off	Loading/Unloading/Ejecting/Power-On
Off	On	Self Test Fail
Off	Pulsing**	No Cartridge, but Caution (cleaning required)
On	Pulsing**	Cartridge Loaded, but Caution (cleaning required)
Flashing*	Pulsing**	Cartridge Loaded, Drive Active, Caution (cleaning required)
Pulsing**	Pulsing**	Cartridge Loading/Unloading, Caution (cleaning required)

* Flashing at 4 Hz rate

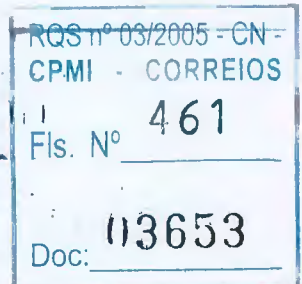
** Pulsing at 2 Hz rate

NOTE

For more information on the HP Tape Drive and its error codes, refer to the documentation provided with the tape drive or refer to Hewlett-Packard's web site, at:
<http://www.hp.com>.

Refer to Chapter 4, "Installing Mass Storage Devices," for installation information.

English



Rear Panel Indicators and Ports

The HP NetServer's rear panel includes communication ports, the AC power inlets, and the NetServer's power supplies.

Figure 2-4 shows the rear of the HP NetServer.

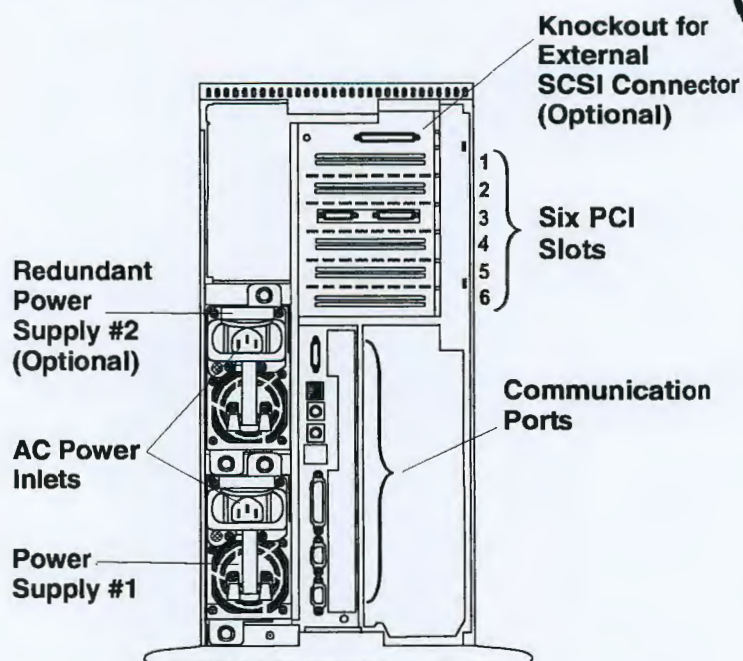


Figure 2-4. Rear Panel of the HP NetServer

CAUTION

To prevent a power supply from overheating, ensure the other power supply opening remains covered, if a second supply is not used. If the second supply is used, keep the cover in case you need to remove one supply for repair.

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Power Supply Module Indicator

Each HP NetServer power supply module has an indicator as shown in Figure 2-5, and each power supply has its own power cord connection. The HP NetServer comes with one power supply module standard, and a second power supply module for redundancy is optional.

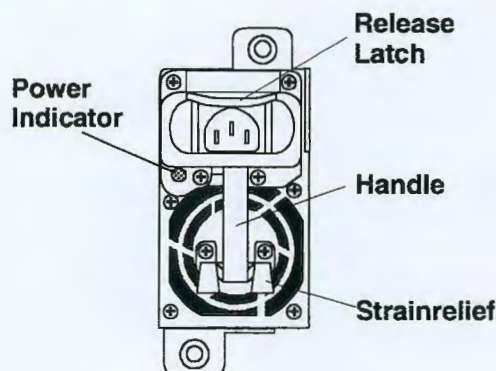


Figure 2-5. Power Supply LED

NOTE

The release latch, which is spring loaded, must be up to insert the power cord. The power supply can not be removed from the chassis with the power cord connected to the AC In connector. The power cord must be removed before pushing down on the release latch to free the power supply from the chassis.

Table 2-5. Power Supply LED Indicator Descriptions

Green LED	Power Supply and NetServer Status
Steady Green	This indicates the HP NetServer is powered up and operating normally, or is in an ACPI suspend state.
Off	This indicates the NetServer is powered off, the AC line cord is unplugged, or the power supply has failed, which may include a fan failure (turning too slowly). If a fan fails in one of two supplies, the defective supply will continue to operate until it reaches the thermal shutdown limit. The second power supply (redundant power supply) will continue to operate providing the necessary power. Refer to Chapter 12, "Troubleshooting."

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Communication Ports

The connectors on the HP NetServer's rear panel are shown in Figure 2-6 and described below.

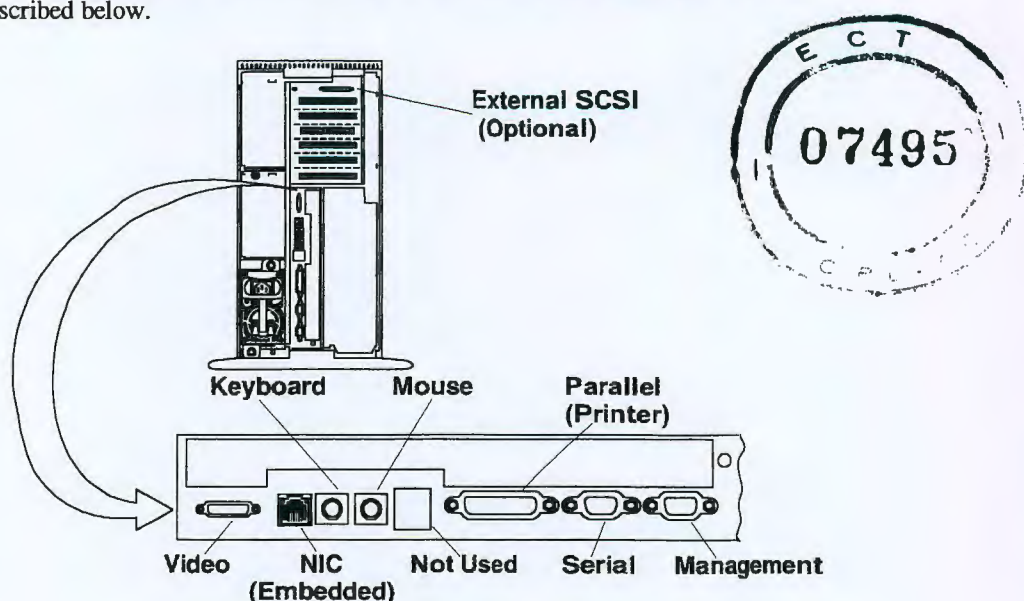


Figure 2-6. Rear Panel Ports

- **Management** – This connector supports the embedded Integrated Remote Assistant and links the HP NetServer to a console for real time monitoring and diagnosis of the NetServer's operation.
- **Serial A** – This is the standard serial port connector.
- **Parallel** – This is the standard parallel printer port connection.
- **Mouse** – This connector accepts a standard PS/2 mouse.
- **Keyboard** – This connector accepts a standard PS/2 keyboard.
- **NIC** – This connector supports the embedded NIC (Network Interface Card) port on the system board. This is a RJ-45 connector supporting 10/100 BaseT Ethernet.
- **Video** – This connector provides the video signal to drive the NetServer's monitor. Refer to "Video Support" in Appendix A for drivers and supported resolutions.

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NIC Indicators

The embedded NIC (Network Interface Card) has two LEDs associated with it, which can only be seen from the rear of the HP NetServer. See Figure 2-7 and Table 2-6.

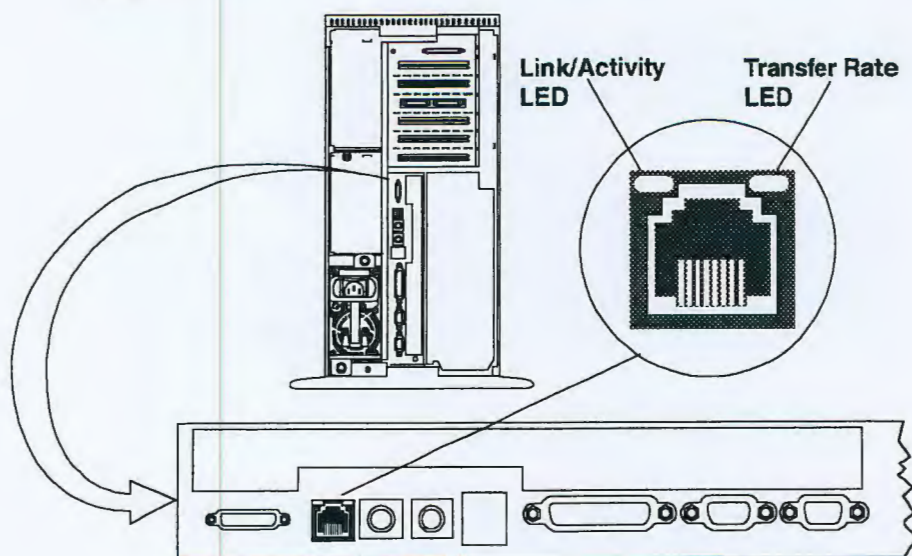
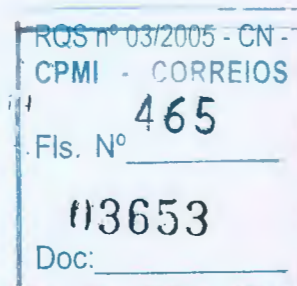
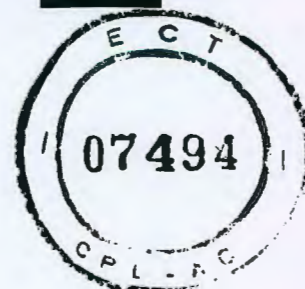


Figure 2-7. NIC LEDs

Table 2-6. NIC LED Code

Indicator	Definition
Link/Activity LED	This LED turns solid green to indicate that it is linked and properly connected. The green LED blinks to indicate the embedded NIC (network adapter) is active and transferring data to/from the NIC. The rate of blinking varies directly with network traffic.
10/100 Mbps LED	This yellow LED turns on to indicate when the NIC is supporting transfers of 100 Mbps (million bits per second). When it is off, the NIC is supporting transfers of 10 Mbps.

English



Applying Power to the HP NetServer

Powering Up the HP NetServer

1. Ensure the HP NetServer's power cord or power cords are connected to the power source. See Figure 2-4.
2. Press the Power button on the front control panel. See Figure 2-1 or 2-2.

NOTE Each time AC power is applied (power cord is plugged in), there is a 15 second delay (self test) before the front control panel will respond to your actions.

Powering Down the HP NetServer

1. Log off all users and, if necessary, back-up files.
2. Follow instructions in your network operating system (NOS) documentation to gracefully shut down all networking software and applications.
3. Press the power switch on the HP NetServer's control panel when prompted by the operating system.

Normally, this completes the shutdown procedure.

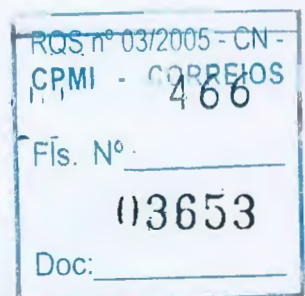
NOTE The power supply will continue to provide standby voltage to the HP NetServer until the power cord(s) is/are disconnected.

Connecting AC Power to Multiple-Server Configurations

The HP NetServer temporarily draws a large "inrush current," when first connected to an AC power source. This also occurs when the NetServer is in a standby mode (power is turned off and the power cord is plugged into AC power). The inrush current is much greater than the NetServer's normal operating current and generally, the AC power source can handle the normal inrush current.

However, if you install several HP NetServers on one circuit, precautions are necessary. If there is a power failure and power is then restored, all the servers immediately begin to draw inrush current at the same time. If the circuit breakers on the incoming power line have insufficient capability, the breaker may trip and thus prevent the servers from powering up.

When preparing your site for installation, allow for the additional inrush current. See "Power Requirements" in Appendix A.



Sleep States (ACPI)

The HP NetServer supports the ACPI (Advanced Configuration and Power Interface) standard, which is a key component of a NOS's directed power management. The supported features are only available when an ACPI-compliant NOS is installed on the NetServer. The term "sleep state" refers to any of several reduced power consumption states in which normal NOS activity has ceased.

The NetServer supports several sleep states, including a sleep state with a short wake-up time, sometimes referred to as "standby" or "suspend" by various operating systems. In this sleep state the NetServer appears to be off, and is indicated by no display on the monitor and no activity for the CD-ROM or internal hard drives. However, the power LED is slowly flashing and the fans are operating.

An additional sleep state supported by the NetServer is one with a slower wake-up time, sometimes referred to as "hibernate" by various operating systems. In this sleep state, the NetServer appears to be off as mentioned earlier, but the fans and the power LED are also turned off. This sleep state's unique feature (and the reason for its slower wake-up time) is that the NetServer's state (applications running, screens open, etc.) just prior to hibernate has been saved to disk and must be restored from disk upon wake-up. This method of restoring the NetServer's operation is much faster than rebooting the NetServer, which would require running all the start-up self-tests before starting the NOS.

The NetServer supports certain types of system activity, which is used as wake-up events from these sleep states. These wake-up events can be generated from the power button, LAN activity, and scheduled events. The embedded Integrated Remote Assistant also has the capability of waking up the NetServer.

NOTE

The HP NetServer's power management policies (transitions between various power states) and the user options are specific to the particular ACPI-compliant NOS installed on the NetServer. If your respective NOS is ACPI-compliant, refer to the power management features in the instructions provided for more information.

The HP NetServer's power button can be configured to initiate a sleep state (Sleep button) or a "soft off" or graceful shutdown of the NOS, rather than an immediate shutdown of the power supply. The power button configurations are dependent on the user interface provided by the ACPI-compliant NOS. While power management is under the control of the ACPI-compliant NOS, the HP NetServer's power button is capable of an override in case of a non-responsive NOS.

English



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NOTE

The HP NetServer power button will force a power down without waiting for the NOS to gracefully shut down the system if the power button is pressed and held in excess of four seconds.

CAUTION

If the power button override is used, there is a strong possibility of corrupted or lost data.



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3 Opening and Closing the HP NetServer

English

Introduction

This chapter describes how to safely extend the rack-mounted HP NetServer LC 2000r out of the rack and how to remove and replace the covers from the HP NetServer LC 2000r and the pedestal model, HP NetServer LC 2000. This chapter also describes how to remove and replace the pedestal base from the HP NetServer LC 2000.

WARNING

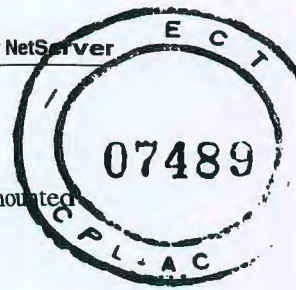
Before removing the covers, shut down the operating system and disconnect the power cords and unplug telephone cables. Disconnect the power cords to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects, such as tools or jewelry. Disconnect telephone cables to avoid exposure to a shock hazard from telephone ringing voltages.

Tools Required

- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.



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Removing the HP NetServer's Covers

The HP NetServer's covers are designated top and bottom for the rack-mounted version and left and right for the pedestal version.

Removing Covers – Rack-Mount (LC 2000r)

Use this procedure to remove the bezel and then safely extend the NetServer to where you can remove the covers (top and bottom) from the HP NetServer LC 2000r.

- If you are installing hardware options, you must remove the front bezel, extend the NetServer, and remove the top cover. The hardware options include accessory boards, DIMMs, and an additional processor, which require access to the interior of the NetServer.
- If you are only installing or removing SCSI disk drives, open the bezel, but do not extend the NetServer or remove the covers. The front bezel is hinged like a door and does not require removal.
- If you are only installing the redundant power supply, you do not need to remove the bezel, extend the NetServer or remove the covers.

WARNING

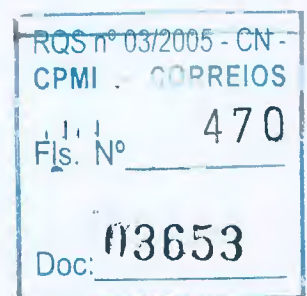
To prevent injury do not operate the HP NetServer with its covers removed, or install items with the power cord connected.

Always disconnect the power cord before removing any covers, to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. Disconnect any telephone cables to avoid exposure to shock hazard from telephone ringing voltages.

CAUTION

To prevent overheating, never operate the NetServer with its covers removed. This includes the power supplies and Hot Swap hard disks, which must be replaced or the opening covered immediately (within 2 minutes).

1. If the HP NetServer is operating, log off all users and, if necessary, back up files.
2. Follow instructions in your network operating system (NOS) documentation to gracefully shut down all networking software and applications.



3. Press the power switch on the HP NetServer's control panel when prompted by the operating system.

Normally, this completes the power down procedure.

4. Disconnect the power cord or cords from the power source.

NOTE

The power supplies will continue to provide standby current to the NetServer until the power cable is disconnected.

5. At the front of the HP NetServer, extend the anti-tip foot from under the front of the rack.

See Chapter 8, "Rack-Mounting the HP NetServer," later in this manual.

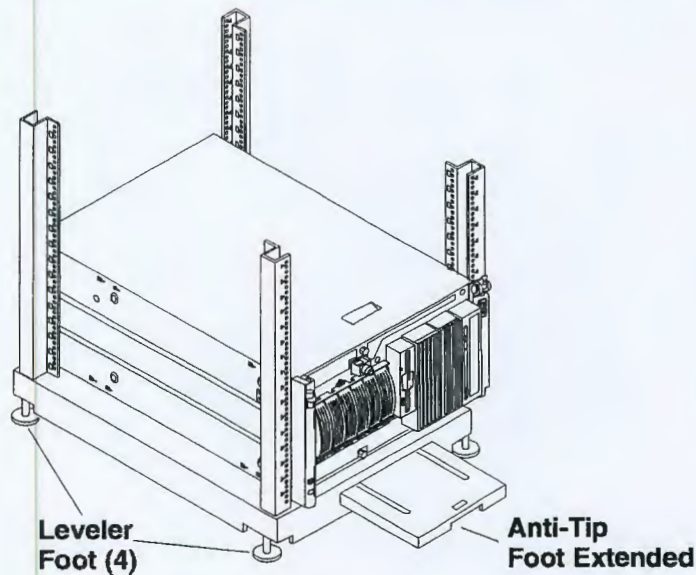


Figure 3-1. Extend the Rack's Anti-Tip Foot

WARNING

This anti-tip device must be extended to prevent the rack and HP NetServer from tipping over, which could damage the NetServer and injure people.

English



6. Swing the bezel open to the left to access the Bezel Release Tab.
7. Press down on the blue Release Tab as shown in Figure 3-2 to release the bezel from the chassis.

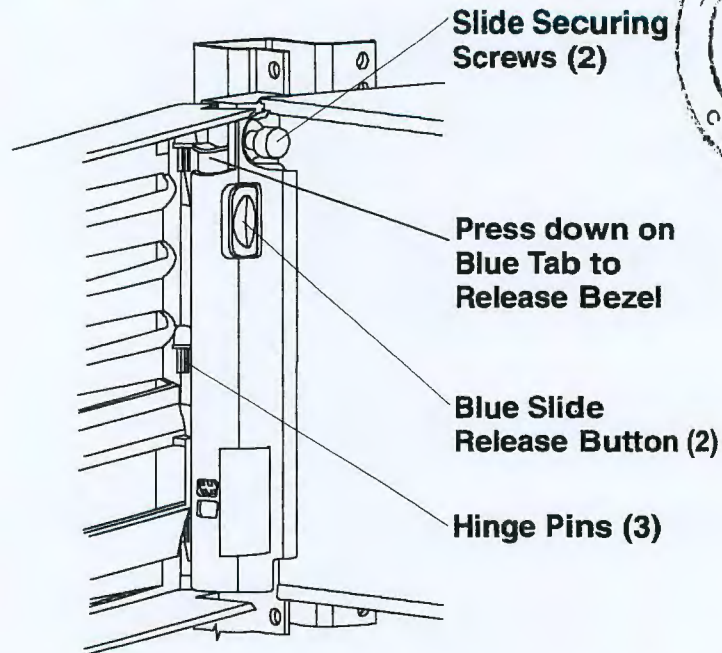
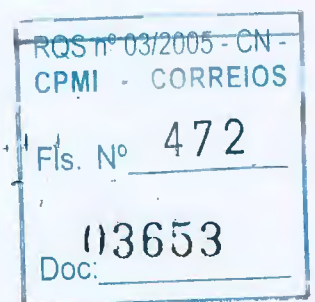


Figure 3-2. Removing the HP NetServer LC 2000r's Bezel

8. Lift the bezel away from the front of the HP NetServer.



9. Unscrew the slide securing screw (2) on each bracket securing the chassis to the column adapter on each side of the rack. See Figure 3-3.
10. Press in on each blue Slide Release button (2) with both hands to slide the HP NetServer out of the rack. See Figure 3-3.

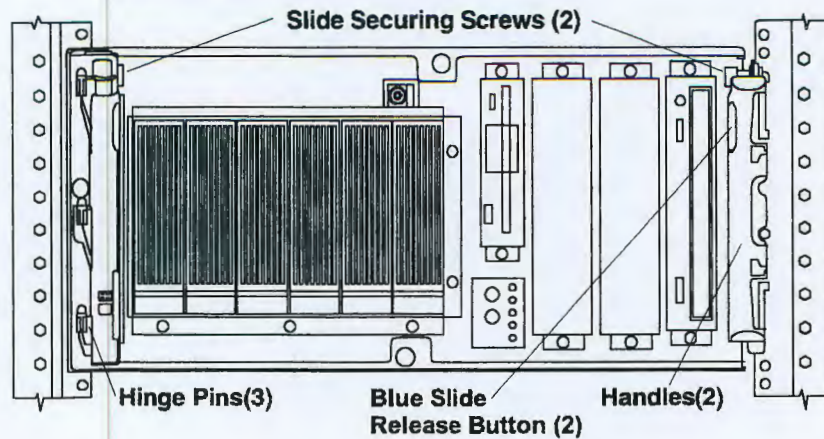


Figure 3-3. Releasing the Securing Buttons

11. Pull the NetServer out of the rack until it snaps into the safety locks in each slide with a click. See Figure 3-4.

English



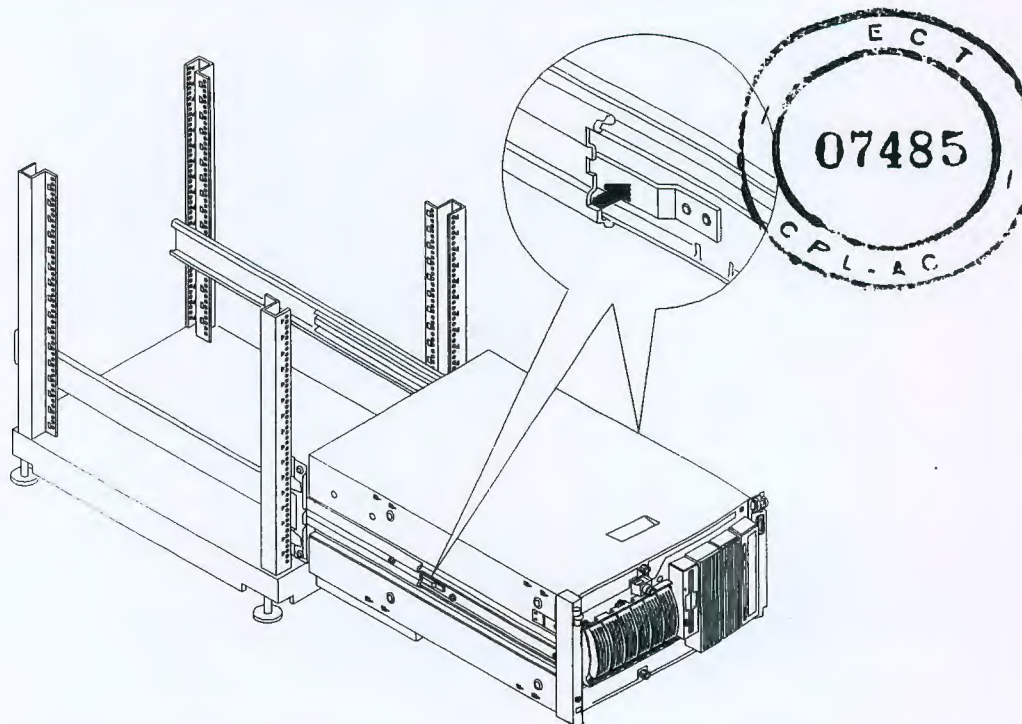
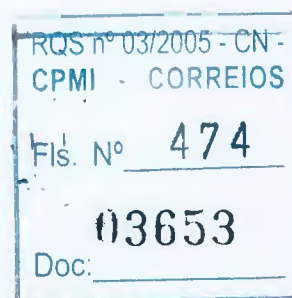


Figure 3-4. Extending the HP NetServer LC 2000r

CAUTION

To prevent damage to the covers, support the cover as you remove it from the HP NetServer. The NetServer's covers are heavy.

12. To remove the top cover, use the key provided to unlock the Mass Storage Cage and release the top cover.
13. Loosen the thumbscrew on the front of the chassis for the top cover and then pull the cover forward to disengage.
14. Lift the top cover up and away from the chassis. See Figure 3-5.



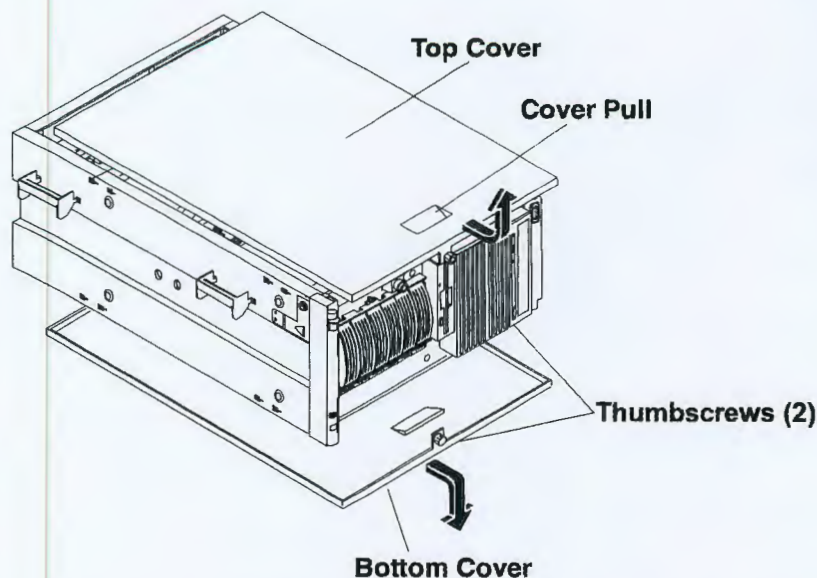
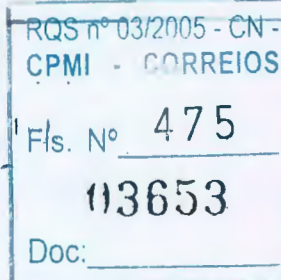
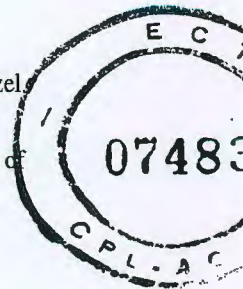


Figure 3-5. Removing HP NetServer LC 2000r Covers

15. If necessary, remove the bottom cover by loosening the thumbscrew at the front of the HP NetServer with one hand. See Figure 3-5.
The bottom cover does not provide any additional access to the interior, except the bottom of the mass storage drives and the control panel board.
16. Support the bottom cover with your free hand, as you pull the cover forward to disengage it, catching it as it falls away from the chassis. See Figure 3-5.
17. To replace the top cover, position the cover's tabs over the respective holes along the top edge on both sides of the chassis.
18. Slide the cover toward the rear.
19. Tighten the thumbscrew at the front of the cover.
20. To replace the bottom cover, position the cover's tabs under the respective holes along the bottom edge on both sides of the chassis.
21. Slide the cover toward the rear.
22. Tighten the thumbscrew at the front of the cover.
23. Release the safety latches in the slide members on both sides of the chassis. See Figure 3-4.



24. Slide the HP NetServer into the rack.
25. To replace the front bezel, reverse the procedure by positioning the bezel over the hinge pins at the front of the HP NetServer's chassis.
26. Press the down on the Blue Bezel Release tab to engage the hinge pins of the bezel and then release it.
27. If the NetServer is not in a restricted-access area, tighten both slide securing screws. See Figures 3-2 and 3-3.
28. Return the HP NetServer to normal operation.



Removing Covers – Pedestal (LC 2000)

Use this procedure to remove the bezel and covers (left & right) on the pedestal version of the HP NetServer LC 2000.

- If you are installing hardware options, you must remove the front bezel and top cover. The hardware options include accessory boards, DIMMs, and an additional processor.
- If you are only installing hot-swap disk drive modules or a redundant power supply, you do not need to remove the bezel or the covers.

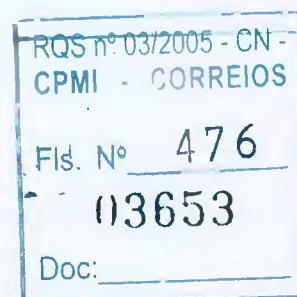
WARNING

Do not operate the HP NetServer with its covers removed. Always disconnect the power cord before removing any covers, to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. Disconnect any telephone cables to avoid exposure to shock hazard from telephone ringing voltages.

CAUTION

To prevent overheating, never operate the NetServer with its covers removed. This includes the power supplies and Hot Swap hard disks, which must be replaced or the opening covered immediately (within 2 minutes).

1. If the HP NetServer is operating, log off all users and, if necessary, back up files.
2. Follow instructions in your network operating system (NOS) documentation to gracefully shut down all networking software and applications.



3. Press the power switch on the HP NetServer's control panel when prompted by the operating system.

Normally, this completes the power-down procedure.

4. Disconnect the power cord from its power source.
5. To remove the bezel, pull the top of the bezel forward until it unsnaps, then lift the entire bezel upward and away from the chassis. See Figure 3-6.

The bezel connects to the front of the HP NetServer chassis with two snap-in connectors at the top front of the chassis and two metal tabs, which fit into two slots on the bottom front of the chassis.

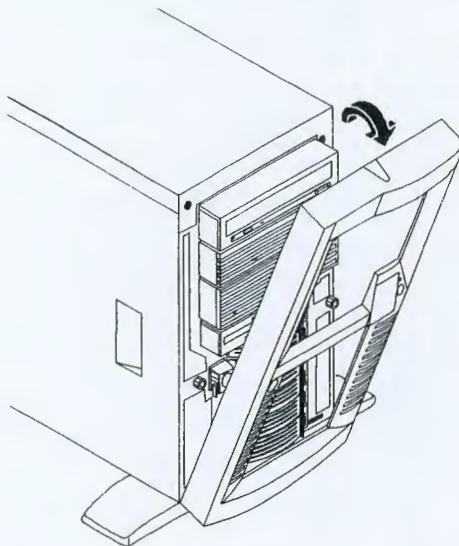


Figure 3-6. Removing the HP NetServer LC 2000 Bezel

CAUTION

To prevent damage to the covers, support the cover as you remove it from the HP NetServer. The NetServer's covers can be easily damaged.

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6. To remove the left side cover, use the key provided to unlock the Mass Storage Cage and release the left side cover.
7. Loosen the thumbscrew on the front of the chassis for the left side cover and then pull the cover forward to disengage it.
8. Move it to the left and away from the chassis. See Figure 3-7.
9. If necessary, remove the right side cover by loosening its thumbscrew on the front of the chassis.

The right cover does not provide any additional access to the interior, except the right side of the mass storage drives and the control panel board.

10. Pull the cover forward and then slightly sideways to disengage it.
11. Move it to the right and away from the chassis. See Figure 3-7.

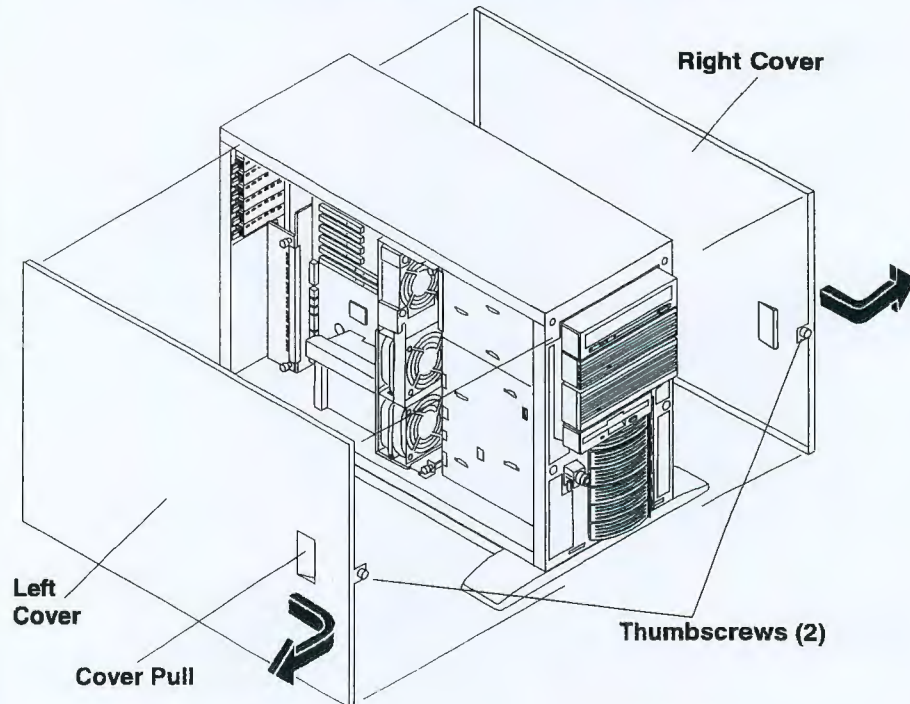
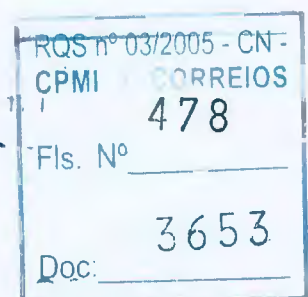


Figure 3-7. HP NetServer LC 2000 Covers



12. To replace the left side cover, position the cover's tabs next to the respective holes along the outer edge on the side of the chassis.
13. Slide the cover toward the rear.
14. Tighten the thumbscrew at the front of the cover.
15. To replace the right side cover, position the cover's tabs next to the respective holes along the outer edge on each side of the chassis.
16. Slide the cover toward the rear.
17. Tighten the thumbscrew at the front of the chassis.
18. To replace the bezel, insert the tabs at the bottom of the bezel into the slots on the chassis.
19. Swing the top of the bezel toward the chassis until it snaps into place. See Figure 3-8.

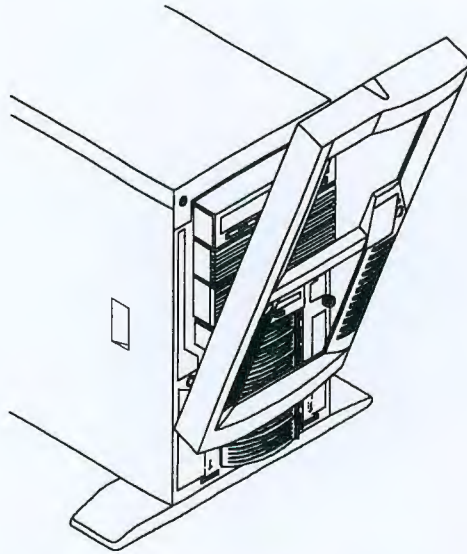
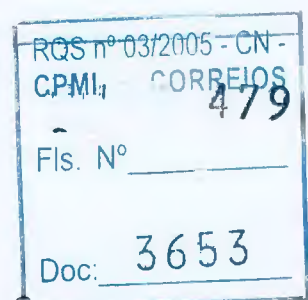


Figure 3-8. Replacing the Bezel

20. Return the HP NetServer to normal operation.

English



Removing the Pedestal

The pedestal version of the HP NetServer LC 2000 mounts to an anti-tip pedestal, which can be easily removed, if necessary.

1. Perform Steps 1-4 in the previous section, "Removing Covers – Pedestal (LC 2000)."

NOTE

The front bezel is shown removed, but the bezel may remain on the chassis while removing the pedestal.

2. Disconnect all cables connected to the rear of the NetServer that would limit its rotation before continuing.
3. Turn the NetServer over onto its top and pull up on the two tabs as shown in Figure 3-9.

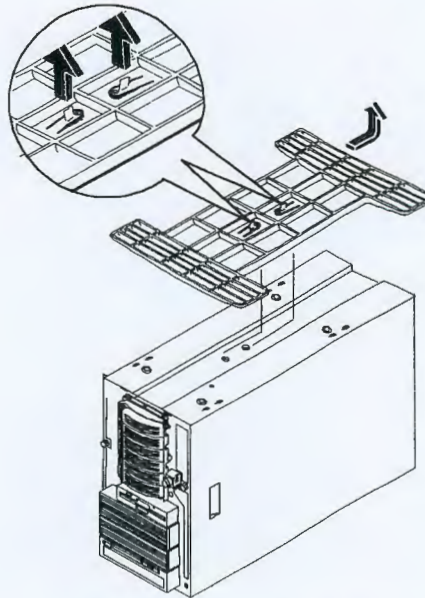


Figure 3-9. Removing the Pedestal

4. Slide the pedestal to the rear of the NetServer as shown in Figure 3-9.
5. To re-install the pedestal, repeat Steps 1-3 and slide the pedestal forward onto the NetServer.

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4 Installing Mass Storage Devices

English



Introduction

This chapter describes how to install the internal mass storage devices, including the internal SCSI Hot Swap hard disk drives and the optional Tape Backup (DAT) Drive. The requirements for external SCSI drives are provided in the respective topic later in this chapter.

NOTE

The two embedded SCSI controllers both operate as LVD (Low-Voltage Differential) controllers, but if a SE (single-ended) device is connected to the controller, it automatically switches to SE and all SCSI devices connected to the controller must operate as SE devices. A 68-pin to 50-pin SCSI adapter is provided on the terminated SCSI cable used for non-hot swap SCSI devices. If your system was not configured with a backup (DAT) tape drive, you must use the terminated non-hot swap cable for the tape drive.

Installing Storage Devices After Shipment

If you are installing mass storage devices that were not shipped with your HP NetServer, certain configurations may require additional cables or adapters not provided with your HP NetServer shipment. For part numbers of the required items, such as HP cables, adapters, trays, and configuration information, see Information Assistant on the *HP NetServer Navigator CD-ROM*.

For new products, you may use Order Assistant on the HP web site at:

<http://www.hp.com/go/netserver>

You may select "Buy HP" and choose the country and desired option that best suits your needs. You may also download the Order Assistant utility.

Tools Required

- Torx T-5 or T-10 driver (non-Hot Swap devices)
- Torx T-15 driver (non-Hot Swap devices)

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Drive Bay Shelves

The non-hot swap drives include the IDE CD-ROM and the 3.5 inch flexible disk drives which are standard for all HP NetServer models (LC 2000/2000r) and ship with each unit. The two empty drive shelves beneath the CD ROM drive support other non-hot swap SCSI devices, such as hard drives (3.5-inch or 5.25-inch), tape back-up devices, or other HP-tested (LVD or SE) SCSI accessories.

The system chassis ships with a Hot Swap Mass Storage cage supporting up to six low-profile Hot Swap hard drives or three half-height Hot Swap hard drives.

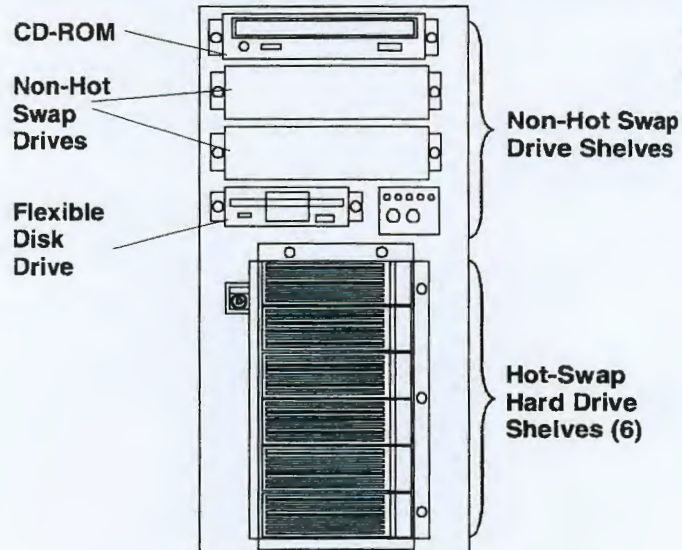


Figure 4-1. Standard Mass Storage Configuration

Boot Priority

This section details the HP NetServer's boot order by highest to lowest priority. The on-board SCSI controller has two channels, A and B. Channel A is typically used to control the Hot Swap SCSI drives. Channel B is typically used to control the internal non-hot swap SCSI drives. On each SCSI channel, the NetServer scans for a boot device starting at device ID 0 and proceeds up from there.

The HP NetServer's boot order (BIOS search order for a boot device) should be considered, when connecting cables from the on board SCSI channels. A SCSI drive's boot priority is set by the drive's location in the boot order. See Figure 4-1.

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You can change this boot order using the Setup Utility (BIOS) and the SCSI Configuration Utility during the boot process. Refer to Chapter 10 "Configuring the HP NetServer" for more information.

By default the NetServer searches for boot devices in this order:

1. IDE CD-ROM drive
2. Flexible disk drive
3. SCSI A bus (typically Hot Swap Mass Storage Cage)
4. SCSI B bus (typically non-Hot Swap internal SCSI devices)
5. PCI Slot P1
6. PCI Slot P2
7. PCI slot P3
8. PCI slot P4
9. PCI slot P5
10. PCI slot P6

Hardware Mirroring

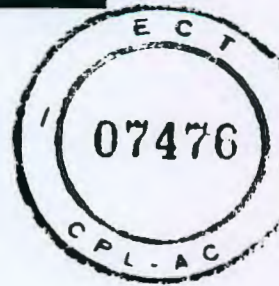
You may choose to mirror the drives (RAID 1) in the HP NetServer's Hot Swap Mass Storage Cage. However, doing so through software slows down disk access time, but using hardware mirroring can help speed up disk access time.

Hardware mirroring requires a dual channel SCSI controller, which allows you to use the two embedded SCSI controllers (SCSI A and B) or install an HP NetRAID (Drive Array Controller – DAC) PCI board to control the two mirrored channels. To use hardware mirroring on the SCSI Hot Swap cage you must install the optional duplex accessory board. Ensure you use a PCI DAC board with an LVD compatible interface.

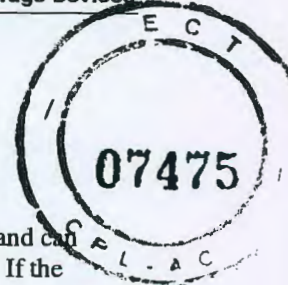
CAUTION

To prevent damage to the interface or the PCI DAC board, don't use a HVD (High Voltage Differential) DAC board.

English



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Mass Storage Guidelines

- General Guidelines

- ◊ Use care when unpacking and handling the disk drives.

The hard disk drives are very susceptible to mechanical shock and can be easily damaged by a drop as short as one-quarter of an inch. If the drop would crack an egg, it will damage the drive.

- ◊ Do not stack drives.

- ◊ Do not use high voltage differential (HVD) SCSI devices on any of the SCSI channels or damage will occur. Use only Single-Ended (SE) or Low-Voltage Differential (LVD) devices.

- SCSI Device Selection

- ◊ Ensure the SCSI devices you install in *both* Hot Swap and non-Hot Swap-drive bays do not have terminations installed. The non-Hot Swap SCSI drives are connected to a terminated cable and the Hot Swap cage provides the termination for any unused slots in the cage.

- ◊ Use only HP LVD SCSI 3.5-inch hard disk drives for the Hot Swap drive cage.

You can use a combination of half-height (1.6-inch) and low-profile (1.0 inch) drives in the Hot Swap cage, but be sure to use spacers and filler panels to cover any openings. The HP Hot Swap drives come set for LVD SCSI operation and without device ID or termination. Do not change these settings.

- ◊ Use only 3.5-inch or 5.25-inch single-ended (SE) SCSI devices for the non-Hot Swap shelves.

The available space in the non-Hot Swap shelves supports two half-height (1.6 inch) devices. You can order HP mounting kits for removable media devices or trays for 3.5-inch hard disk drives (half-height). You may use narrow/wide SCSI adapters on these devices.

CAUTION

When installing Hot Swap drives, you must install one drive spacer with each half-height (1.6 inch) drive and ensure there are no drive gaps in the cage to provide proper ventilation.

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- SCSI Drive Addressing

- ◊ The drives in the Hot Swap Cage are automatically assigned SCSI addresses by the HP NetServer.

The Hot Swap drive's address is dependent on its position within the drive cage and the combination of half-height and low-profile SCSI drives installed. Refer to Figures 4-2 through 4-5 for the automatic SCSI ID assignments.

The Hot Swap Cage also supports the installation of a Duplex board, which divides the cage in two equal halves. The only drive addresses available in this case are 0 through 2. Refer to Figures 4-4 and 4-5 for duplexed cage drive examples.

- ◊ The non-hot swap SCSI devices use SCSI IDs from 0 through 15, with the following restrictions:
 - a. Narrow SCSI devices must be addressed 0 through 6.
 - b. Wide SCSI devices may be addressed 0 through 15, except for ID 7, which is held by the SCSI controller.

The non-hot swap SCSI devices are all connected to the same cable, which is terminated and connected to one SCSI controller. Each SCSI device connected to the non-hot swap device connector must have a unique address.

- SCSI Device Installation Order

The Hot Swap Cage's supported hard drive configurations for both HP NetServer models are shown in Figures 4-2 through 4-5. The arrows indicate the order of hard drive installation.

- ◊ Start from the bottom of the Hot Swap drive cage when adding hard drives in the HP NetServer LC 2000.

If you are using one or more filler panels, insert them at the *top* of the cage. These configurations may use filler panels and drive spacers to close up the front of the Hot Swap mass storage cage. If there are gaps in the cage, the drives may not receive the proper ventilation and could suffer thermal damage.

- ◊ Start from the left of the Hot Swap drive cage when adding hard drives in the HP NetServer LC 2000r.

If you are using one or more filler panels, insert the panels on the *right* side of the drive cage. These configurations may use filler panels and drive spacers to close up the front of the Hot Swap mass storage cage.



If there are gaps in the cage, the drives may not receive the proper ventilation and could suffer thermal damage.

- Filler Panels and Spacers

- ◊ Ensure all empty slots in the Hot Swap drive cage have filler panels inserted to ensure proper airflow.

If there are fewer drives than the Hot Swap drive cage supports, a 1-inch *filler panel* must be inserted in each empty disk location. The filler panels ensure the drive cage has the proper ventilation and airflow. The filler panel will be removed before inserting a new drive.

- ◊ Ensure all smaller spaces in the Hot Swap drive cage have the smaller filler panels inserted to ensure properly airflow.

If there is a mix of 1-inch and 1.6-inch drives in the drive cage, you may need to add ½-inch drive spacers. The smaller drive spacer fills the gap between adjacent drives or between a drive and a filler panel. Disk spacers can be mounted on 1-inch low-profile drives or 1.6-inch half-height drives, so a drive spacer and low-profile drive are the same size as a half-height drive, and a drive spacer and a half-height drive are as large as two low-profile drives.

CAUTION

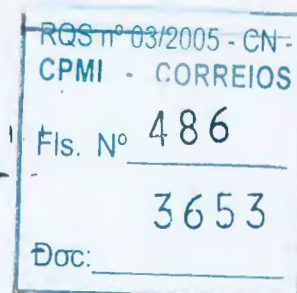
To prevent overheating or excessive electromagnetic radiation, use the filler panels and spacers to fill the gaps between Hot Swap hard drives. If the filler panels or spacers are left out of the drive shelves, thermal damage and/or excessive EMI could occur.

- Hot Swap Drive Cage Configurations

The possible Hot Swap Drive Cage Configurations are summarized in Figures 4-2 through 4-5 for the HP NetServer's LC 2000r and LC 2000 respectively. There are various SCSI cable configurations associated with the system and, if incorrectly configured, could cause damage to the HP NetServer and the SCSI devices. Refer to Figures 4-6 and 4-7.

Hot Swap Configuration Options

The Hot Swap Mass Storage Cage has various configurations which affects the options installed and cable configurations. If the Duplex board is installed on the mass storage cage, the drive and cable configurations differ from those shown without the duplex board installed. Compare Figures 4-2 and 4-4 or 4-3 and 4-5.



**Rack-Mounted Configurations for
SCSI Hot Swap Mass Storage Cage
Single Bus Control - SCSI Connector A**

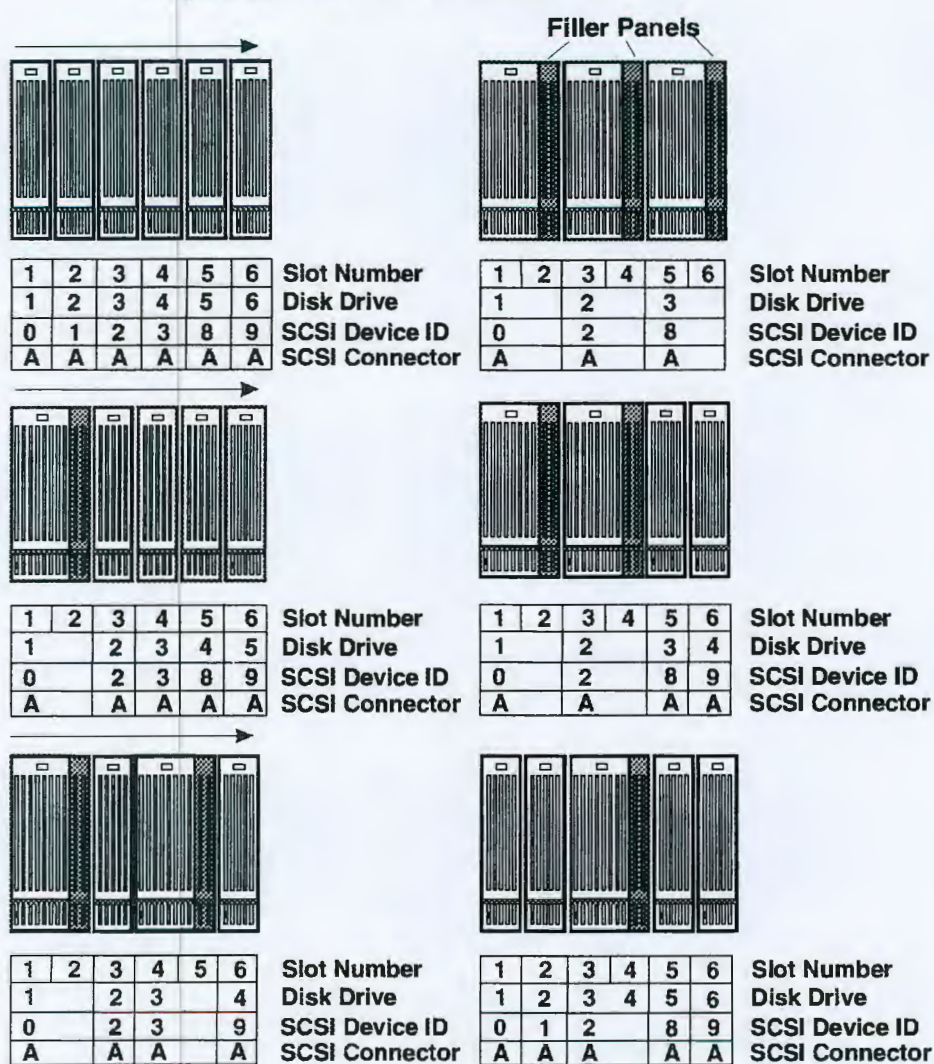
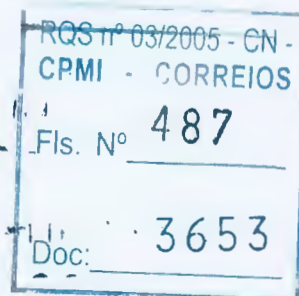


Figure 4-2. Rack Mounted Hot Swap Drive Configurations (No Duplex)

English



Pedestal Configurations for
SCSI Hot Swap Mass Storage Cage
Single Bus Control - Connector A

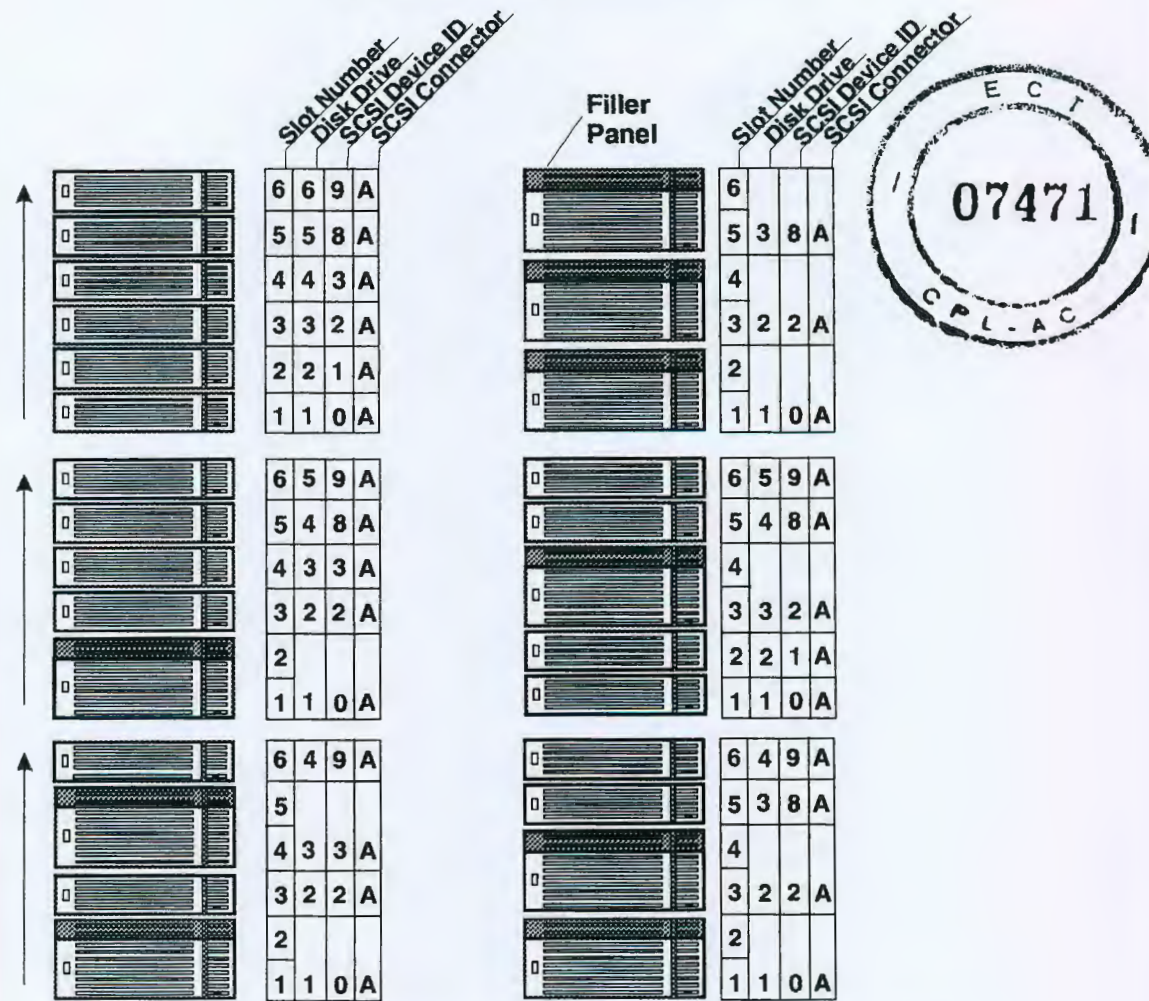
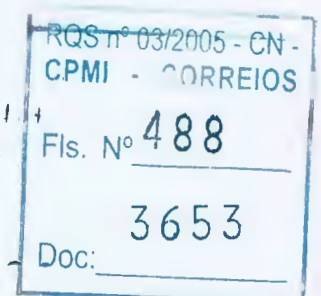


Figure 4-3. Pedestal Mounted Hot Swap Drive Configurations (No Duplex)



**Rack-Mounted Configurations for
SCSI Hot Swap Mass Storage Cage
Duplex Board Installed - Two Bus Control
Connector A and B**

English

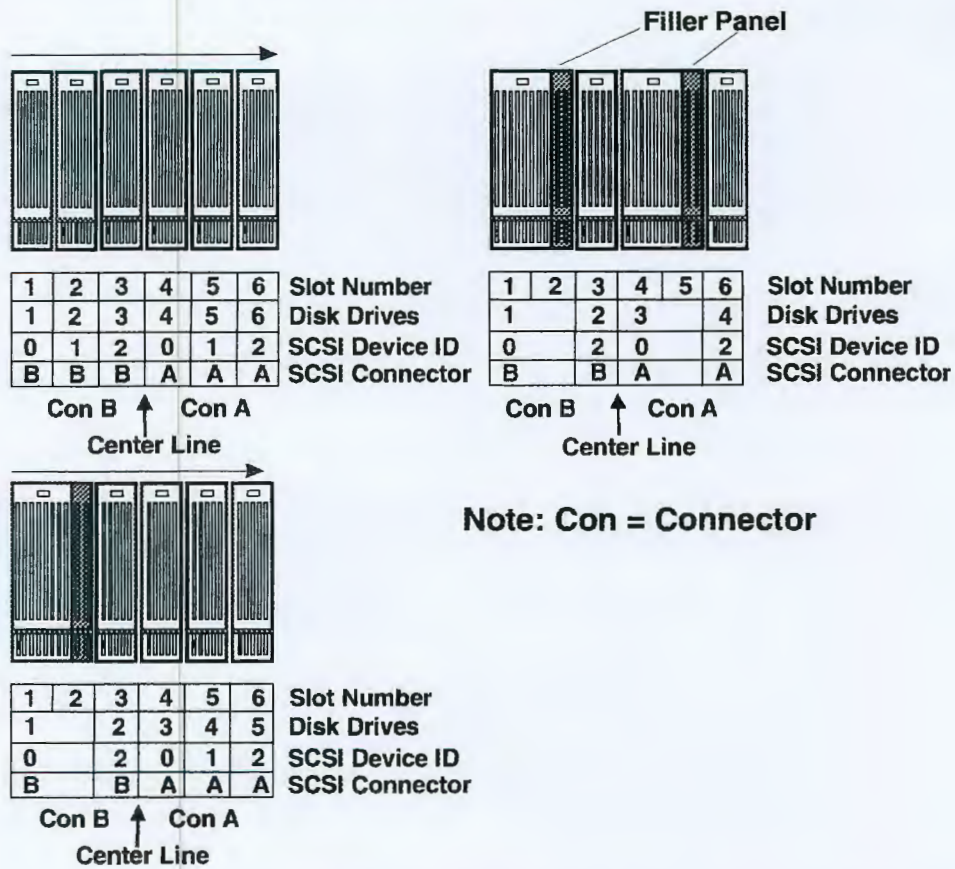
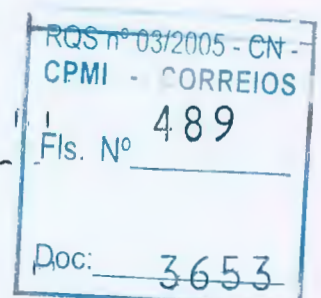
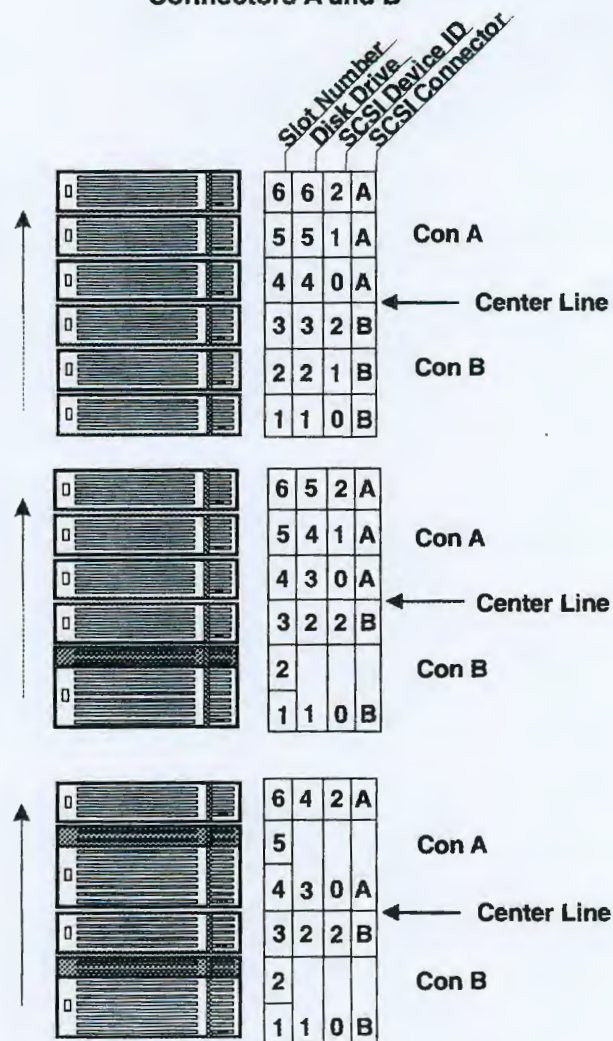
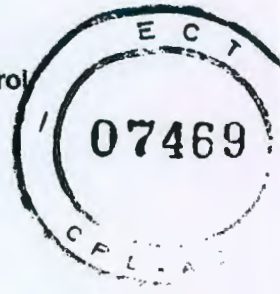


Figure 4-4. Rack Mounted Hot Swap Drive Configurations (Duplex)

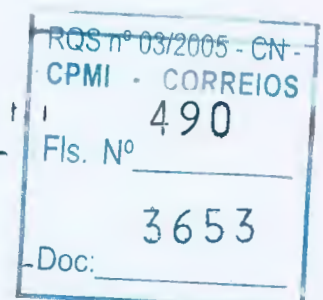


**Pedestal Configurations for
SCSI Hot Swap Mass Storage Cage
Duplex Board Installed - Two Bus Control
Connectors A and B**



Con = Connector

Figure 4-5. Pedestal Mounted Hot Swap Drive Configurations (Duplex)



Cabling Configurations

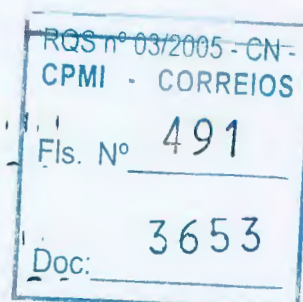
There are various SCSI cable configurations associated with the HP NetServer and if all possible SCSI devices and connections are used, then an additional SCSI disk controller is required. Table 4-1 describes the various cables and where each one can be connected. The example configurations shown in Figures 4-6 and 4-7 assume the maximum number of SCSI devices and connections.

- Do not connect the SCSI terminated cable (# 3) to the Hot Swap Mass Storage Cage's connector A or B, or unreliable operation will occur.
- The Hot Swap Mass Storage Cage can have up to six drives with only one SCSI cable connected.
- The Hot Swap Mass Storage Cage can also be split into two equal parts, with up to three drives each (requires duplex board accessory kit), and uses two independent SCSI busses, which require two SCSI cables.

If the duplex board is installed, the two embedded SCSI controllers, a dual channel SCSI disk controller board, or a DAC board must be used to control the two halves of the Hot Swap Mass Storage Cage.

Table 4-1. Internal Cable Designations

Cable Designation	Description	Source
Cable 1	This cable always connects to the Flexible disk drive in the system.	This cable can only connect to the floppy connector on the system board.
Cable 2	This cable always connects to the Mass Storage Cage and has no termination.	This cable is typically connected to the embedded SCSI A channel, a SCSI disk controller board, or a HP NetRAID (DAC) board.
Cable 3	This cable always connects to the non-hot swap SCSI drives and has a termination at the end.	This cable can be connected to the embedded SCSI A or B channel, but is typically connected to SCSI Channel B.
Cable 4	This cable always connects to the IDE devices (CD-ROM) in the HP NetServer.	This cable can only connect to the embedded IDE connector on the system board.
Cable 5	This sheathed ribbon cable (optional) is always used for the external connector.	This cable can be connected to an embedded SCSI channel or a SCSI disk controller board.



SCSI Cable Configurations
Hot-Swap and Non-Hot Swap Drives
(Single Bus Control - No Duplex Board Installed)

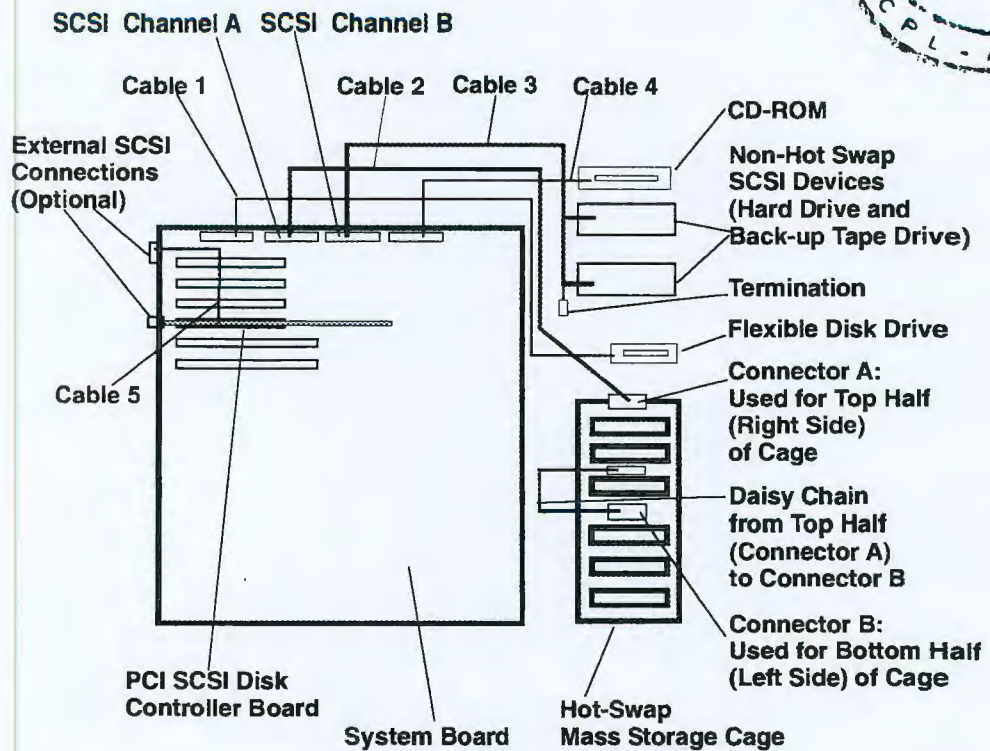
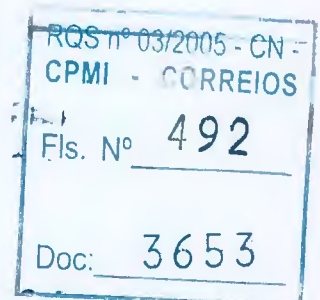


Figure 4-6. SCSI Cable Configurations (No Duplex)



**SCSI Cable Configurations
Hot-Swap and Non-Hot Swap Drives
(Two Bus Control - Duplex Board Installed)**

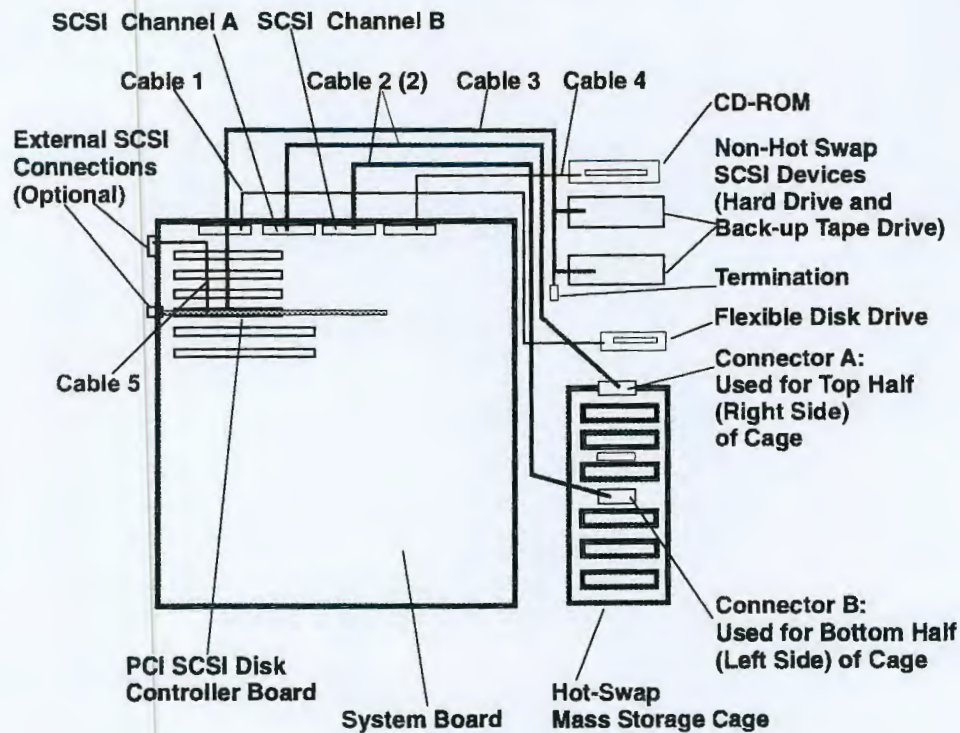


Figure 4-7. SCSI Cable Configurations (Duplex)

English



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Installing Hot Swap Hard Drives

Use this section to install Hot Swap hard drives in the Hot Swap drive cage.

CAUTION

Protect the drive from static electricity by leaving it in its anti-static bag until you are ready to install it. Before handling the drive, touch any unpainted metal surface to discharge static electricity. When you remove the drive from the anti-static bag, handle it only by the frame.

Do not touch the electrical components. Place the drive on the anti-static bag whenever you set it down.

1. Unlock the Hot Swap Mass Storage Cage with the key provided before attempting to remove the drive spacer or filler panels.
2. Remove any filler panels in the desired disk drive location:
 - a. Press in the locking latch and insert your fingers.
 - b. Using your fingers, pull the filler plug straight out. See Figure 4-8.

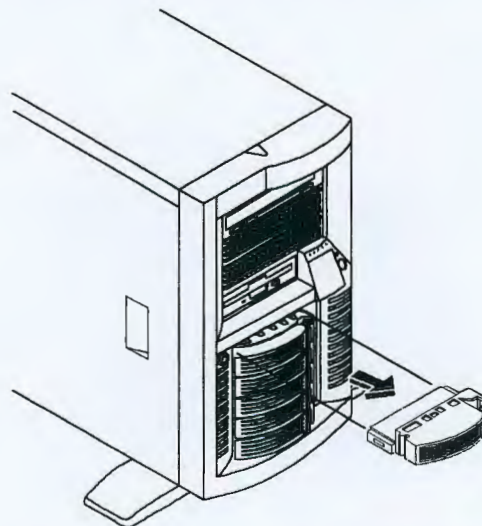
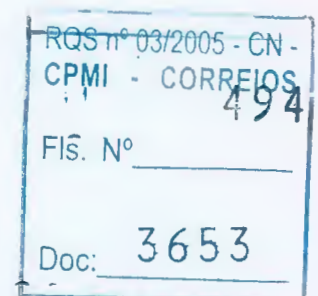


Figure 4-8. Removing Filler Panel from Cage



3. Remove any drive spacers, if necessary:

- a. Slide the drive spacer back, a fraction of an inch away from your body as you face the front of the drive.

Drive spacers attach to the disk drive module with four small feet.

- b. Tilt up the front of the drive spacer to disengage the front two feet.
- c. Pull the drive spacer forward slightly to disengage the back two feet and lift. See Figure 4-9.

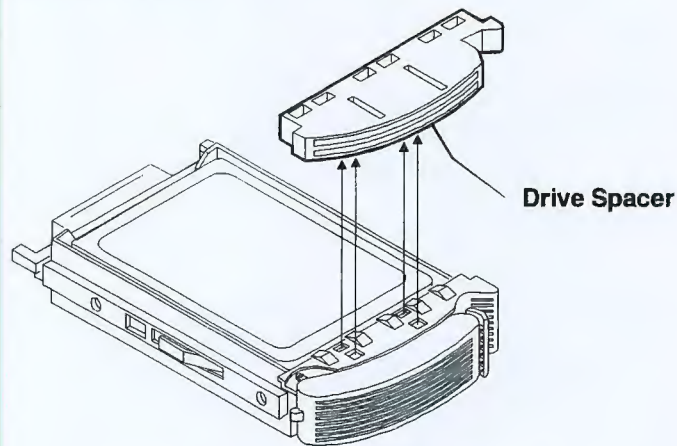
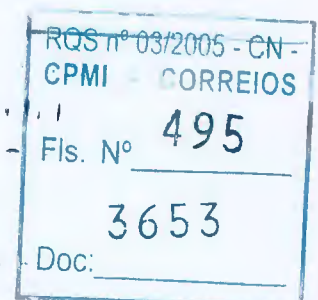


Figure 4-9. Removing the Drive Spacer

English



CAUTION

To prevent snapping off the handle do not use extreme force when opening it. Open the handle until you feel resistance.

4. Open the drive module by pressing in on the locking latch at the end of the drive ejector handle and pulling the handle open.

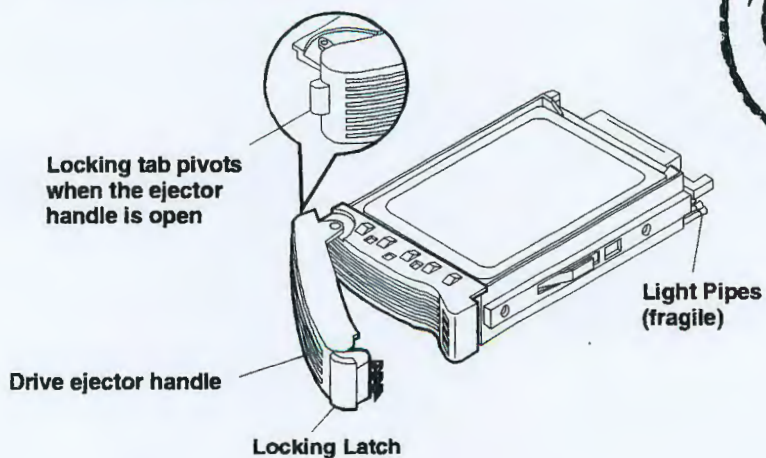


Figure 4-10. Ready Drive for Installation

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CAUTION

Use caution when handling the drive to prevent damage to the fragile light pipes as you insert the drive.

5. Gently slide the drive module into the cage and stop when you feel resistance. See Figure 4-11.

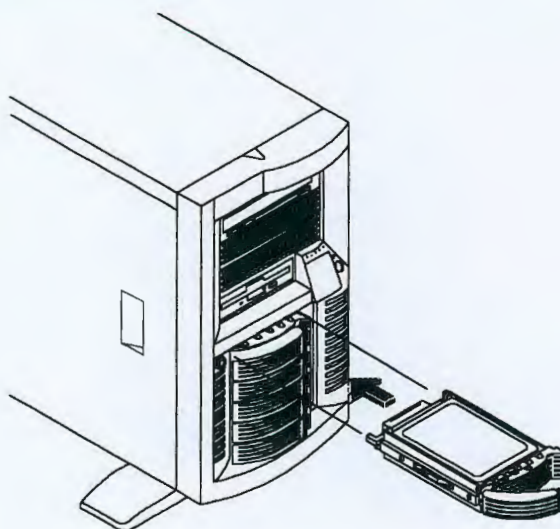


Figure 4-11. Inserting the Drive

6. Verify the pin behind the pivot end of the handle engages the hole in the edge of the cage.
7. Press the ejector handle in until you feel the latch click into place.

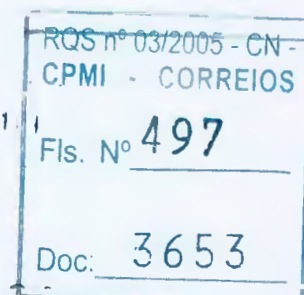
Closing the ejector handle engages the drive with the electrical connector in the Hot Swap drive cage and seats the drive.

8. If the drive is unseated in the cage after closing the ejector handle, repeat this procedure from Steps 4 to 7.

The handle was probably not pulled out far enough, and the locking latch failed to engage the Hot Swap mass storage cage.

NOTE

Closing the ejector handle engages the drive with the electrical connector in the Hot Swap mass storage cage and seats the drive.



Removing Hot Swap Hard Drives

CAUTION

You must remove the drive slowly to ensure the drive heads are parked prior to removal. Ensure you follow these instructions carefully to prevent handling damage, such as head slaps or head actuator unlocking.

1. To unlock the drive, push the locking latch in and then pull the ejector handle toward you. See Figures 4-10 and 4-12.
2. Gently pull the drive out about an inch to disengage the power connection.
3. Wait about 30 seconds for the drive to stop spinning and the drive heads to park.
4. Use your hand to support the bottom of the drive, while you slowly pull the drive straight out.

Do not allow the drive to fall.

5. Place the drive in an electrostatic-protected container.

Do not stack drives.

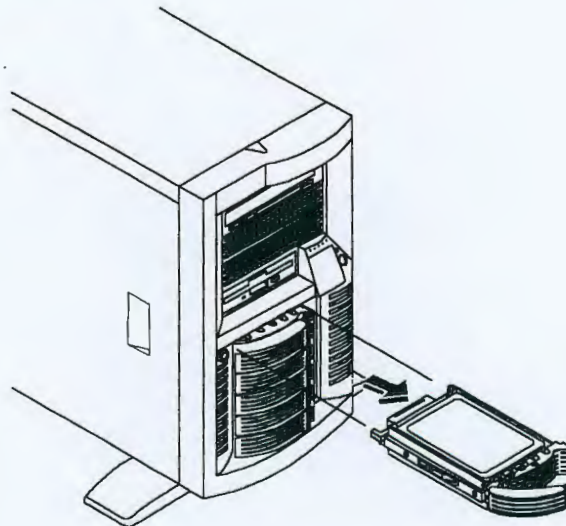


Figure 4-12. Hot Swap Drive



Installing Non-Hot Swap Storage Devices

Use this section to install any of the non-hot swap mass storage devices used as a hard drive or a tape backup storage.

CAUTION

Protect the drive from static electricity by leaving it in its anti-static bag until you are ready to install it. Before handling the drive, touch any unpainted metal surface to discharge static electricity. When you remove the drive from the anti-static bag, handle it only by the frame.

Do not touch the electrical components. Place the drive on the anti-static bag whenever you set it down.

Non-Hot Swap
Drives
(Optional)

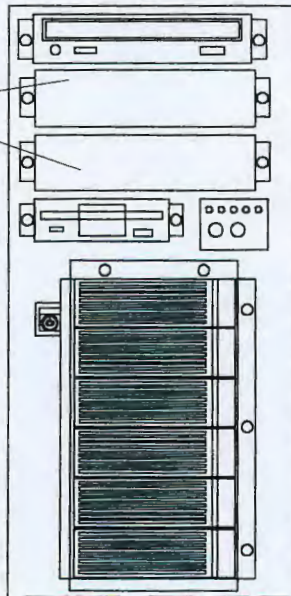


Figure 4-13. Non-Hot Swap Drive Shelves

To install a drive in the non-hot swap drive bay, refer to the following procedure.

1. If necessary, shutdown the HP NetServer's NOS.

Refer to Chapter 2, "Controls, Ports, and Indicators."

2. Disconnect all telephone cables and power cords.

English

07460



3. If working on a pedestal-mounted NetServer, remove the bezel and gain access to the HP NetServer's non-hot swap-drive bays.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

4. If working on a rack-mounted NetServer, follow the appropriate instructions to safely extend the NetServer from the rack.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

5. Select an available drive bay for the device and remove the filler panel.

6. Configure the device according to the manufacturer's instructions.

Refer to SCSI addressing in the "Mass Storage Guidelines" section earlier in this chapter.

7. If you are installing a boot device, check the boot priority described earlier in this chapter.

8. If the device does not already have a storage tray or mounting hardware, install the appropriate mounting hardware on the device.

Refer to the directions included with the device's mounting hardware.

9. Slide the drive into the open shelf and secure the drive using the two mounting screws included with the mounting hardware or filler panel.

10. Connect the power cable and the appropriate data cable (SCSI) from the system board or SCSI controller to the device.

11. Replace the cover.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

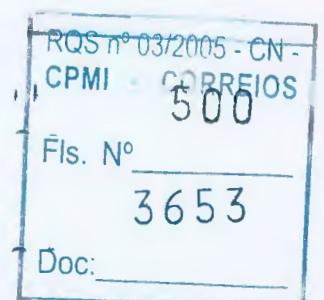
12. If the NetServer is rack mounted, slide it back into the rack and secure it.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

13. Replace the bezel.

Refer to Chapter 3, "Opening and Closing the HP NetServer."

14. Return power to the NetServer and run the Setup Utility to configure the device.



Connecting External SCSI Devices

The HP NetServer may provide an external SCSI connector (optional) at the rear panel knockout as shown in Figure 4-14. The external SCSI connector is typically connected to a PCI SCSI disk controller board inserted in one of the PCI slots.

An external SCSI connection may also be provided by a SCSI disk controller board or a DAC board inserted into one of the PCI slots as shown in Figure 4-14. The last device in the SCSI chain of external devices must be terminated. See Figure 4-14.

CAUTION

Do not use high voltage differential (HVD) SCSI devices on any of the SCSI channels or damage will occur. The HVD SCSI devices are not supported. Use only Single-Ended (SE) or Low-Voltage Differential (LVD) devices to connect to the external connectors.

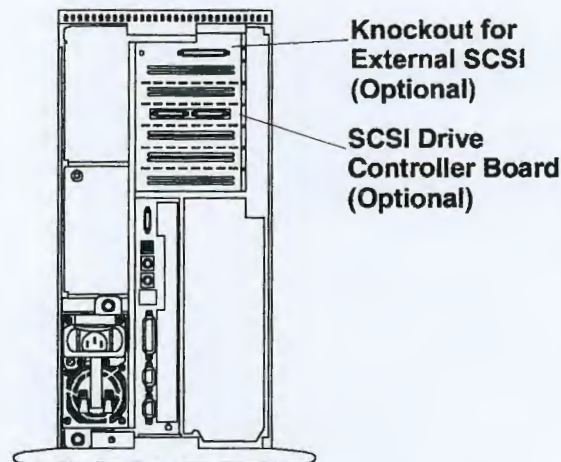


Figure 4-14. External SCSI Connection

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5 Installing Additional Memory

English

Introduction

This chapter provides the instructions for installing and removing DIMMs on the system board in the HP NetServer LC 2000 or LC 2000r. The video memory comes with 2MB standard and cannot be upgraded.

NOTE

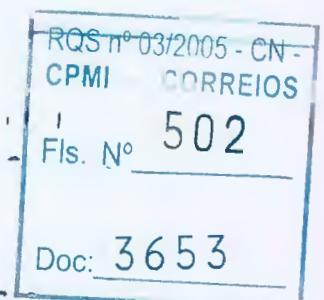
The EDO DIMMs and PC 100 SDRAM DIMMs from earlier HP NetServer models will fit into the DIMM slots in the NetServer LC 2000/LC 2000r, but the EDO DIMMs and PC 100 SDRAM will not function properly. Use only 133 MHz SDRAM DIMMs acquired from HP.

To ensure you have the correct DIMMs before installation, refer to one of the following for a list of qualified DIMMs:

- Technical Reference Label inside the HP NetServer's top or side cover
- HP Order Assistant on the HP web site at:
<http://www.hp.com/go/netserver>
- Information Assistant on the *HP NetServer Online Documentation CD-ROM*
- HP Customer Service

Tools Required

- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.



Memory Installation Guidelines

- The HP NetServer LC 2000/2000r uses only 133 MHz (PC133) SDRAM DIMMs, which are electrically different from the EDO and PC100 SDRAM memory modules used in previous HP NetServer models.
- DIMM sizes supported are 64 MB, 128 MB, 256 MB, 512 MB, or 1 GB in any combination.
- Supported memory capacity ranges from 64 MB to 4 GB maximum (1 GB per DIMM slot and 4 DIMM slots total). The minimum capacity is 64 MB (one DIMM).
- DIMM sizes may be mixed on the system board and may be loaded in any order (0 through 3).
- Open slots between DIMMs are permitted.
- When handling DIMMs, observe anti-static precautions to avoid damage.

DIMM Installation

Use this procedure to install each DIMM in a DIMM slot on the system board.

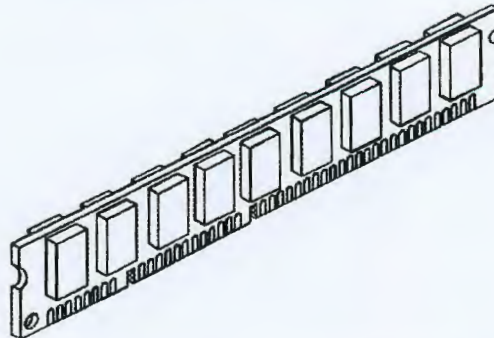


Figure 5-1. Individual SDRAM DIMM

CAUTION

Do not install EDO DIMMs or PC100 SDRAM from previous HP NetServers in the HP NetServer LC 2000/2000r. Use only DIMMs specified for the HP NetServer LC 2000/2000r.



To install additional memory in the HP NetServer, refer to the following procedure.

1. To gain access to the HP NetServer, perform one of the procedures listed below.

NOTE

It is not necessary to remove the system board from the HP NetServer to install the additional DIMM memory.

- ◇ If the NetServer is mounted on the pedestal, perform Steps 1-8 in the "Removing Covers – Pedestal (LC 2000)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
 - ◇ If the NetServer is in the rack, perform steps 1-14 in the "Removing Covers – Rack Mount (LC 2000r)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
2. Locate the DIMM slot for installation and spread the two retaining clips outward to accept the DIMM. See Figure 5-2.
 3. Remove the HP DIMM from its container, handling the module by its edges.

If you must lay it down, place it on an anti-static mat.

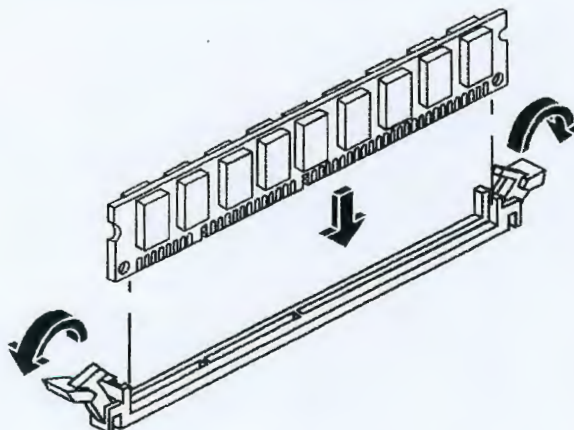


Figure 5-2. Opening Retaining Clips

4. Align the notches on the DIMM with the keys on the DIMM slot, holding the DIMM at a 90° angle to the system board. See Figures 5-2 and 5-3.

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5. Insert the DIMM fully into the slot, handling the DIMM by its edges. See Figures 5-2 and 5-3.

The retaining clips should grasp the DIMM automatically if it is inserted properly. If the clips do not close, the DIMM is not inserted correctly.

CAUTION

Do not rock the DIMM into place, but apply firm and even pressure. If the retaining clips do not close, remove the DIMM and repeat Steps 2-5.

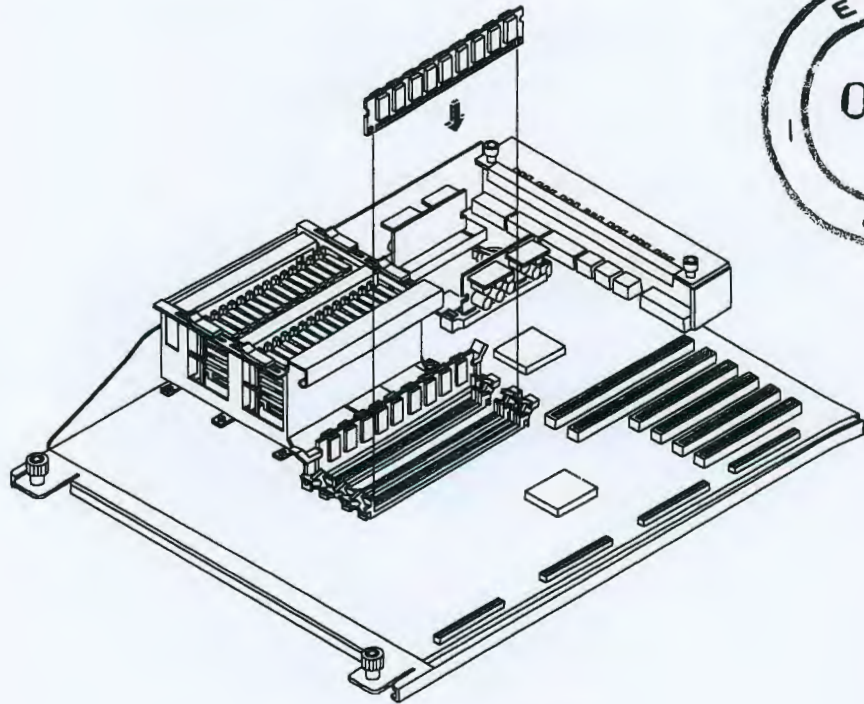


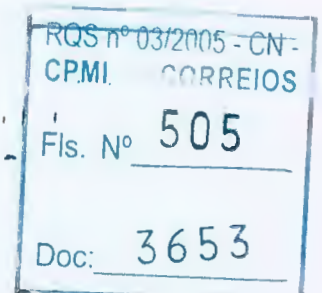
Figure 5-3. Installing the DIMM

NOTE

The Processor Cage Cover is shown removed for clarity.

6. If all DIMMs have been installed, replace the cover.

Refer to Chapter 3, "Opening and Closing the HP NetServer."



7. If the NetServer is in a rack installation, return the chassis into the rack.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
8. Re-install the bezel onto the front of the HP NetServer.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
9. Reconnect the power cord(s).
10. Power on the HP NetServer according to the respective NOS power-up instructions.
Refer to Chapter 2, "Controls, Ports, and Indicators."
11. Return the HP NetServer to normal operation.

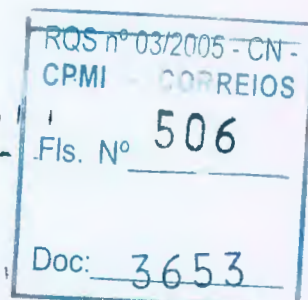
DIMM Removal

Use this procedure to remove DIMMs from the HP NetServer's system board. The HP NetServer must be powered down and the appropriate cover must be removed from the HP NetServer before removing any DIMMs.

1. If you have not already removed the appropriate cover from the HP NetServer, perform one of the procedures listed below.
 - ◊ If the NetServer is mounted on the pedestal, perform Steps 1-8 in the "Removing Covers – Pedestal (LC 2000)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
 - ◊ If the NetServer is in the rack, perform steps 1-14 in the "Removing Covers – Rack Mount (LC 2000r)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
2. Select the desired DIMM(s) to remove.
3. Open the DIMM's retaining clips to lift the DIMM's top edge away from the clips. See Figure 5-4.
4. Lift the DIMM completely away from the slot. See Figure 5-4.
5. Place the DIMM in its anti-static container.

English

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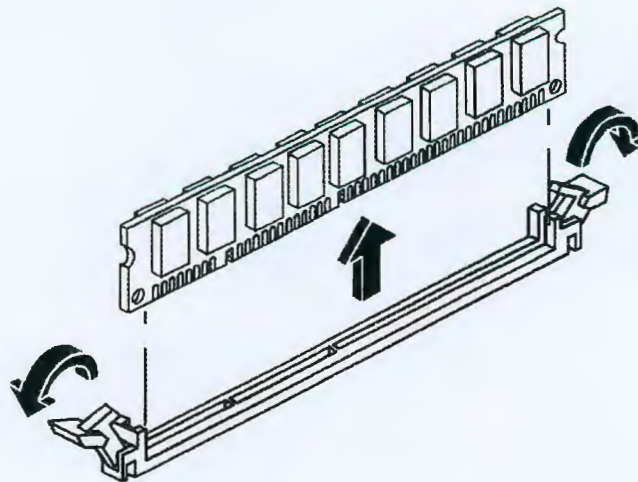


Figure 5-4. Removing a DIMM Module

6. Repeat Steps 2 through 5 to remove any additional desired DIMMs on the system board.

NOTE

Ensure the retaining clips on the DIMM slots for each DIMM are closed before replacing the cover onto the HP NetServer.

An error will be displayed if all DIMMs are removed.

7. If all desired DIMMs have been removed, replace the cover.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
8. If the NetServer is a rack installation, return the chassis into the rack.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
9. Re-install the bezel onto the front of the HP NetServer.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
10. Reconnect the power cord(s).
11. Power on the HP NetServer according to the respective NOS power-up instructions.
Refer to Chapter 2, "Controls, Ports, and Indicators."
12. Return the HP NetServer to normal operation.



6 Installing Additional Boards

English

Introduction

This chapter describes how to install accessory boards into the system board of the HP NetServer LC 2000/2000r. The system board provides up to six PCI slots (P1 through P6), two of which are 64-bit slots.

Tested PCI Boards

For a list of tested PCI boards, check for compatibility in Configuration Assistant on the Navigator CD-ROM or look for the Hardware Tested Products list for the HP NetServer LC 2000/2000r under the Service and Support topic for the specific NOS used in the NetServer at HP's web site:

<http://www.hp.com/netserver/support/compatibility>

CAUTION

Some accessory board outputs may exceed U.S. National Electrical code (NFPA 70) Class 2 or limited power source limits and must use appropriate interconnecting cabling in accordance with the National Electrical Code. (All Hewlett-Packard boards comply with Class 2.)

Tools Required

The following tools are required for installation or removal of the accessories boards in the HP NetServer LC 2000/2000r:

- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap with ground lead.

Remote Control Card

The HP NetServer LC 2000/2000r may use the *HP TopTools Remote Control* card in any PCI slot on the system board. The Remote Control card supports HP TopTools software. An I²C connector is provided on the system board. For more information on use of the HP TopTools Remote Control function, see Chapter 11, "Information Assistant," and Chapter 10, "Configuring the HP NetServer."



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Boot Priority

This section details the HP NetServer's boot order by highest to lowest priority. The NetServer's boot order (BIOS search order for a boot drive) should be considered when selecting a slot on the system board. This is especially important if you are installing a SCSI disk controller board. The disk controller's boot priority is set by the board's slot location. See Figure 6-1.

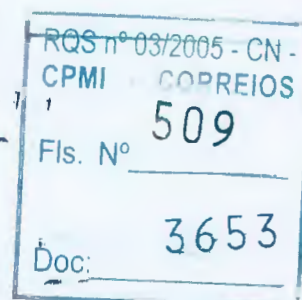
The on-board SCSI consists of two channels, A and B. Channel A is typically used to control the Hot Swap SCSI drives. Channel B is typically used to control the internal non-hot swap SCSI drives. On each SCSI channel, the system scans for a boot device starting at device ID 0 and works up from there.

By default the NetServer searches for boot devices in this order:

1. IDE CD-ROM drive
2. Flexible disk drive
3. SCSI A bus (typically the Hot Swap Mass Storage Cage)
4. SCSI B bus (typically the non-Hot Swap internal SCSI devices)
5. PCI slot P1
6. PCI slot P2
7. PCI slot P3
8. PCI slot P4
9. PCI slot P5
10. PCI slot P6

NOTE

The NetServer can be configured to boot from a PCI accessory board or PCI-based DAC, instead of the onboard SCSI channels, by putting the board in one of the PCI slots. The SCSI Configuration Utility can be used to configure the NetServer to skip over the onboard SCSI channels and select a PCI slot instead, when scanning for boot devices. For instructions, refer to the SCSI Configuration Utility in Chapter 10, "Configuring the HP NetServer."





IRQ Settings

The IRQ settings are automatically assigned and don't require user intervention. PCI boards have the capability of sharing hardware interrupts (IRQs) with other PCI boards, as stated in the PCI specifications, but this does not always prove to be true between board manufacturers. To solve this problem requires an in-depth knowledge of a server's implementation to place a PCI board in a slot that would not conflict with another PCI board's IRQ setting.

The HP NetServer provides various ways to automatically share interrupts in the NetServer. The sharing mode can be selected under the heading "Sharing Algorithms" in the Setup Utility. The IRQs are automatically assigned during boot up for each PCI slot and embedded device in the NetServer, avoiding any IRQ conflicts and providing the best performance. This feature also provides a way of manually assigning IRQs when disabling the Sharing Algorithm feature. Refer to Chapter 10, "Configuring the HP NetServer," for more information.

These IRQ assignments trigger the installed NOS to enable the APIC (Advanced Programmable Interrupt Controller) which takes control of the IRQ sharing scheme. You are not required to manually assign interrupts for the following NOSs:

- Microsoft's NT 4.0
- Novell's NetWare 5
- SCO UnixWare 7

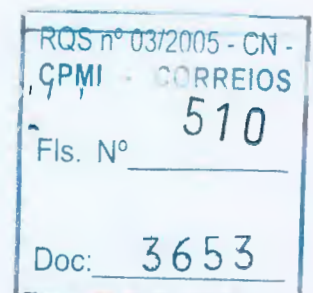
NOTE	SCO UnixWare 7 requires installation of the OSMP module to enable the APIC mode.
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System Board PCI Slots

All accessory boards plug into the six slots on system board at the rear of the NetServer's chassis. See Figure 6-1.

- Four PCI slots (P1-P4) support full length 32-bit boards at a clock rate of 33 MHz. These slots only support +5 VDC power and Universal boards. These slots have keys in the upper half of the board slot to prevent 3.3 volt boards from being inserted into the slots.

NOTE	Universal boards automatically switch to accept power from a +5.0 or +3.3 VDC source and have a key slot in the connector to allow installation in any of the 6 PCI slots.
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- Two PCI slots (P5-P6) support full-length 32- or 64-bit boards at clock rates of 33 MHz. These slots only support +5 VDC power and Universal boards. These slots have keys in the upper half of the board slot to prevent 3.3 volt boards from being inserted into the slots.

CAUTION

Some accessory board outputs may exceed U.S. National Electrical code (NFPA 70) Class 2 or limited power source limits and must use appropriate interconnect cabling in accordance with the National Electrical Code.

- I/O connections – The system board provides connections to support the video monitor, mouse, keyboard, one serial port, one management port, one parallel port, and an embedded NIC port.

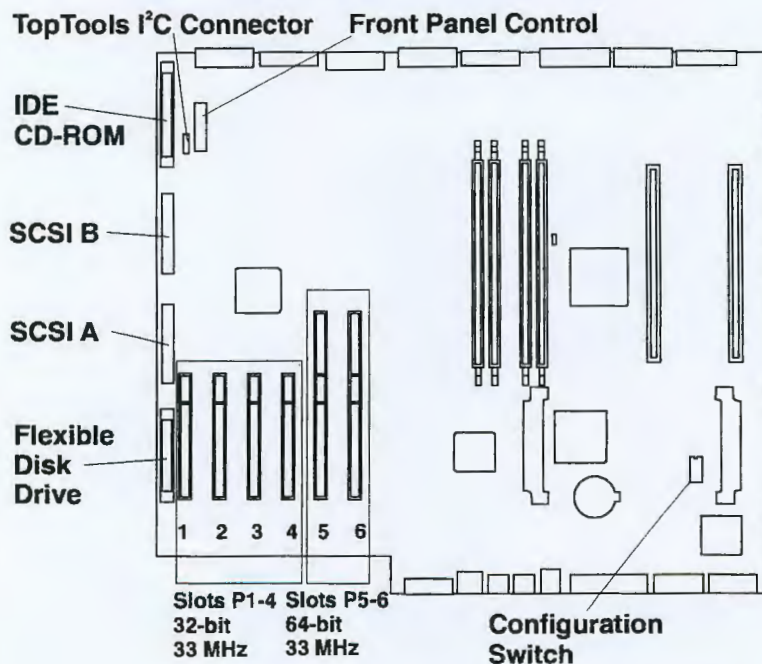
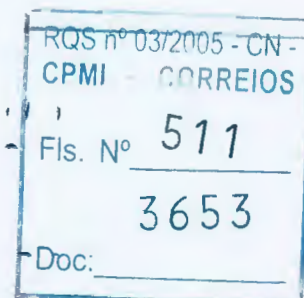


Figure 6-1. System Board PCI Slots



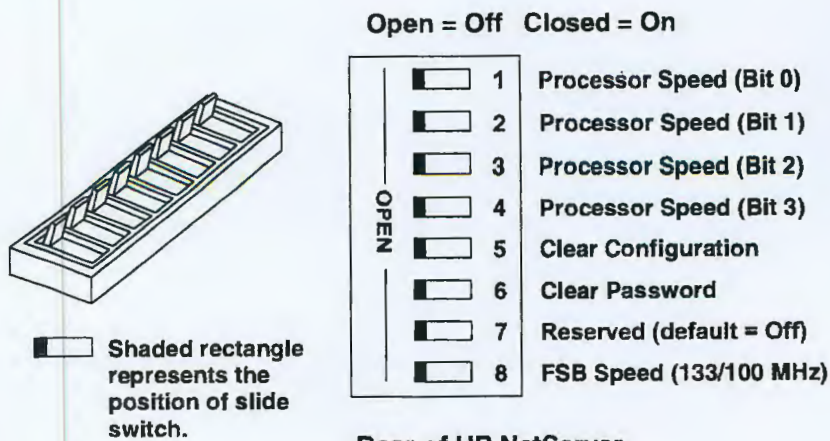


Figure 6-2. Configuration Switch Block

Installing Accessory Boards

Use this procedure to install all accessory boards.

1. Read the documentation included with each board and follow any special instructions provided.

CAUTION

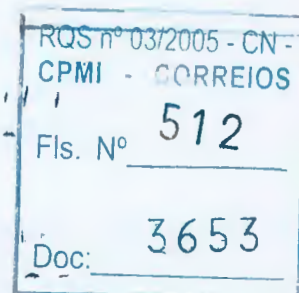
To prevent a system crash, never remove or insert a PCI board from or into a slot with the NetServer powered on. Always turn power off to the NetServer before performing any installation or removal operations.

2. Log off all users and back-up all files.
3. Follow the instructions in the respective NOS (network operating system) documentation to gracefully shut down all networking software and applications.
4. Press the power button on the HP NetServer's control panel when prompted by the operating system.

Normally, this completes the shutdown procedure.

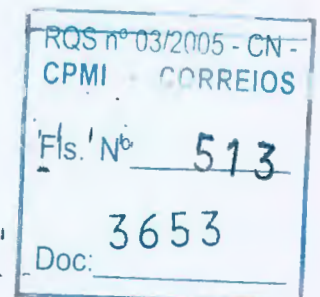
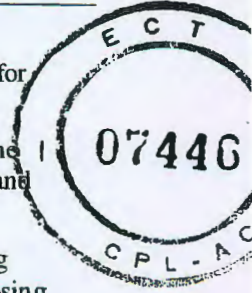
NOTE

The power supplies will continue to provide standby current to the NetServer until the power cable is disconnected.



5. Gain access to the NetServer by performing the appropriate procedure for the NetServer LC 2000 or the LC 2000r.
 - ◊ If the NetServer is mounted on the pedestal, perform Steps 1-8 in the "Removing Covers – Pedestal (LC 2000)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
 - ◊ If the NetServer is in the rack, perform steps 1-14 in the "Removing Covers – Rack Mount (LC 2000r)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.
6. Consider the boot priority before installing any accessory boards.
See Figure 6-1.

If installing a SCSI disk controller board, the controller's priority (BIOS search order for a boot drive) is set by the board's slot location. For details, refer to Boot Priority earlier in this chapter.
7. Identify the desired slot (P1 through P6), before installing the accessory board. See Figure 6-1.



8. Remove the slot cover from the NetServer's rear panel, before installing the new board into the slot, as shown in Figure 6-3.

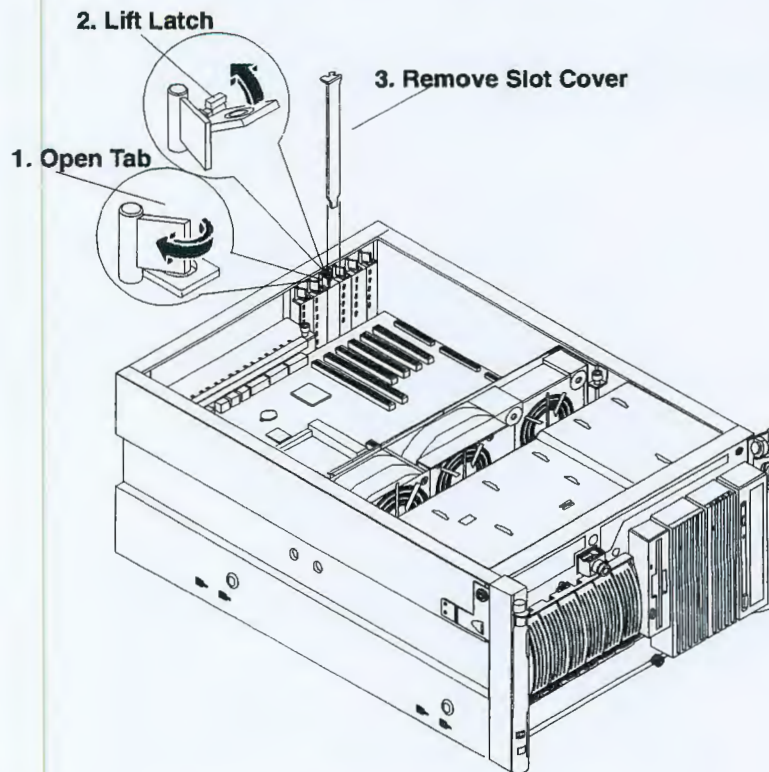
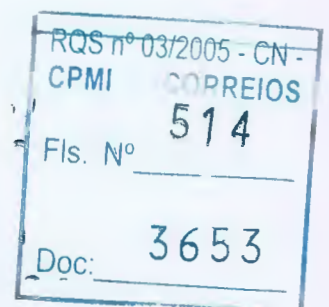


Figure 6-3. Removing the Slot Cover

NOTE Each PCI slot must have a slot cover or PCI board in the slot. Ensure all unused slots have slot covers in place.

CAUTION Do not bend the PCI board to install it into the slot. If a full-length PCI board has a handle on the end of the board that prevents its installation, remove the handle before installing the board.



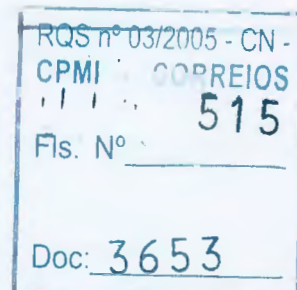
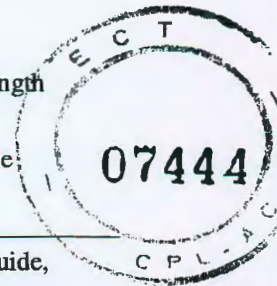
9. Before installing the new PCI board:

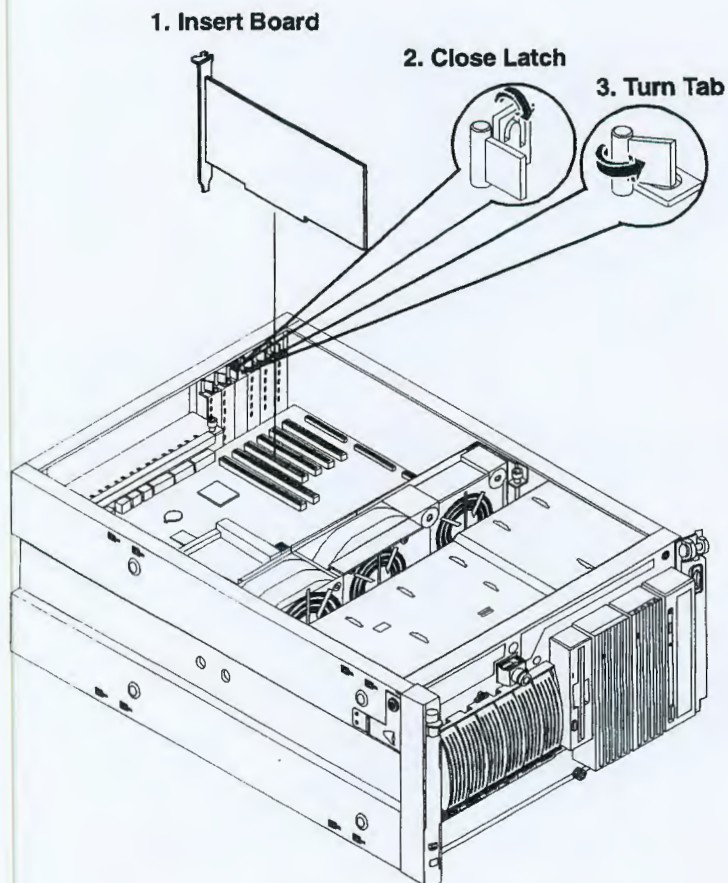
- ◊ Verify there is no handle attached to it, especially if it is a full-length board.
- ◊ If it has a handle attached, remove the handle before installing the board into the slot.

NOTE

Use only the right side of the two slots in the board guide, when installing PCI boards into some of the PCI slots (P3 through P6) on the system board.

- 10. Align the board with its slot along its full length and position it into the slot.
- 11. Push the PCI board down into its connector in the System board.





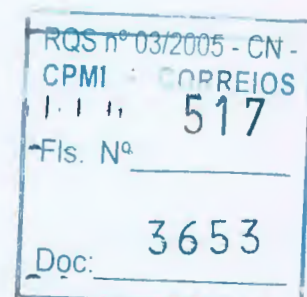
English

**Figure 6-4. Installing the Accessory Board**

12. Secure the PCI board as shown in Figure 6-4.
13. If the installed accessory board requires an external connection or a connection to the System board, ensure the cable is properly attached.
Refer to the accessory board documentation for connection requirements.
14. If accessory board installation is complete, re-install the cover on the NetServer.
Refer to Chapter 3, "Opening and Closing the HP NetServer."
15. Re-install the bezel onto the front of the HP NetServer.
Refer to Chapter 3, "Opening and Closing the HP NetServer."



16. If all installation work is complete, return power to the NetServer according to the respective NOS power up instructions.
17. Use the respective NOS software to ensure the correct software drivers for the PCI board are loaded and verify correct operation.



7 Installing Additional Processors

English



Introduction

The HP NetServer LC 2000/2000r supports two processors in primary and secondary slots and both processors must operate at the same speed and cache size.

The HP NetServer supports the Pentium III processors at a front side bus (FSB) speed of 133 MHz. Advanced processors will be supported as each one becomes available. Contact HP or your reseller for details.

The NetServer ships with one processor in the primary processor slot and one voltage regulator module (VRM) installed in its respective VRM slot. Both processors and VRM slots are located on the system board.

Tools Required

- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Processor Configuration Guidelines

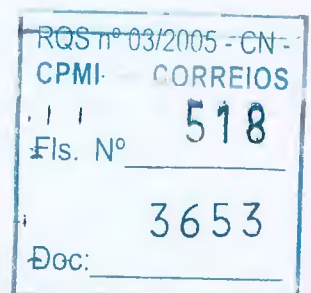
The HP NetServer LC 2000/2000r supports a variety of processor speeds with an FSB speed of 133 MHz.

CAUTION

Do not open the new processor's protective bag or remove it from the bag until you are ready to install it.

Before you remove a processor from the anti-static container, touch a grounded, unpainted metal surface on the HP NetServer to discharge static electricity.

- Both processor modules must be the same processor type and have the same product number, which insures the same clock speed, cache size, and FSB speed.
- The processor modules must operate at the designated speed stated by the product type on the processor.



CAUTION

Do not set the processor speed switches to any other speed, as this can result in unreliable or intermittent performance, and data integrity may also be at risk.

- Use only processor upgrade kits with the same HP product number. This ensures the processor type, clock speed, and cache size match, and that product numbers are compatible.
- Ensure you install the processor module and its respective VRM in the secondary slot, if the primary processor is already installed.

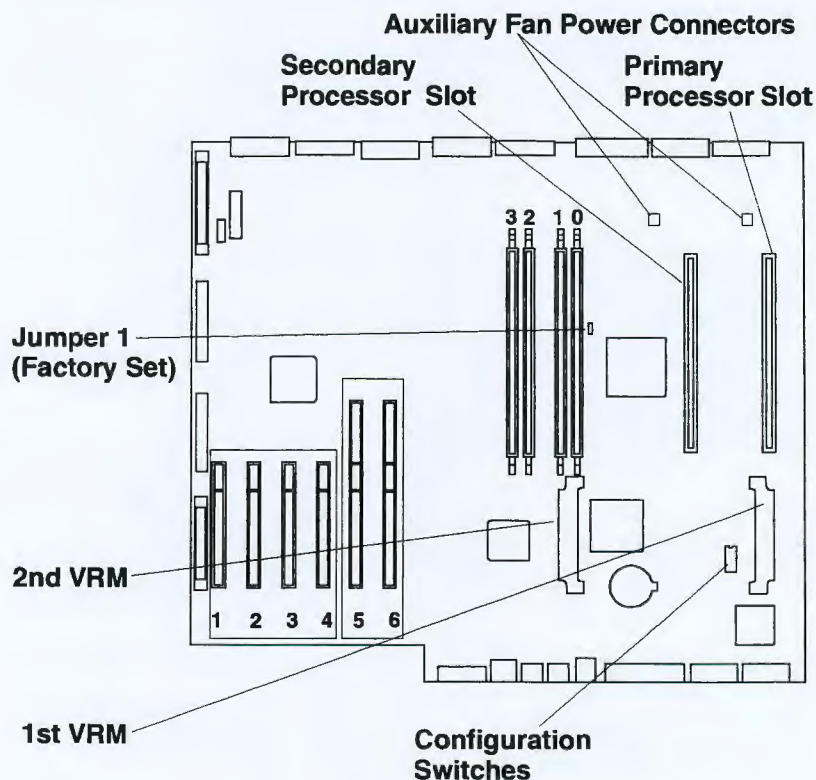
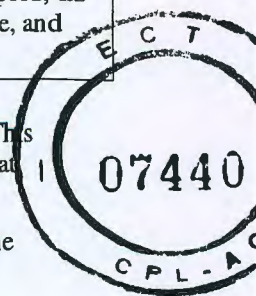


Figure 7-1. System Board

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Installing the Processor

The installation procedure is the same for the rack-mounted models as for the pedestal models of the NetServer once you gain access to the system board.

CAUTION Use an anti-static wrist strap and a grounding mat. Wear a wrist-strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure the metal of the wrist strap contacts your skin.

1. Unpack the processor shipping box and check the contents against its packing list.

CAUTION Do not remove the processor from its bag until you are ready to install it and ensure the bag remains sealed until then.

2. Gracefully shut down the network operating system according to directions in your NOS documentation.
3. Press the power switch on the HP NetServer's control panel when prompted by the operating system.

Normally, this completes the shutdown procedure.

4. Disconnect the power cord or power cords.

WARNING Power supplies will continue to provide standby current to the NetServer until the power cables are disconnected.

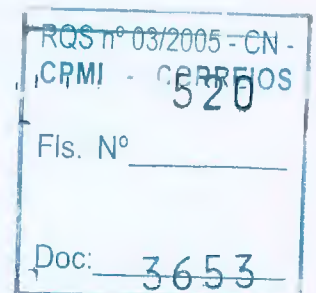
5. To gain access to the system board, follow the appropriate instructions for removing the cover.

- ◊ If the NetServer is mounted on the pedestal, perform Steps 1-8 in the "Removing Covers – Pedestal (LC 2000)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.

NOTE It is not necessary to remove the system board from the NetServer to install the new processor module or the VRM.

- ◊ If the NetServer is in the rack, perform steps 1-14 in the "Removing Covers – Rack Mount (LC 2000r)" in Chapter 3, "Opening and Closing the HP NetServer," to gain access to the NetServer.

English

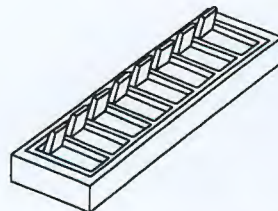


6. Verify the processor speed and FSB setting, before installing the second processor module. See Figures 7-1 and 7-2, and Tables 7-1 and 7-2.

Both processor modules must have the same clock speed, cache size, FSB speed, and product number.

7. If installing two new processor modules, set the switches accordingly.

Use a small, flat-blade screwdriver or similar tool.



Shaded rectangle represents the position of slide switch.

Open = Off Closed = On

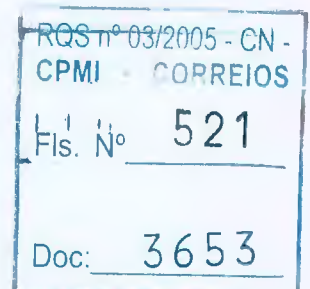
1	Processor Speed (Bit 0)
2	Processor Speed (Bit 1)
3	Processor Speed (Bit 2)
4	Processor Speed (Bit 3)
5	Clear Configuration
6	Clear Password
7	Reserved (default = Off)
8	FSB Speed (133/100 MHz)

Rear of HP NetServer

Figure 7-2. System Switch and Settings

Table 7-1. Configuration Switch Settings

FSB Switch Setting		Processor Speed Settings			
SW8 – Off (133 MHz Bus)	(Multiple of FSB)	SW1	SW2	SW3	SW4
533 MHz	4.0X	ON	OFF	ON	ON
600 MHz	4.5X	ON	OFF	ON	OFF
667 MHz	5.0X	ON	OFF	OFF	ON
733 MHz	5.5X	ON	OFF	OFF	OFF



NOTE Some processor speeds listed in Table 7-1 may not be supported. For the latest support information, visit the HP web site:

<http://www.hp.com/go/netserver>

NOTE

The System board is shown removed from the HP NetServer for simplicity in the following figures, but it is not necessary to remove the system board to install the new processor module or the VRM.

8. Loosen the thumbscrew on the processor cage cover, and lift off the cover as shown in Figure 7-3.

Processor Cage Cover

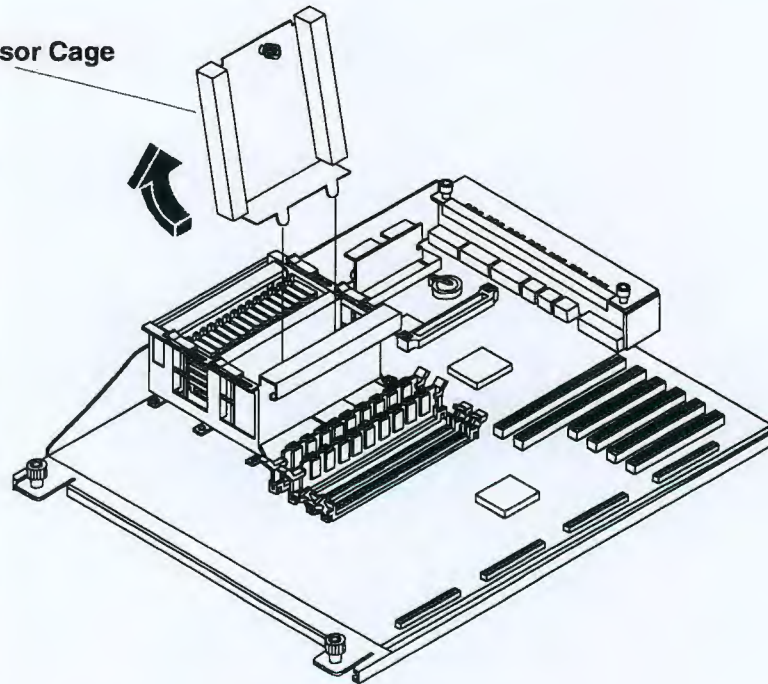


Figure 7-3. Removing Processor Cage Cover



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9. Remove the termination from the secondary processor slot by pressing in on the tabs and pulling directly upwards. See Figure 7-4.

Terminator

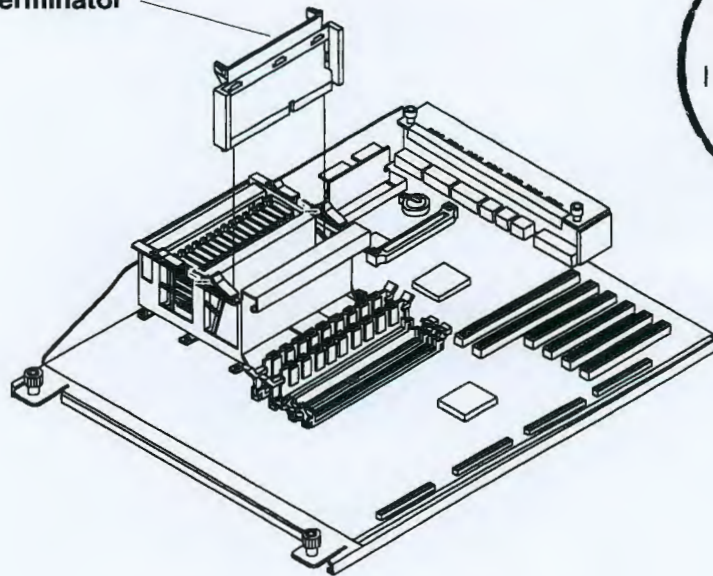


Figure 7-4. Remove Terminator Board

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10. Remove the processor module from the sealed bag.
11. Open the latches on top of the processor slot. See Figure 7-5.
If a processor is installed in the slot, the processor module will move up in the slot where you can grasp it for removal.

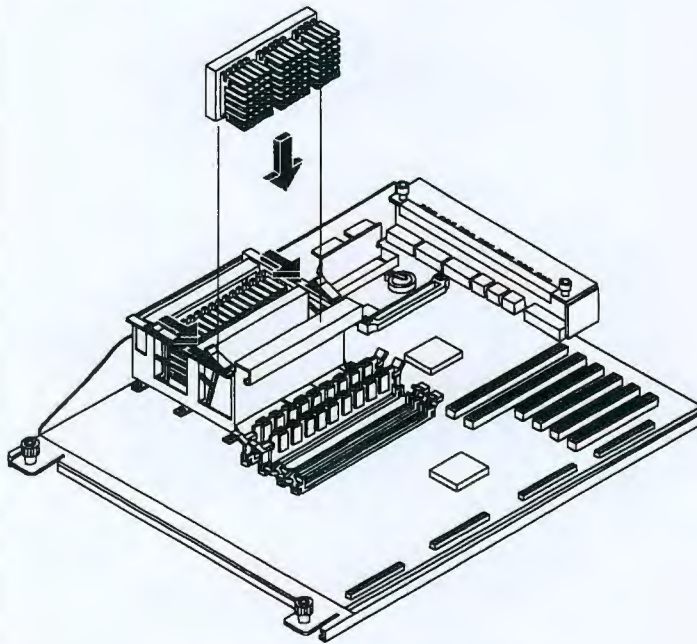


Figure 7-5. Installing the Processor

12. Align the additional processor module over the secondary processor module slot. See Figure 7-5.
13. Gently push down on the processor module until it seats.
14. Slide the retaining latches closed to completely seat the processor module firmly in the connector. See Figure 7-6.

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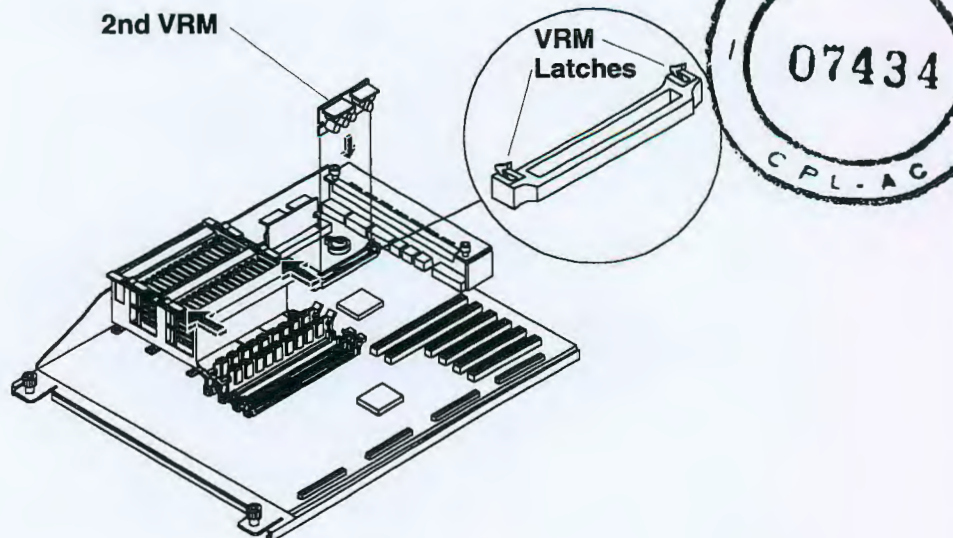


Figure 7-6. Installing VRM

CAUTION

To prevent damage to the VRM, do not push on the large flat surface or touch the components on the board as you push the VRM card down into the slot. Push only on the edges of the VRM board.

15. Open the VRM retaining latches as shown in Figure 7-6.
16. Align the VRM's connector edge with the secondary VRM slot. See Figure 7-6.

The VRM's component side should face towards the center of the enclosure, which is just the opposite of the primary VRM already installed.
17. Gently push as you insert the VRM into the socket. See Figure 7-6.
18. Re-install the cover on the processor cage by reversing Step 8.
19. Re-install the cover and bezel onto the NetServer according to the appropriate procedure.

Refer to Chapter 3, "Opening and Closing the HP NetServer," for instructions.
20. Return power to the NetServer and restore normal operation.

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8 Rack Mounting the HP NetServer

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Introduction

This chapter tells how to mount the HP NetServer in an HP System/E or System/U rack. The illustration below shows the characteristics of the System/E and System/U racks. If you have the older HP Systems rack, see Chapter 13, "Alternative Rack Mounting," for instructions. (If you are mounting the NetServer in a non-HP rack, refer to the separate rack-mounting guide for third-party racks. It is packed in the accessories tray in the HP NetServer's shipping box.)

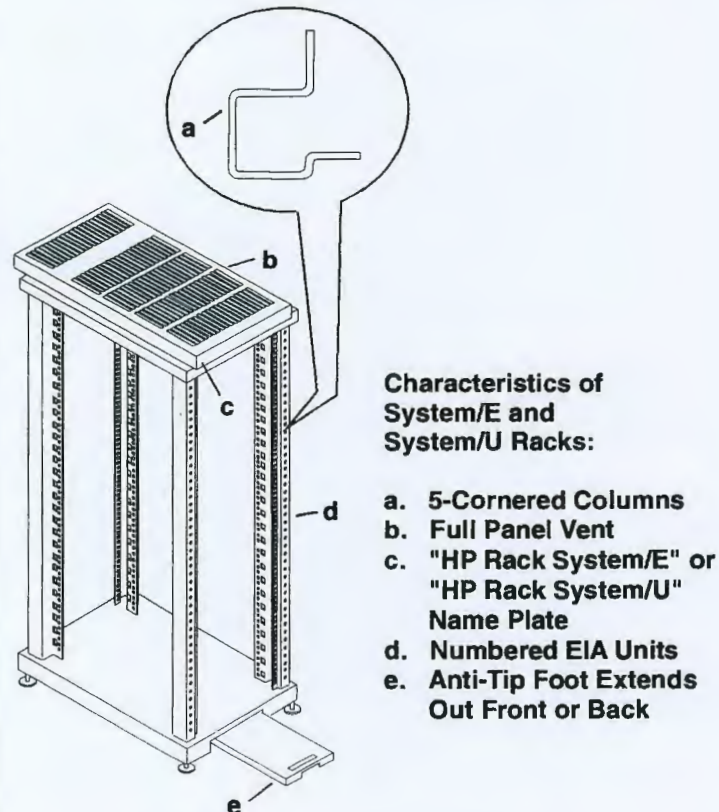


Figure 8-1. HP System/E and System/U Rack Features

NOTE

If you want to put your NetServer into a third-party rack not mentioned in the guide, you may be able to find relevant documentation on HP's web site at the following URL:

<http://www.hp.com/netserver/support>

The HP NetServer rack mount kit requires five EIA units of space in the rack. Before mounting the NetServer, plan the NetServer's location in the rack relative to other rack components. Proper placement is vital both for safety and operating efficiency. For more details, see the *HP Rack Installation Road Map* and the *HP NetServer LC 2000r Rack Cabling Reference Guide*.

NOTE

If the HP NetServer is completely configured by the vendor before delivery to the customer, then mounting the HP NetServer in the rack may be the final step in the installation procedure. If the vendor configures the HP NetServer at the customer's site, installation of the network operating system and other software may occur after the HP NetServer is mounted in the rack.

WARNING

The HP NetServer weighs 80 lbs. (36 kg) fully loaded. To prevent an accident, use two people when placing the NetServer into the rack.

CAUTION

If other rack components are to be mounted in the rack below the HP NetServer, install those components before starting to mount the NetServer.

Tools Required

To assemble the rack mount kit and install the HP NetServer on it, you need these tools.

- T-15 and T-25 Torx Drivers
- Number 2 Phillips screwdriver
- Marking pen

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Safety Precautions

Always keep the following safety and environmental issues in mind, especially if you install the HP NetServer in a non-HP rack environment:

- **Optimum Operating Environment** – The optimum operating conditions for the HP NetServer is in an environmental controlled computer room with a temperature range of 20 to 22°C (68 to 72°F) at 40 to 60% relative humidity.
- **Maximum Ambient Temperature** - Ensure the maximum ambient temperature does not exceed 35°C (95°F).
- **Elevated Operating Ambient Temperature** - The ambient operating temperature within a closed or multi-unit rack assembly is likely to exceed the room's ambient temperature. Ensure the temperature within the rack itself does not exceed 35°C (95°F).
- **Reduced Air Flow** - As you mount equipment in the rack, ensure you allow enough air flow for safe operation of the equipment. The NetServer's fans will only operate correctly if both front and rear doors of the rack allow free air flow (perforated openings), or are removed.
- **Mechanical Loading** - Uneven mechanical loading within the rack can cause hazardous conditions. To prevent this in your installation plans, place the heaviest components in the bottom of the rack, mounting all components as low in the rack as is practical.
- **Circuit Overloading** - Ensure the total configuration of equipment in the rack does not overload the supply circuit. To this end, check the nameplate ratings on all equipment. Consider the effect of circuit overloading on overcurrent protection and supply wiring.
- **Reliable Earth Grounding** - Maintain reliable earth grounding of rack-mounted equipment. Give particular attention to supply connections that are not direct connections to the branch circuit: for example, using non-HP power strips.

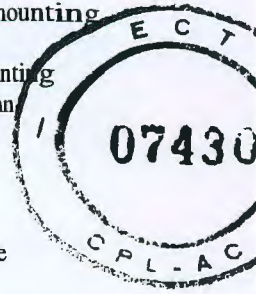
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Preparing the Rack

The column adapters and rack nuts must be connected to the rack before mounting the slide mechanism. Once the slides are correctly mounted, then the HP NetServer LC 2000r can be installing into the rack. A cardboard rack mounting template comes with the HP NetServer. The template identifies the column adapter and rack nut locations on the rack.



HP NetServer Rack Mount Parts List

Ensure the rack-mounting kit provided with the HP NetServer contains the following parts:

Table 8-1. Parts for Rack Mount Kit

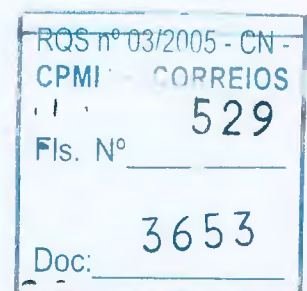
Quantity	Description
2	Slides
4	Rack Nuts
12	Rack Nut Screws (M5 x 16mm)
6	Screws for Slides (8-32 x 1/4 inch, 4 panhead and 2 flathead)
2	Column Adapters
1	Template

Marking the Rack and Attaching Rack Nuts

Use this section to mark the front columns and attach the rack nuts to the rear columns of the HP System/E or HP System/U rack. The column adapters attach to the front columns and the slides are attached to the column adapters and the rack nuts to hold the NetServer's slides in place. The rack template and marking pen are used to identify and mark the locations on the columns.

CAUTION	If other rack components are to be mounted in the rack below the HP NetServer, install those components before starting to mount the NetServer.
----------------	---

NOTE	Use the <i>HP Rack Configuration Tools</i> to determine where in the rack to mount the HP NetServer. The tools are available at: http://www.hp.com/netserver/support
-------------	---



1. Find the rack-mounting template.

If your HP NetServer is still in its box, the template should be in the accessories tray that sits on top of the NetServer itself.

2. Hold the template alongside the outside face (front) of the left front rack columns.

3. Line up the bottom of the template with the lower line of the NetServer's location in the rack.

The template covers a span of 5 EIA units, which is the height requirement of the HP NetServer.

4. Use the marking pen to mark the 2nd and 14th holes on both front columns, as shown on the template. See Figure 8-3.

NOTE

The two column adapters are mounted at the 2nd and 14th holes on the respective front column and provide the captive nuts for mounting the rack slides to the front columns at 7th and 9th holes from the bottom. If you don't have the template, Figure 8-3 shows the location on the front columns for the column adapters.

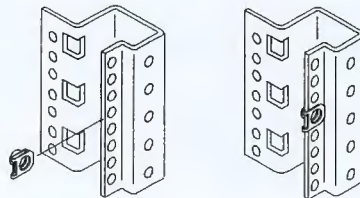


Figure 8-2. Placing Rack Nuts on Rack Columns



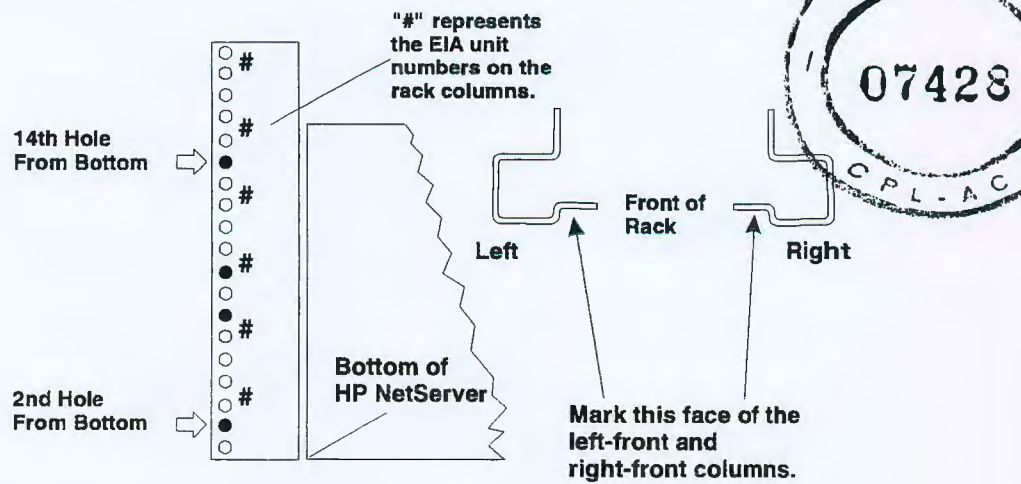


Figure 8-3. Location Marks on the Rack's Front Columns

5. Turn the template over and use it to mount rack nuts (at 7th and 9th holes) on the left-rear and right-rear rack columns.

The template provides you with the nut placement locations. If you don't have the template, Figure 8-4 shows rack nut placement for the two rear rack columns.

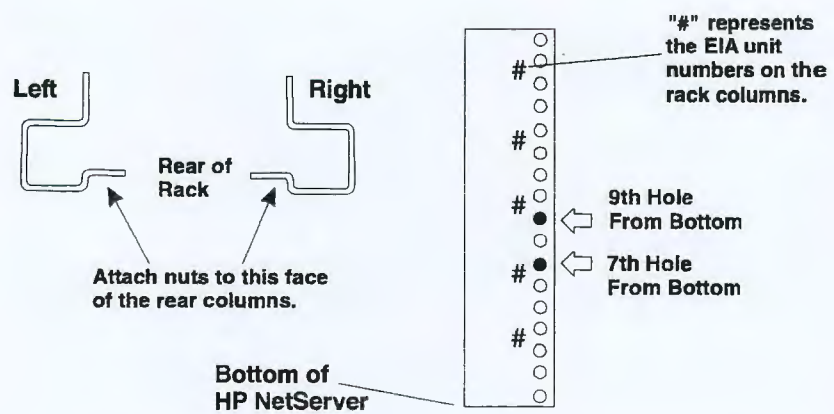
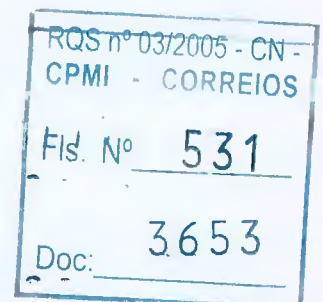


Figure 8-4. Rack Nut Locations on the Rack's Rear Columns



Attaching the Column Adapters and Slides

1. Pull the anti-tip foot forward out of the bottom of the rack.
See Figure 8-6 for the anti-tip foot location.
2. Align the left HP column adapter to the left front column as shown in Figure 8-5.
3. Match the column adapter holes (2nd & 14th) to the marks on the front column and place the column adapter mounting holes behind the column face. See Figure 8-5.
4. With the column adapter held in position, insert two screws (M5) through the holes in the column into the captive nuts on the column adapter. See Figure 8-5.
5. Repeat Steps 2 through 4 for the column adapter on the right front column.

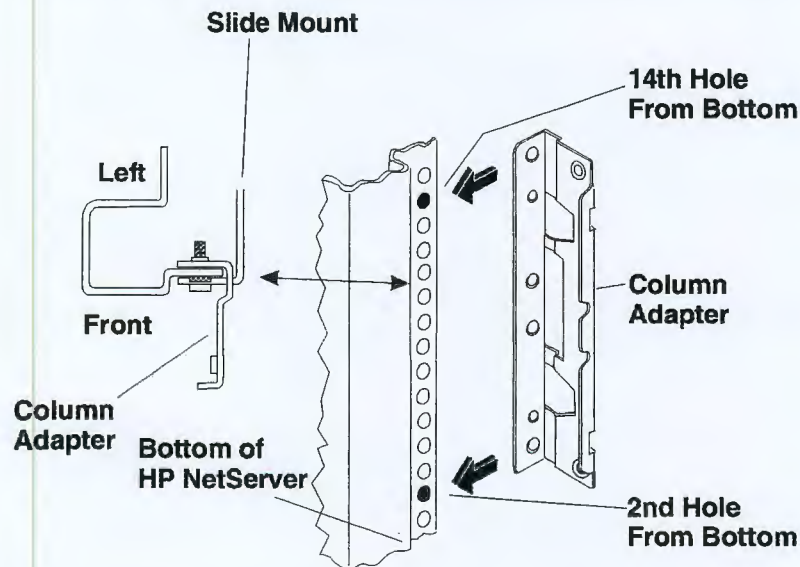
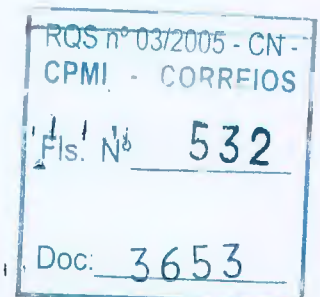


Figure 8-5. Mounting Column Adapter to Front Columns

6. Hold a slide in position inside the two left-hand rack columns and observing the following items.
 - a. The mounting flange on each end of the slide must wrap around the outside face of both the front and rear columns. See Figure 8-6.



- b. The two holes in the mounting flange should line up with the captive nuts (at 7th and 9th holes) in the column adapter and the two rack nuts you installed on each rear column.
- c. The extending portion of the slide (slide member) should point forward out of the rack.

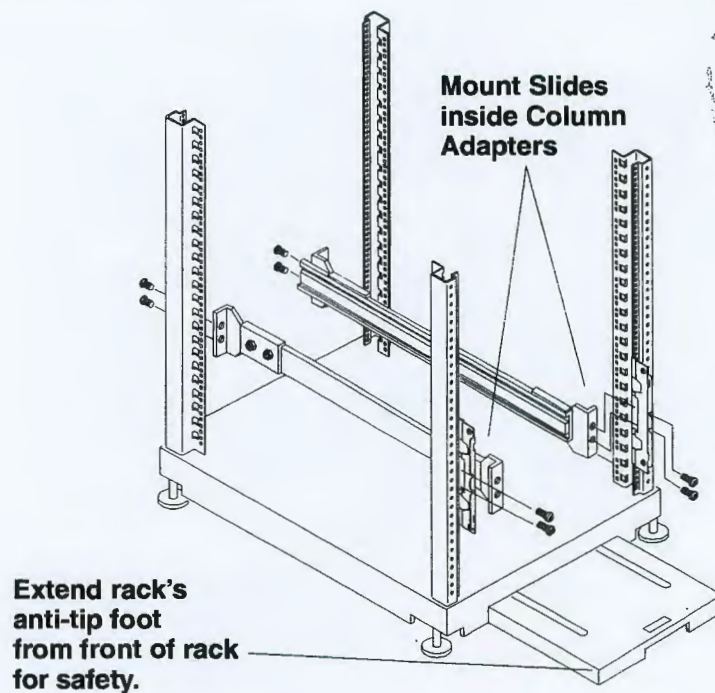


Figure 8-6. Securing the Slides to the Rack Columns

7. With the slide pushed firmly into position, insert two screws through the slide's front bracket into the captive nuts on the left column adapter.
 - a. Secure the screws only loosely at first, so the bracket can settle into the lowest possible position. There is a dimple in the bracket to position the slides in the proper location.
 - b. Then tighten the screws until the bracket is held firmly to the column adapter and rack column. See Figures 8-5 and 8-6.

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8. Fasten the slide's rear bracket to the rack nuts on the left-rear column.
 - a. Secure the screws only loosely at first, so the bracket can settle into the lowest possible position. There is a dimple in the bracket to position the slides in the proper location.
 - b. Then tighten the screws until the bracket is held firmly to the column.
9. Attach the other slide to the right-front column adapter and right-rear rack column by repeating Steps 6-8.

Placing the HP NetServer in the Rack

Use this procedure to position the HP NetServer into the extended slides and secure the chassis to the slides. Once the NetServer is in the rack, then you can connect the Cable Management Arm to the rear of the NetServer.

WARNING

To prevent rack instability while mounting the HP NetServer pull the rack's anti-tip foot forward out of the bottom. Failure to do so could result in injury and equipment damage.

To prevent the rack from rolling while you mount the HP NetServer, ensure the leveler screws on the rack's lower four corners are in firm contact with the floor. See Figure 8-7.

1. Lower the leveler screws on the rack's lower four corners to make firm contact with the floor. See Figure 8-7.
2. Ensure you have extended the anti-tip foot from the rack before continuing this procedure. See Figure 8-7.

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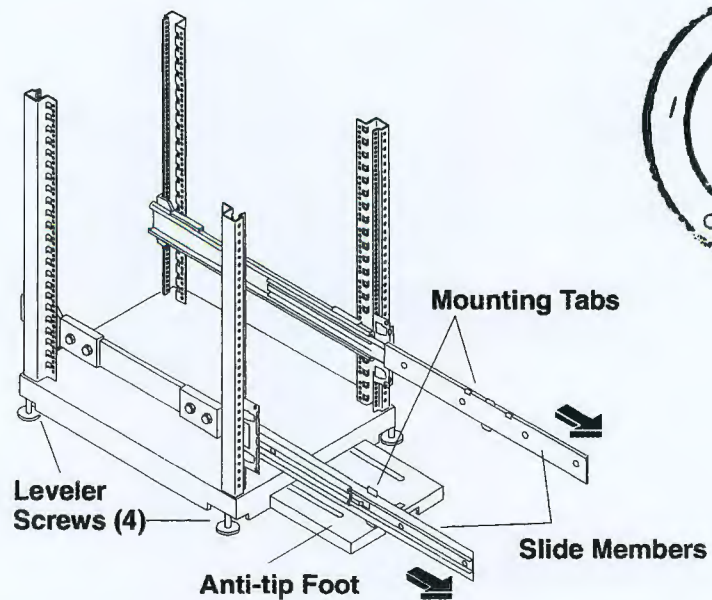


Figure 8-7. Pulling Out the Slides

3. Pull out both slides until the slide members are fully extended. See Figure 8-7.

The slides click into position when locked. This locked position prevents the slides from moving back into the rack, unless the release latches are pressed as shown in Figure 8-10.

4. With the help of at least one other person, lift the HP NetServer by its four handles off the floor or pallet.
5. Move the rear of the NetServer just beyond the extended slide members.
6. Position the NetServer's channels on each side to insert the slide members into the channels. See Figure 8-8.

The mounting tabs in the slides will engage the slots in the chassis. See Figure 8-7.

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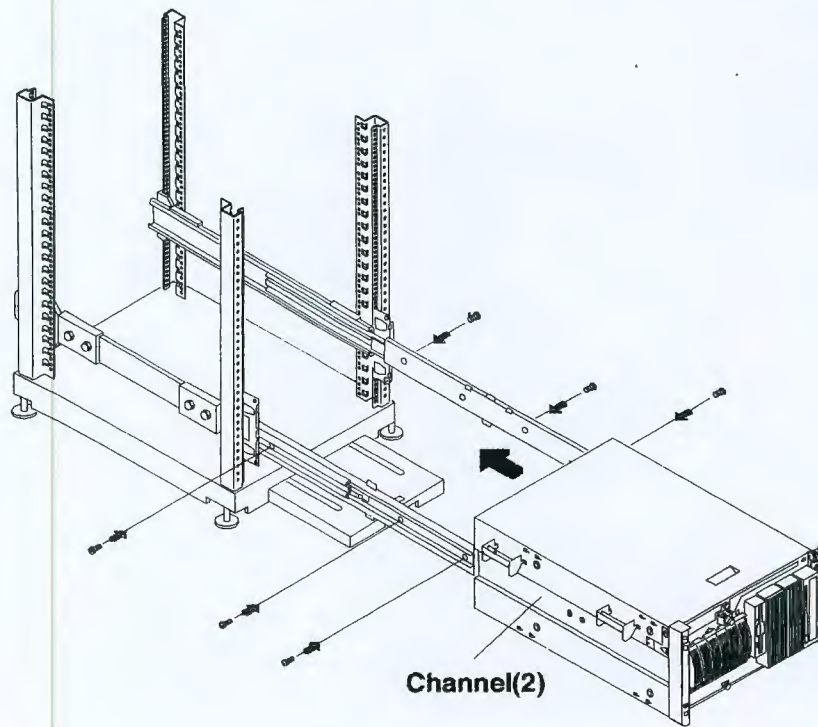


Figure 8-8. Mounting the HP NetServer on the Slides

7. Move the slide members into the NetServer's channels until both slide members are underneath all four of the NetServer's handles. See Figures 8-8 and 8-9.

The mounting tabs in the slides should be in position to fit into the openings in the chassis. See Figures 8-7 and 8-8.

8. Lower the NetServer onto the slide members. See Figure 8-9.

The handles will temporarily support the NetServer on the slides.

9. Adjust the NetServer's position on the slide members to line up the mounting holes on each side (3 each) of the chassis with the screw holes in the slide members.

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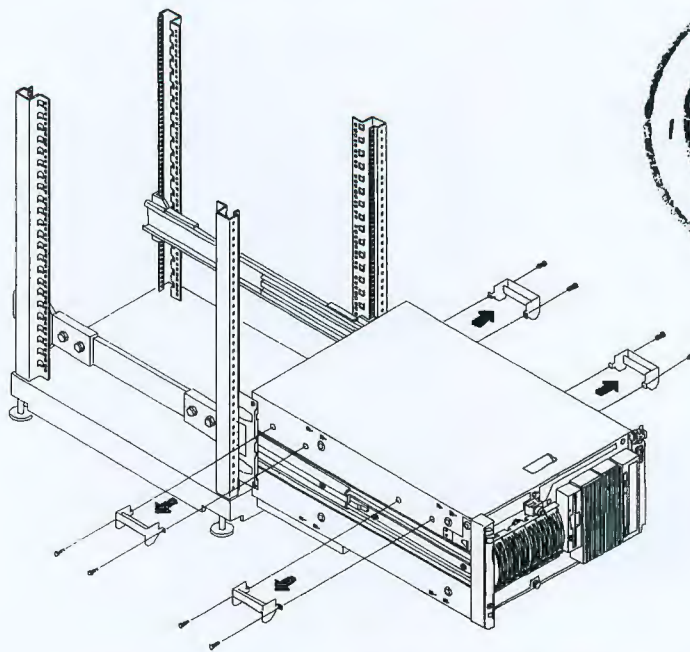


Figure 8-9. Removing the Mounting Handles

10. Insert the flathead screws into the slides' holes at the rear and the panheads screws in the other four places to secure the chassis to the slides.
11. Use a T-15 Torx driver to remove the screws holding the handles to the NetServer. See Figure 8-9.
12. Take the handles off the NetServer and store the handles and screws in a convenient place. See Figure 8-9.

The handles can be re-attached whenever you remove the NetServer from the rack. If moving the NetServer elsewhere, always package it with the handles attached.

13. Press in the release latches on each slide, and push the NetServer all the way into the rack. See Figure 8-10.

The blue Slide Release buttons in the Bezel moldings on each side of chassis' front edge must click into the latches in the column adapters on the two front rack columns.

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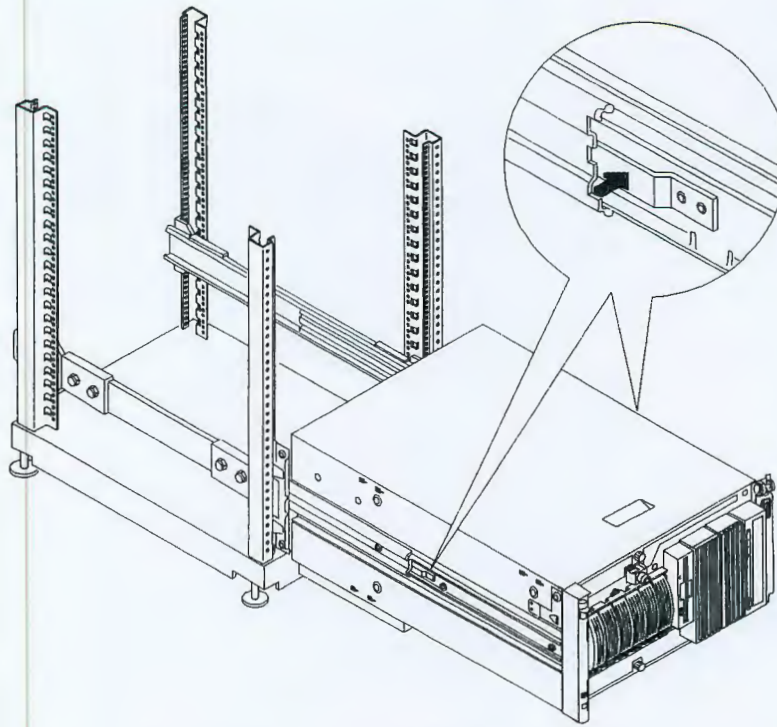


Figure 8-10. Pressing in the Release Latches

14. Verify the NetServer will slide all the way into the rack, before continuing with the procedures.
15. Continue with the next section, "Attaching the Cable Management Arm," before securing the HP NetServer in the rack.

Attaching the Cable Management Arm

Use this procedure to mount the Cable Management Arm on the HP NetServer LC 2000r when mounted in the HP System/E or System /U racks. The HP NetServer LC 2000r's Cable Management Arm allows the cables, including the power cord, to move in and out with the HP NetServer chassis without any damage or being accidentally disconnected. See Figure 8-11.

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WARNING

Before sliding out the HP NetServer LC 2000r, ensure the anti-tip foot is still extended from the front of the rack. A tip-over hazard exists, so never slide more than one component out of the rack at a time.

1. Ensure the HP NetServer LC 2000r is pushed all the way into the rack.
2. At the rear of the HP NetServer, place rack nuts on the left column in the 12th and 14th holes above the baseline (bottom) of the NetServer. See Figure 8-11.

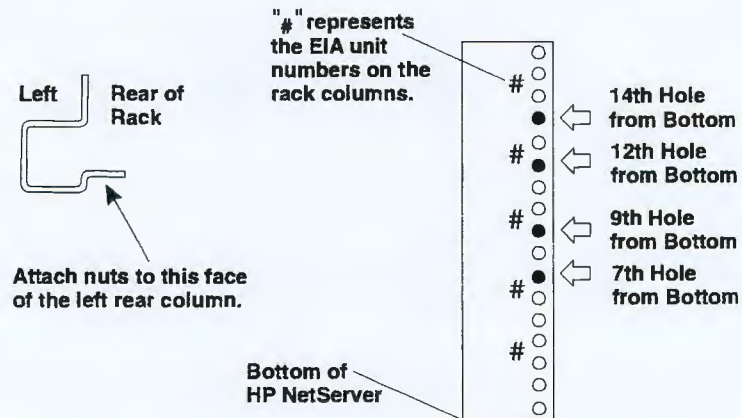


Figure 8-11. Attaching the Rack Nuts to the Left Column

3. Orient the Cable Management Arm as shown in Figure 8-11.
4. Match the inner flange mounting holes with the two captive nuts at the rear of the NetServer. See Figure 8-12.

The captive nuts are located near the external SCSI Connector (knockout) location.

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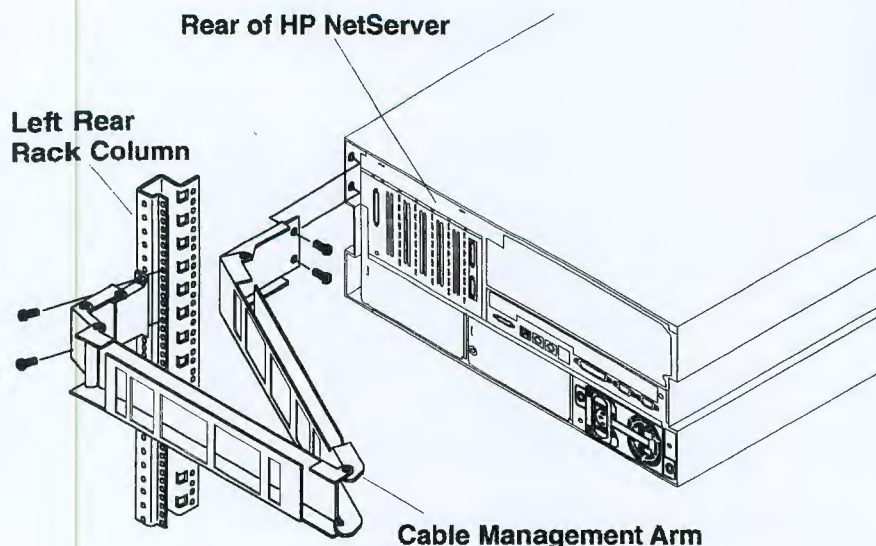


Figure 8-12. Attaching the Cable Management Arm

5. Attach the other flange of the cable arm to the rear column of the rack with the two M-5 pan head T-25 Torx screws, which are included with the Arm.
6. Attach the flange to the NetServer with the two 8-32 pan head Torx T-20 screws, which are included with the Arm. See Figure 8-12.
7. Extend the NetServer out of the rack to ensure the Cable Management Arm moves along with the chassis without binding.

NOTE

Refer to the *HP NetServer LC 2000r Rack Cabling Reference Guide*, for information about cable dressing and routing.

8. If the Cable Management Arm moves with the chassis and the rack installation appears to be successful, slide the NetServer into the rack.
The NetServer should click into the latches on the two column adapters.
9. If the NetServer is not in a restricted-access area, tighten both slide securing screws on the bezel latching mechanisms. See Figure 8-13.
10. Plug the HP NetServer's power cable and all available data cables into the back of the NetServer.



Attaching the Front Bezel

The front bezel attaches to the HP NetServer by a hinge on the left and a latch on the right. The hinge has three spring-loaded hinge pins to secure the bezel. The bezel is held in place on the right with a latch allowing the bezel to swing open when pulled from the right. The chassis is shipped with the bezel hinge and latch in place. The column adapters are the only items requiring installation on the rack which is done before mounting the rack slides.

1. Position the Bezel in front of the HP NetServer LC 2000r as shown in Figure 8-14.

The hinge pins must be pushed down with the Blue Tab shown in Figure 8-13 to engage the hinge pins. When the Blue Tab is released, the spring loaded hinge pins move up to grasp the bezel holding it in place. The bezel is then swung closed on the right to engage the latch. See Figure 8-13.

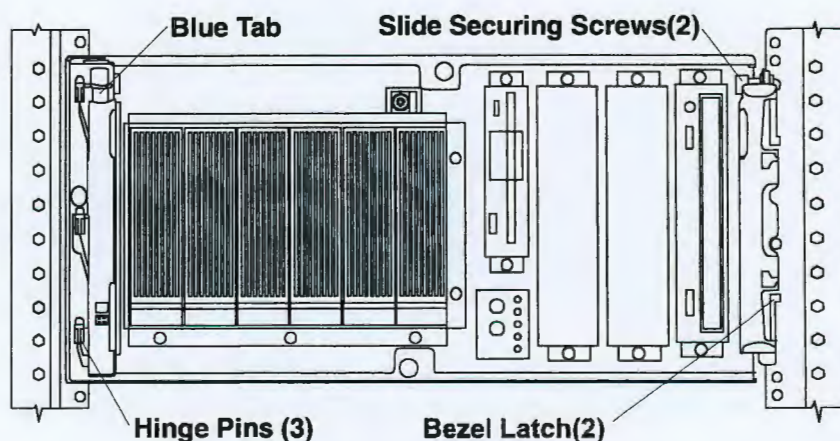


Figure 8-13. Hinge Pins and Blue Tab Release

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2. Press down on the blue Bezel Release Tab shown in Figure 8-13.

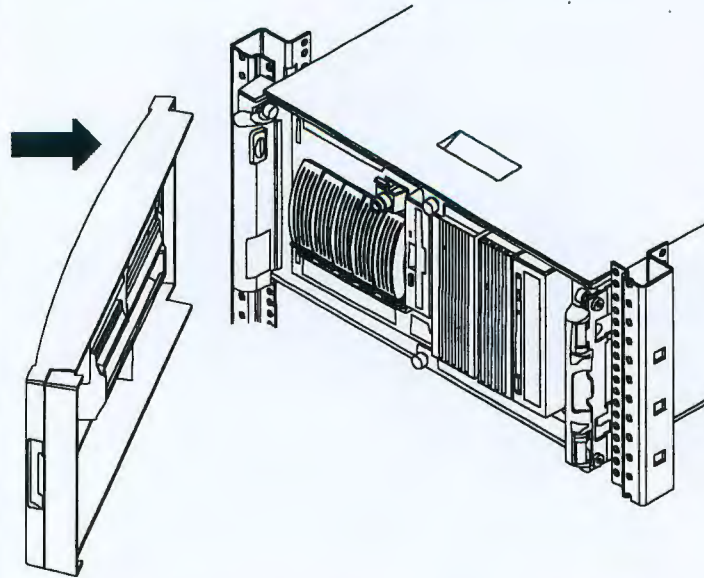


Figure 8-14. Attaching the Bezel to the NetServer

3. Press the bezel onto the front of the HP NetServer and release the Blue Tab to engage the hinge pins. See Figures 8-13 and 8-14.
4. Swing the open bezel to the right to engage the latch and close the bezel.

Continuing with the Rack Installation Process

After you install the HP NetServer in the rack, refer to the *HP Rack Installation Road Map* to continue with the process of installing and configuring your HP rack system.

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9 Connecting the Monitor, Keyboard, Mouse, and UPS

English

Introduction

This chapter provides the instructions for connecting a monitor, keyboard, mouse and Uninterruptible Power Supply (UPS) to the rear of the HP NetServer LC 2000/2000r.

Connecting the Monitor, Keyboard, and Mouse

To connect the peripheral control devices and monitor to the HP NetServer LC 2000/2000r, refer to the following procedure.

1. Connect the monitor, keyboard, and mouse to the HP NetServer LC 2000/2000r using the connections provided on the rear of the chassis. See Figure 9-1.

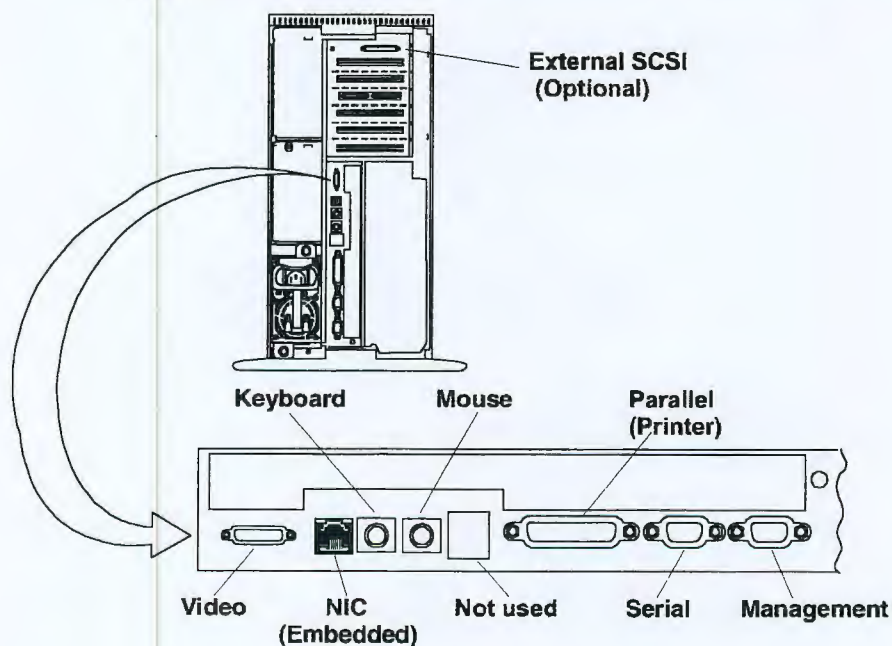


Figure 9-1. Connection Ports (rear of chassis)

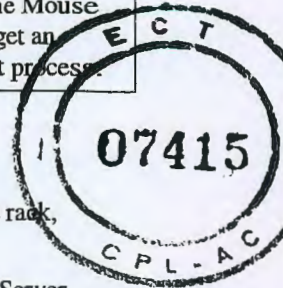
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NOTE

If you have a console switch box, refer to the switch box's user guide for instructions on connecting the keyboard, mouse, and monitor.

CAUTION

The Keyboard and Mouse ports are both PS/2 ports, but are not interchangeable. If you plug the keyboard into the Mouse port, or the mouse into the Keyboard port, you will get an error message and the system will not finish the boot process.

**Connecting the UPS (Uninterruptible Power Supply)**

1. If you have an UPS (Uninterruptible Power Supply) installed in the rack, turn it on.
2. Connect the provided serial cable between the UPS and the HP NetServer as specified in the *HP Rack Installation Road Map*.

Refer to the user guide included with the UPS and to the *HP Rack Installation Road Map* for additional information.

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10 Configuring the HP NetServer

English

Introduction

This chapter supports setting up software on your HP NetServer LC 2000/2000r. You may choose to do this before or after you install the NetServer in the rack. For more information on the overall process, see Chapter 1 of this manual and refer to the *HP Rack Installation Road Map*.

HP NetServer Navigator CD-ROM

The *HP NetServer Navigator CD-ROM* provides you with two choices for running the CD-ROM and accessing its configuration information and utilities.

- Run the Navigator CD-ROM on the HP NetServer to obtain the required configuration information and set up the NetServer.

You need to run the Navigator CD-ROM on the NetServer to install the NOS and all the bundled drivers and utilities. Refer to the following topics for the contents of Navigator's Main Menu when used on the NetServer.

- Run the Navigator CD-ROM on any Windows PC after setting up the HP NetServer to obtain the required configuration information.

Refer to "Running the Navigator CD-ROM on a Windows PC" later in the chapter for more information.

Contents of the Navigator CD-ROM – HP NetServer

The Main Menu directs you to modules where you can perform configuration tasks or create the diskettes required for installation including the Utilities. The Information Assistant button directs you to the *HP NetServer Online Documentation CD-ROM*. The menu buttons are:

- Readme File
- Configuration Assistant and Installation Assistant
- HP Management Solutions
- Information Assistant (directs you to the *HP NetServer Online Documentation CD-ROM*)
- NetServer Utilities
- User Preferences



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Before the HP Navigator main menu is displayed, you may be prompted to set the language, time, and date. You can also set the language displayed by the BIOS. Refer to the following topics for more information on the Navigator CD-ROM's main menu items when run on the HP NetServer.

Obtaining HP Navigator CD-ROM Release History

Check the release history to ensure you have the most recent firmware upgrades and software drivers for the HP NetServer.

To ensure you have the latest versions of the HP NetServer Navigator software, obtain the current *HP NetServer Navigator CD-ROM Release History*. The Release History is updated for each new release of the CD-ROM.

The Release History briefly describes the following for each release:

- Major changes to the HP Navigator CD-ROM that were made for that release
- Version number
- Release date
- Part number of the HP Navigator CD-ROM
- Document Number

The Status Report for your specific *HP NetServer Navigator CD-ROM* describes in detail any software updates between this version of the CD-ROM and the previous version.

To obtain a Release History or a Status Report, you will need a Document Number.

- Release History: Document Number is 6005
- Status Report: The number is different for each Status Report. Each version of the *HP NetServer Navigator CD-ROM* has a four-digit Document Number printed on the disk.



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Figure 10-1. Location of Document Number on Navigator CD

You can obtain the Release History and Status Report for your CD-ROM in one of these ways:

- Internet WWW--
http://www.hp.com:80/netserver/support/news_main.html
- Internet FTP--<ftp://ftp.hp.com/pub/servers>

Obtaining Up-to-Date Configuration Details

You can find up-to-date configuration information on the Navigator CD-ROM, both in the Readme File and in Configuration Assistant. Use these sources to learn about applicable compatibility issues and get the latest list of HP-tested peripherals and accessories (see the Test Products List in Configuration Advisor).

Access the Readme File First

This file includes the most recent information that was not included in the printed installation documentation. Follow these steps to view the file.

1. Press the power-on button.
2. Press the CD-ROM drive eject button.
3. Place the *HP NetServer Navigator CD-ROM* in the drive, and press the eject button again to close the drive.

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The CD-ROM will start automatically using the auto-run feature as soon as the drive closes.

NOTE

Using the low profile CD-ROM drive is slightly different than full-height units. The disk drawer will spring out only part way when you push the eject button. You must manually pull the drawer open and manually close it after inserting a CD-ROM.

4. If the CD-ROM does not start automatically, push the reset button.
5. If the system fails to boot, follow the diagnostic instructions on the screen.
6. Go to the HP Navigator main menu.
7. If the language needs to be changed, select **User Preferences** and the language you want.

You can also change the language of the BIOS, but this is only available when in the BIOS Setup Utility.

8. Select **Readme File** and read it carefully before beginning your installation.

The Readme file contains the latest information to help you install your HP NetServer.

Configuration Assistant

Configuration Assistant guides you through the steps necessary to configure the HP NetServer. You can view configuration advisories at one step and change your hardware if necessary.

HP Configuration Assistant and Installation Assistant guide you through the steps necessary to configure the NetServer. Three methods of configuration are available: Express, Custom, and Replicate.

HP Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration. If Configuration Assistant detects that a newer version of the BIOS is available on the HP Navigator CD-ROM it will prompt you to update the BIOS.

Before you run Configuration Assistant and Installation Assistant, you may need to run the Symbios Configuration utility and the Setup Utility to do the following:

- If you need to verify or modify SCSI host adapter settings.
- If you need to low-level format SCSI disks or verify SCSI disk media, run the Symbios Configuration utility.

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HP VISUALIZE J Class Owner's Guide

HP VISUALIZE Workstation



Manufacturing Part Number: A5991-90000

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HP PRODUCT
HP VISUALIZE J5 Class and J7 Class

DURATION OF WARRANTY
1 Year

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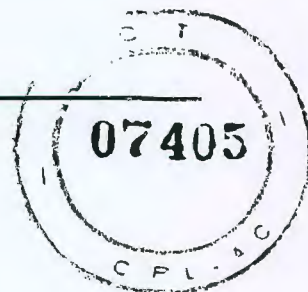
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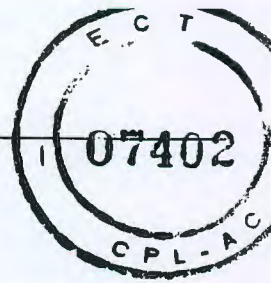
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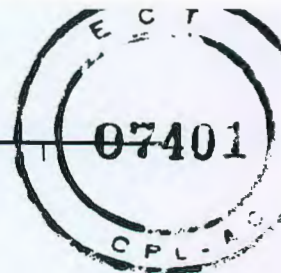


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Preface

This owner's guide describes how to use your HP VISUALIZE J5xxx or J7xxx computer.

This manual assumes that you have installed your computer as described in the HP VISUALIZE J5 Class and J7 Class Installation Card.

Audience

This guide is intended for HP VISUALIZE J5 Class and J7 Class computer users.

Safety and Regulatory Statements

See Appendix A , "Safety and Regulatory Statements," on page 177 for the safety and regulatory statements that apply to the HP VISUALIZE J5 Class and J7 Class computer.

Installation Notice

Products designated in the applicable Hewlett-Packard price list as customer-installable can be installed by computer-knowledgeable customers who carefully read and follow the instructions provided. Customers who elect to have the product installed by our field personnel are charged the applicable field installation charge, as covered under the standard terms and conditions. For more information, please contact your local sales representative.

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Related Manuals

For more information, refer to one of the following documents:

- *HP VISUALIZE J5 Class and J7 Class Site Prep Guide*
- *HP VISUALIZE J5 Class and J7 Class Installation Card*
- *Using HP-UX*
- *HP CDE Getting Started Guide and User's Guide*
- *Managing Systems and Workgroups*
- *HP-UX System Administration Tasks*

Note that most of the documents listed above can be viewed with a web browser using this URL:

<http://www.docs.hp.com>

Revision History

The revision history for each edition of the manual is listed below:

Edition	Revision History
E0299	First Printing

Problems, Questions, and Suggestions

If you have any problems or questions with our hardware, software, or documentation, please contact either your HP Response Center or your local HP representative.

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Documentation Conventions

Unless otherwise noted in the text, this guide uses the following symbolic conventions.

Table 1

Documentation Conventions

<i>user-supplied values</i>	Italic words or characters in syntax and command descriptions represent “conceptual variables”—whose values are indicated by the current context and which you must supply. Italics are also used in text for emphasis.
screen display	Information that the system displays, commands that you must use literally, and path names appear in this typeface.
Enter	Keycaps are presented with a special keycap font as shown in the left column. (In this document, we refer to the Enter key. On your keyboard, the key may be labeled either Enter or Return .)

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Electrostatic Discharge (ESD) Precautions

Electrostatic discharges (static electricity) can damage the integrated circuits on printed circuit boards and other internal devices. To prevent such damage from occurring, observe the following precautions during board unpacking and installation:

- Stand on a static-free mat.
- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.
- Connect all equipment together, including the static-free mat, static strap, routing nodes, and peripheral units.
- Keep uninstalled printed circuit boards in their protective antistatic bags.
- Handle printed circuit boards by their edges, once you have removed them from their protective antistatic bags.

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System Overview

This chapter introduces the HP VISUALIZE J5xxx and J7xxx computers. Its purpose is to familiarize you with your computer and its controls and indicators.

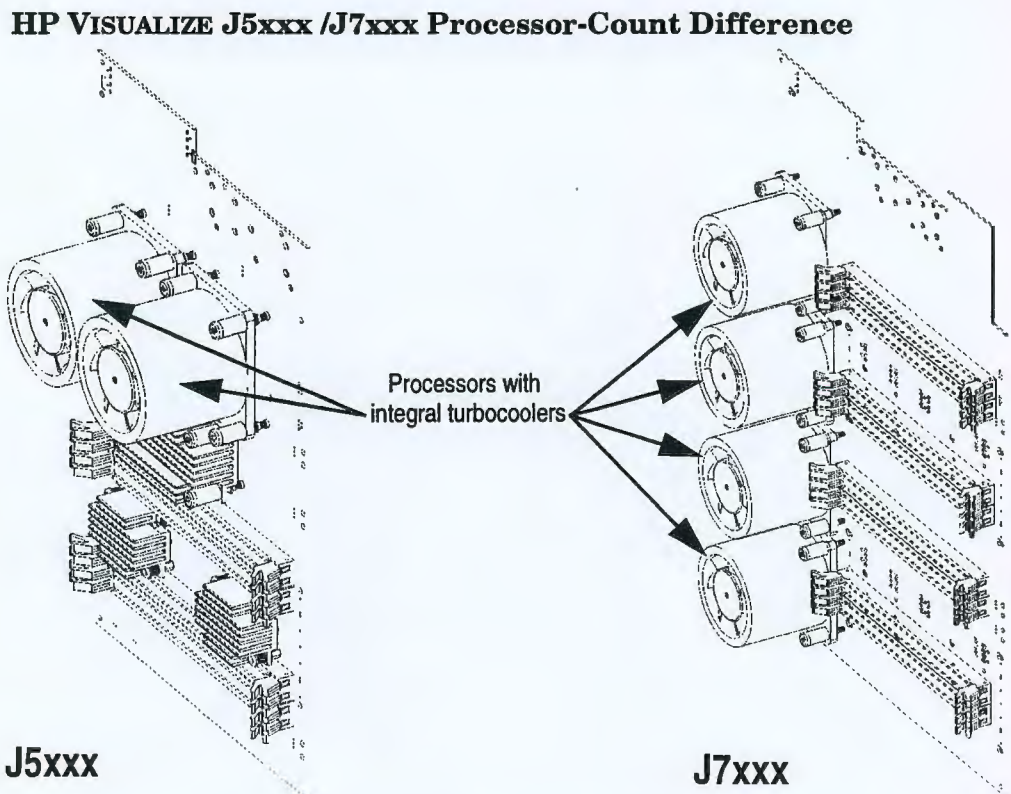
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System Requirements

The HP VISUALIZE J5xxx and J7xxx computers are similar in many ways, but the main way in which they differ is the number of processors: the J5xxx has two, and the J7xxx has four. In addition to the label on the front of the machine, you can also determine which machine you have by counting the processors on the motherboard. Each one is cooled by a cylindrical heat sink (a "turbocooler") with dozens of airflow slots and an integrated fan. The illustration below shows the two turbocoolers (and hence two processors) of the J5xxx's motherboard; the J7xxx has four:

Figure 1-1



Instructions in this chapter assume that you are using the HP-UX 10.20 or HP-UX 11.0 operating system.

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Product Description

To help you gain a better understanding of the J5 Class and J7 Class computers, the following table provides the computer's key features.

Table 1-1

HP VISUALIZE J5 Class and J7 Class Features

Computer Feature	Description
Processors	Two (in the J5xxx) or four (in the J7xxx) 440MHz PA8500 microprocessors with 0.5MB on-chip instruction cache and 1.0MB on-chip data cache.
Operating System	HP-UX 10.20 HP-UX 11.0
User Interface	HP CDE graphical user interface
Compatibility	Source- and binary-code compatible with the C-Class and J-Class product families
Monitors	List of compatible monitors: • 19-inch, 1280×1024 color monitor • 20-inch, 1280×1024 color monitor • 21-inch, 1280×1024 color monitor • 21-inch, 1600×1200 color monitor • 18-inch LCD Flat Panel Display
Graphics	Standard graphics: • HP VISUALIZE-FX² Pro • HP VISUALIZE-EG • HP VISUALIZE-FX⁶ Pro • HP VISUALIZE-Fe



Table 1-1

HP VISUALIZE J5 Class and J7 Class Features

Computer Feature	Description
Main Memory	Using 256-MB DIMMs: • J5xxx: Up to 2GB in 8 slots • J7xxx: Up to 4GB in 16 slots Using 512-MB DIMMs: • J5xxx: Up to 4GB in 8 slots • J7xxx: Up to 8GB in 16 slots
Internal Storage Devices	Four hot-pluggable internal Ultra-2 Low Voltage Differential (LVD) SCSI hard disk drives, a standalone PC CD-ROM drive, and a choice of either a PC floppy drive or a NSE SCSI DDS tape drive.
Standard Network	Ethernet IEEE 802.3 RJ45, UTP Twisted Pair 10/100 BaseT
Standard I/O	More than 2GB/sec I/O bandwidth. Standard computer I/O ports: • Two Universal Serial Bus (USB) ports for keyboard and mouse • Two serial interface ports • One parallel port (IEEE 1284) • Ultra Narrow Single-Ended SCSI • Wide Ultra-2 Low Voltage Differential (LVD) SCSI • Floppy interface • ATAPI interface for CD-ROM • Built-in 44KHz, 16-bit stereo audio ports (line in, line out, microphone in, and headphone out)

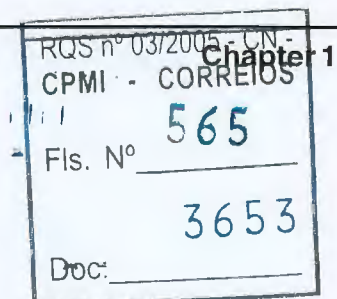




Table 1-1

HP VISUALIZE J5 Class and J7 Class Features

Computer Feature	Description
PCI (Peripheral Connect Interface) slots	Eight 64-bit slots in the following arrangement: 1. 5V, 33MHz, bus 1, top slot (power only) 2. 5V, 33MHz, bus 2 3. 5V, 33MHz, bus 2 4. 3.3V, 66MHz, bus 3 5. 5V, 33MHz, bus 4 6. 5V, 33MHz, bus 4 7. 3.3V, 66MHz, bus 5 8. 5V, 33MHz, bus 4, bottom slot Slot 7 is the primary FX Pro graphics slot, and Slot 4 is the secondary. Both are 66-MHz slots.
Keyboard	Universal Serial Bus (USB) keyboard
Mouse	Universal Serial Bus (USB) mouse

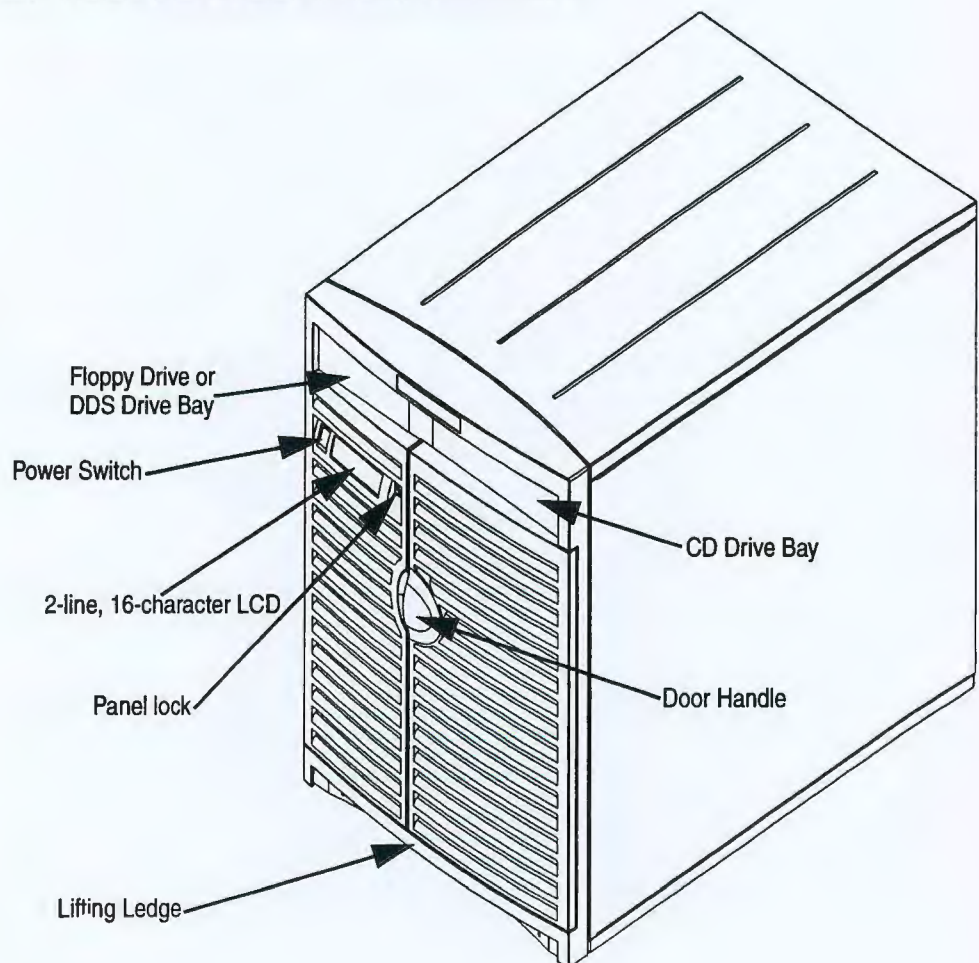


System Unit, Front View

Before powering on your system, you should become familiar with the system unit controls:

Figure 1-2

HP VISUALIZE J5xxx /J7xxx Front View



CAUTION

The Lifting Ledge is strong enough to use as a handhold when lifting the unit. Note that the computer is designated for two-man lifting; it weighs about 90 lbs. Do not attempt to lift it by yourself, or injury may result.

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System LCD

The Liquid Crystal Display (LCD) is located on the left side of the front panel. The LCD displays messages about the state of the system, including error codes (see “LCD-Indicated Problems” in the Troubleshooting chapter for more details). The following symbols appear in the LCD, representing the different system activities shown:

Figure 1-3

LCD Symbols

-  Operating System running
-  Disk access in progress
-  Receiving from network
-  Sending to network

System Power Switch

The power switch is used to turn the system unit on and off. The workstations have a “soft power down” feature that shuts the system down in a controlled manner. Hitting the power switch is identical to logging in as root, and executing shutdown -q. Note that a soft power down does not occur if you disconnect the power cord on the machine, or if you disengage the power supply (by removing the interlocked thumbscrew on the rear panel of the chassis).

Removable-Media Devices

Depending on your configuration, you can have a CD drive and your choice of either a DDS tape drive or a floppy diskette drive.

NOTE

You cannot have two of the same type of internal mass-storage device. That is, you cannot have two CD drives, two floppy drives, or two DDS drives, but you can have a CD drive and a floppy drive or a CD drive and a DDS drive (you cannot have both a floppy drive and a DDS drive).

A description of each drive’s controls and indicators is in the chapter describing that device, later in this document.

- Audio connectors (line in, line out, microphone and headphones)
- USB keyboard and mouse connectors
- HP parallel Centronics I/O connector
- 802.3 TP (Twisted Pair) LAN connector
- Two RS-232C serial I/O connectors
- Narrow Single-Ended (SE) SCSI connector
- Low-Voltage Differential (LVD) SCSI connector
- TOC (Transfer Of Control, or interrupt) button
- Power cord connector

To maintain FCC/EMI compliance, verify that all cables are fully seated and properly fastened.

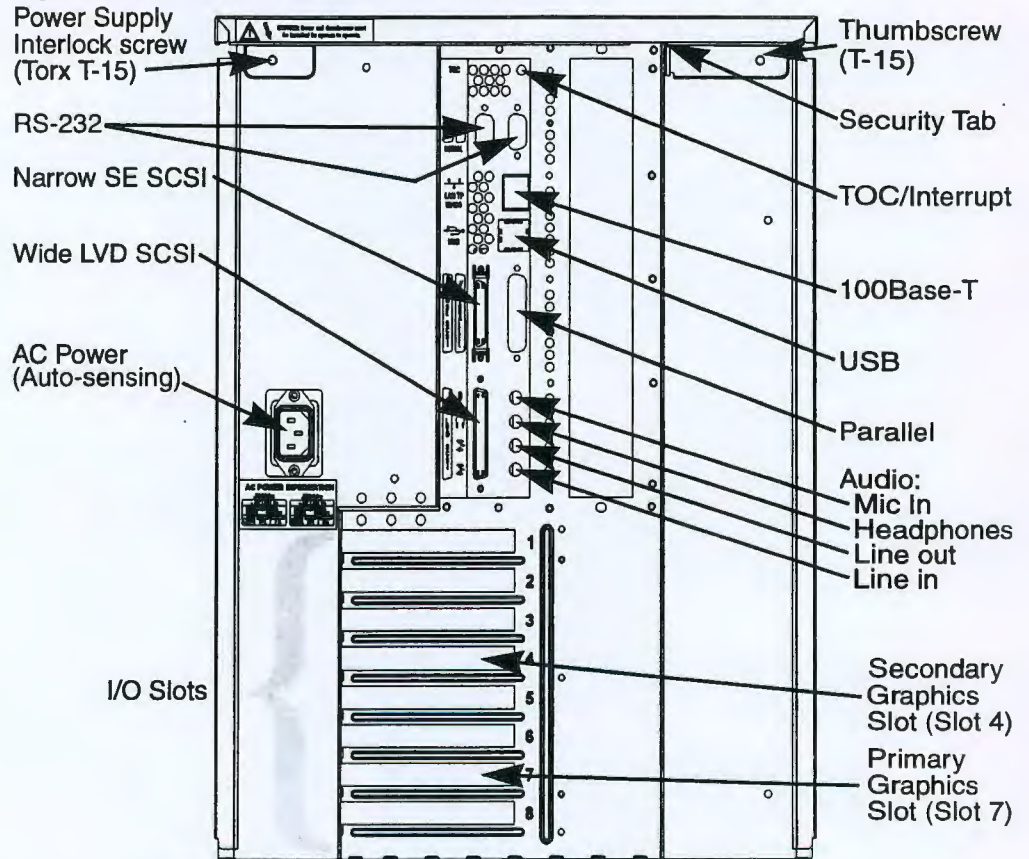


System Overview System Unit Rear Panel Connectors

The illustration below shows the locations of the connectors on the system unit's rear panel.

Figure 1-4

System Unit Rear Panel Connectors



The two T-15 thumbscrews in the upper corners of the rear panel are the keys to opening the machine: removing these two screws allows the top panel to be removed, which in turn allows the left and right side panels to be removed.

NOTE

The upper-left thumbscrew (as seen from the back) is interlocked with the power supply: loosening that screw disengages the power, minimizing the shock danger while servicing. Make sure the interlocked screw is firmly tightened when closing the unit, or the power supply might still be disengaged.



System Overview

System Unit Rear Panel Connectors

Turning the power off with the power switch executes a clean shutdown, but *disengaging the power supply does not*, so remember to power down with the power switch!

Audio Connectors

Your computer has audio input and -output capability through an internal speaker, as well as external input and output connectors on the rear panel (see diagram of entire rear panel above, plus the close-up of the audio connectors, below). The sound is 16-bit, 44kHz (CD-quality) stereo sound.

Figure 1-5

Audio Connectors

 Microphone (in)

 Headphones (out)

 Line Out

 Line In

The audio connectors are standard stereo audio mini-jacks. Hewlett-Packard recommends using gold-plated plugs available through audio retailers for the best quality recording and playback through the external connectors.

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A summary of the computer audio electrical specifications follows.

Table 1-2

Audio Electrical Specifications

Frequency Response	25Hz to 20kHz
Input Sensitivity/Impedance: Line in Microphone	2.0Vpk/47Kohm 22mVpk/1Kohm
Max Output Level/Impedance Line out Headphone Speaker (internal)	2.8Vpp/47Kohm 2.75Vpp/50ohm 5.88Vpp/48ohm
Output Impedance Line out Headphone	619ohm 118ohm

Keyboard Connectors

The two USB connectors provide an interface for the keyboard and mouse to the system (either connector can be used for either device). Consult the documentation that accompanies each input device for specific information concerning its use. Note that older non-USB keyboards (PS-2 and HP-HIL keyboards) cannot be used with the J5xxx and J7xxx.

HP Parallel I/O Connector

The 25-pin HP Parallel I/O interface uses Centronics interface protocols to support peripheral devices such as printers and plotters. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

802.3 Network Connectors

Your computer has built-in TP (Twisted Pair) connectors for the 802.3 (ethernet) or 100 BaseT network. Connections to ThinLAN networks require an external transceiver. Your computer will automatically select the correct network setting.



RS-232C Serial Input/Output Connectors

You can attach peripheral devices to the RS-232C Serial Input/Output (SIO) ports on this computer. Peripheral devices include printers, plotters, modems, and scanners. Consult the documentation that accompanies each pointing or peripheral device for specific information concerning its use.

The SIO ports are programmable; that is, you can choose attributes such as bit rate, character length, parity, and stop bits either by selecting the corresponding device file (in /dev), or by using SAM (the System Administration Manager). The SIO ports are used as an interface for serial asynchronous devices to the CPU. The ports operate at up to a 115.2Kbaud rate.

The table below shows the SIO connector pin listings. The serial connectors are 9-pin D-sub connectors. Signal names are those specified in the EIA RS-232 standard.

Table 1-3

Serial I/O Pins

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

SCSI Connectors

Use the Narrow Single-Ended SCSI connector and/or the Wide LVD (Low-Voltage Differential) SCSI connectors to connect external SCSI devices such as hard disk drives, optical disk drives, DDS-format tape

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System Overview System Unit Rear Panel Connectors

drives and CD-ROM drives. Consult the documentation that accompanies each SCSI device for specific information concerning its use. Refer to the appendix "SCSI Connections" for information about connecting SCSI devices to your computer.

WARNING

Do not attach FWD SCSI devices to the LVD SCSI port, or damage will occur.

NOTE

When attaching external SCSI devices, be sure to terminate the last device on each external SCSI bus. The terminators are included in a small plastic bag that was shipped with your machine. Before powering up your computer, make sure that the last external SCSI device in each SCSI chain has a terminator.

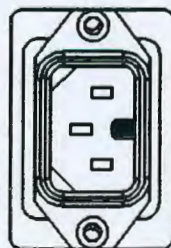
If you have no external SCSI devices, install the terminators directory on the connectors on the rear panel of the computer.

Power Cord Connectors

Plug the workstation's power cord into the power cord connector to provide AC power to the system. Note that the HP VISUALIZE J5xxx and J7xxx have different types of power cords, because of their differing power requirements:

Figure 1-6

Power Connectors



The power connector on the left is used on the J5xxx (notice that it is a keyed connector, requiring a 15-amp circuit), and the one on the right is used on the J7xxx because of its greater power demand (20 amps).



Keyboard and Mouse

At this printing, only the HP three-button USB mouse is supported as a pointing device for the J5xxx and J7xxx.

For general information on using three-button mice and on the various cursor shapes associated with different areas of HP CDE while using a mouse or other pointing device, see *Using Your HP Workstation*. Another supported USB device is the HP USB keyboard.

The mouse and keyboard can be plugged into either USB port on the back of the computer.

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Operating System Overview

Your computer uses version 10.20 or 11.0 of the HP-UX operating system. Instant Ignition systems (systems with preloaded software) have X-Windows and Hewlett-Packard's graphical user interface HP CDE installed and configured (see the *HP CDE Getting Started Guide* and *User's Guide* for details).

Please refer to the "Instant Ignition System Configuration Information" sheet that came with your system for details on configuration.

If your Instant Ignition system does not have the kernel preconfigured with all of the device drivers, you need to refer to the manual *Managing Systems and Workgroups* to configure your kernel as appropriate for your set of hardware and peripheral devices.

If you have any questions about Instant Ignition, refer to *HP-UX System Administration Tasks* for more information.

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Powering Up Your System

After you have connected the various parts of the computer—for details, see the J5 Class and J7 Class Installation Sheet that came with your computer—you are ready to power up the system. At this point, there are two possibilities:

- Your computer has been “ignited;” that is, the HP’s Instant Ignition process has installed the operating system already. In this case, when you power up the computer, you will be presented with a series of questions asking you the machine’s hostname, IP address, subnet mask, and other basic configuration questions (see next page for details). When these are answered, the CDE login screen will appear.
- Your computer has not been “ignited;” that is, the HP’s Instant Ignition process has *not* installed the operating system already. In this case, you will need to install the operating system from the CDs. For details, see the CD Booklet included with the CDs.

Once the CDE login screen appears, and you can log in as root—initially, there is no password. When you have logged in, you will be able to create other users’ accounts and do whatever other configuration and installations you require to get the machine into its desired state. Use the Help facility of SAM (the System Administration Manager) or see the *HP CDE Getting Started Guide* and *User’s Guide* for instructions on typical tasks.

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Getting Required Information

The start-up procedure for your workstation will require you to supply the following information. Please have this information available before you turn the workstation on for the first time.

NOTE

If you are not the system administrator for your workstation, and therefore do not know the information, ask your system administrator.

Here is the information you will need. You may want to fill in the blanks so the answers will be readily available during the configuration phase.

- *Host name:* _____
The host name is sometimes called the "system name."
- *IP (Internet Protocol) address:* _____
You will need this address if you are connecting the workstation to a local area network.
- *Time zone:* _____
This is the time zone in which the workstation is located.
- *Optional networking parameters*
Ask your system administrator if you need to configure these parameters.

Table 1-4

Networking Parameters

<i>Subnetwork mask</i>	_____
<i>Network gateway IP address</i>	_____
<i>Local domain name</i>	_____
<i>DNS server host name</i>	_____
<i>DNS server IP address</i>	_____
<i>Network Information Service domain name</i>	_____



System Overview
Powering Up Your System

- *Optional font server parameters*

You need to supply these parameters if you want the workstation to obtain its fonts from a network server. Ask your system administrator if you need to configure these parameters.

Table 1-5

Font-Server Parameters

Font server name

Font server IP address



Turning on the Power

1. Turn on the monitor and any external peripherals (for example, printers) connected to the workstation.
2. Turn on the workstation. The workstation will run a series of self-tests.
3. After two or three minutes, a series of messages are displayed as various hardware and software subsystems are activated. Unless something is wrong with your system, you are not asked to respond to these messages.
4. A series of windows appears requesting the information you gathered in the previous section, such as your host name, IP address, and time zone. Enter the information as it is requested.

NOTE

You should enter the host name when requested; otherwise, you will get an error message when you log in.

If you do not have other pieces of information, press Enter to use the default value. You can provide missing information later by logging into a terminal emulator window as superuser and executing this command:

```
/sbin/set_parms
```

5. The next question asks if you want to set a root password. The root password is the password used for the account of the "superuser"—a special user who has permission to perform all system administration tasks. The username for the superuser is root.
6. When you have finished answering all of the questions, the workstation completes its start-up sequence and displays the CDE login screen.
7. Log into your first CDE session as root. For information on logging into CDE, see the *Common Desktop Environment User's Guide*.

System Overview
Powering Up Your System



NOTE

You must log into the first session as root. This is because the system contains no other user accounts. Once you are done with system configuration, including the creation of other users' accounts via SAM (the System Administration Manager), you should log out as superuser and log back in as one of the other users.

Documentation

The documentation for your system is located on the Instant Information CD. To access this CD, you need to follow the special mounting instructions that come with it.

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Monitors

You can use one of the following HP monitors with your computer:

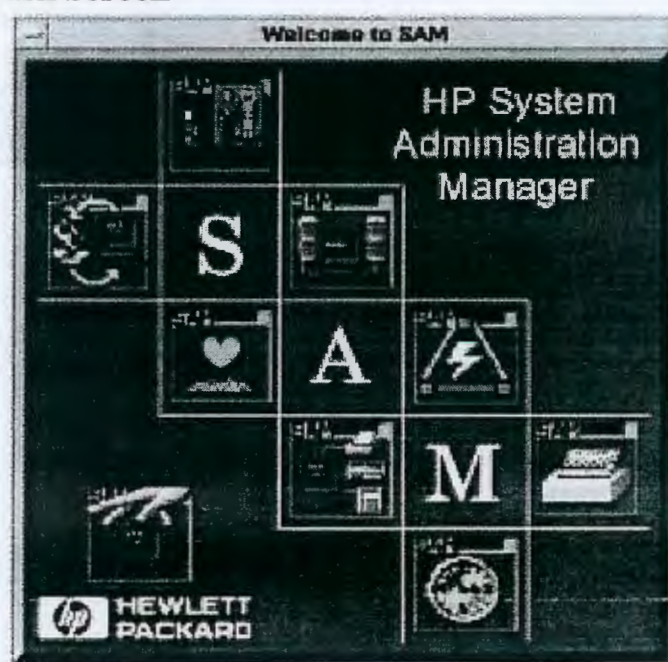
- 19-inch, 1280×1024 color monitor (A4575A)
- 19-inch, 1600×1200 color monitor (A4575A)
- 21-inch, 1280×1024 color monitor (A4576A)
- 21-inch, 1600×1200 color monitor (A4576A)

Before using your monitor, you should become familiar with its controls, connectors and indicators. For information on these controls and indicators and on using your monitor, see the documentation that came with the monitor. To confirm your graphics configuration, use SAM (the System Administration Manager) as follows.

As root, run `/usr/sbin/sam`, and the following splash screen appears to indicate that SAM is running:

Figure 1-7

SAM's Splash Screen



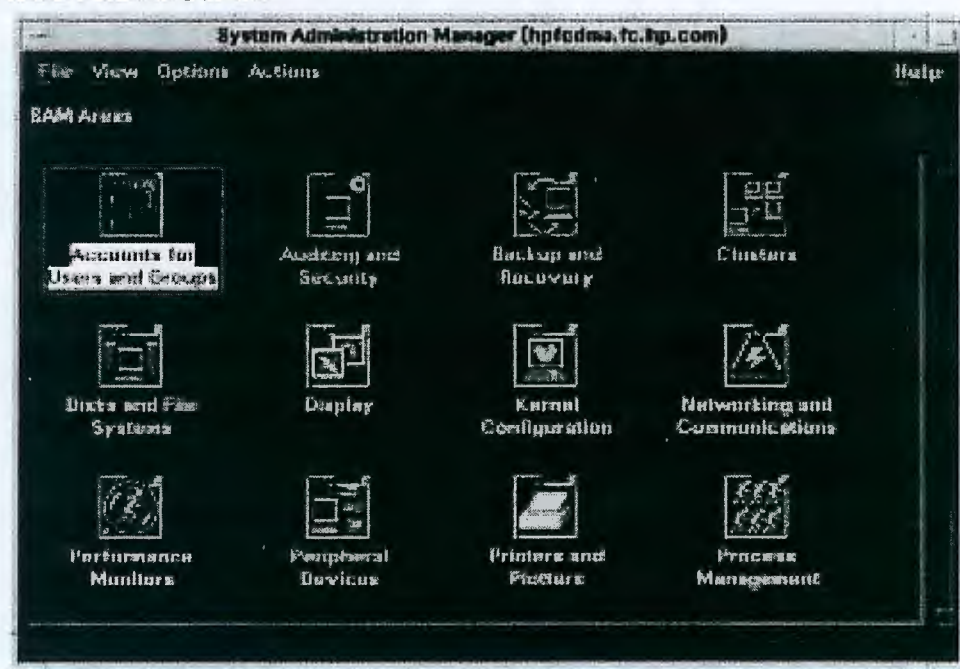


System Overview Monitors

After a few seconds of analyzing your hardware and software configurations, the splash screen disappears, and another window appears, which offers access to the various administration tasks:

Figure 1-8

SAM's Main Menu



Double-click the "Display" icon, and something like the following appears (of course, the actual devices on your machine are likely to be different):

Figure 1-9

X Server Configuration



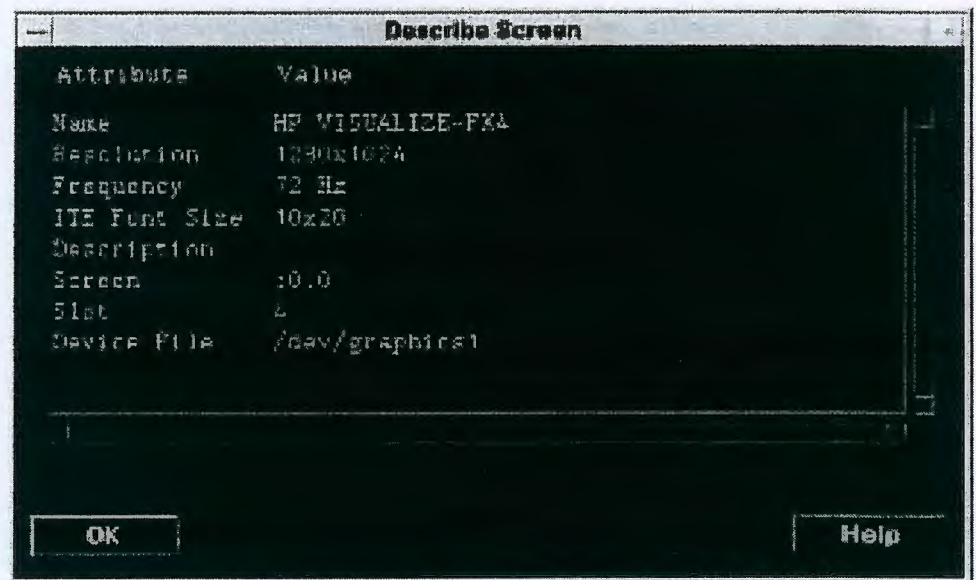


System Overview Monitors

Double-clicking on any of the icons that represent graphics devices (or single-clicking and then selecting **Describe...** under the **Actions** menu) will cause a monitor-description window to appear; for example:

Figure 1-10

Monitor Description Window



Other options under the **Actions** menu allow you to identify the physical monitor associated with the logical monitor (by making the screen image blink), and to change the monitor type and/or gamma-correction value.

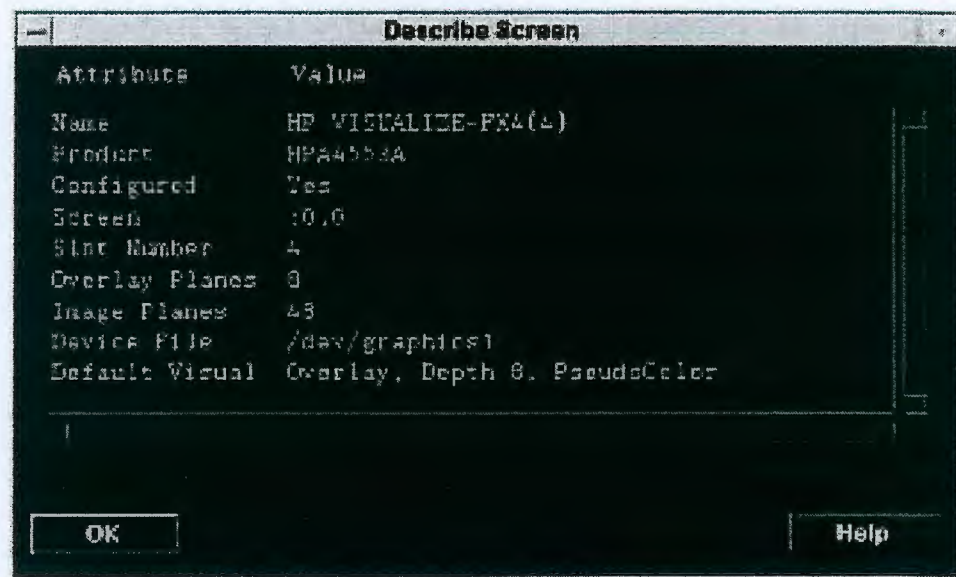
By selecting **X Server Configuration** (under the **List** menu), you can see and configure your graphics device in terms of X server parameters. For example, when you double-click on any of the icons that represent X-Windows screens (or single-click and then select **Describe...** under the **Actions** menu), you'll see information similar to the following:

System Overview
Monitors



Figure 1-11

X-Window Screen Description Window



As before, other options under the **Actions** menu allow you to identify the physical monitor associated with the X-screen definition (again, by making the screen image blink), and to change the default visual, screen options, server options, etc.



2

Changing Your Computer's Hardware Configuration

This chapter describes the procedures required to change your computer's hardware configuration.

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Changing Your Computer's Hardware Configuration

The instructions in this chapter assume you are using the HP-UX 10.20 or 11.0 operating system and the HP CDE interface.

CAUTION

When installing internal devices, always wear a properly grounded wrist strap to avoid damaging components with electrostatic discharge (static electricity).

Use the following tools to remove or replace hardware parts when changing your configuration:

- Light-duty flat blade screwdriver with a 150mm (6-inch) blade
- Number 1 Posidriv driver
- T10, T15 and T20 Torx drivers
- Needle-nosed pliers

Also, read the ESD Precautions elsewhere in this guide.

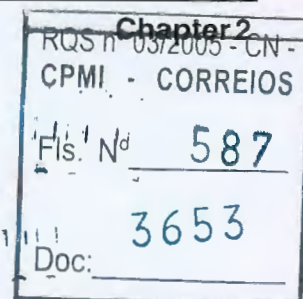
NOTE

Many of the HP-UX commands in this chapter will require that you become superuser (root). If you cannot log in as root, contact your system administrator.

To make access to the internal components easier, you may want to place the computer on a table or workbench instead of leaving it on the floor.

CAUTION

This computer is designated for two-man lifting; it weighs approximately 90 pounds. Do not attempt to lift it by yourself, or injury may result.





Opening the System Unit

Some hardware-configuration operations, like installing and removing hard disk drives, can be done simply by opening the door on the front of the unit; the disk drives are accessible through the open door. Other operations require a bit more access to the interior of the computer, so more panels will need to be removed. Such operations include the installation and removal of the following devices (along with a list of which panels will need to be removed):

- CD drive (front panel, top cover)
- DDS drive (front panel, top cover)
- Floppy drive (front panel, top cover)
- Memory (top cover, left side)
- I/O cards (top cover, right side)

Before opening the front, top, left, or right panels of the unit, make sure that the system is powered down and unplugged. *Note: **do not** remove the rear thumbscrews before powering down the unit, or the system power will be interrupted due to the interlock.*

1. Power off the system (either by executing shutdown -h as root and then turning off the power, or by simply hitting the power switch, which accomplishes the same thing), the monitor, and any peripheral devices.
2. Unplug the power cord of the system unit and any peripheral devices from AC wall outlets.
3. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the back panel of the system unit.

CAUTION

Do not attempt to operate the computer with any of the front, top, or side covers removed. In addition to maintaining FCC/EMI compliance, the covers are needed to ensure proper airflow, and hence, sufficient system cooling. Operating the unit without its covers in place may void the warranty.

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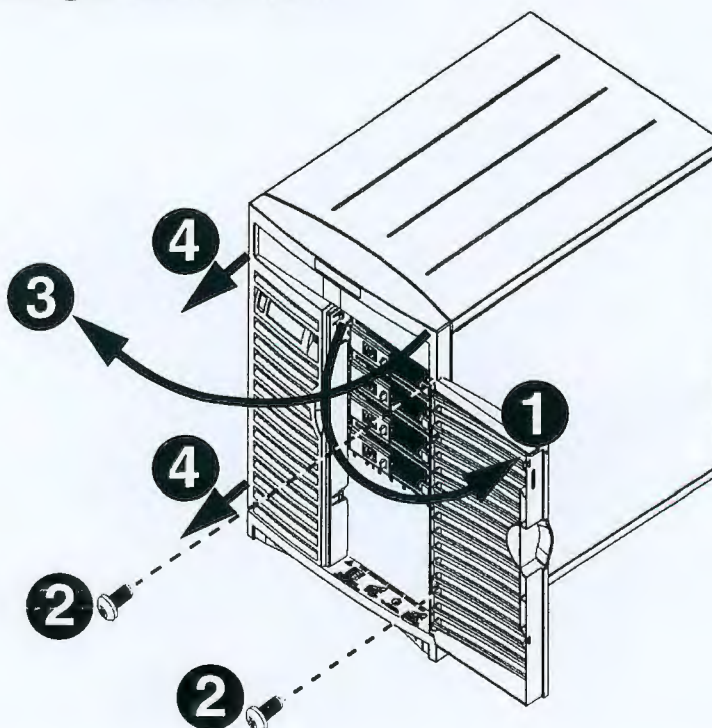
Removing the Front Panel

The front panel must be removed in order to install a CD drive, a DDS tape drive, or a floppy drive—see their respective sections later in this chapter for detailed instructions on the installation process for each type of device. If you need to remove the front panel (the panel that contains the door), perform the following steps:

1. Shut down and unplug the system as described above. Unlock the door on the front of the unit, if necessary, and swing it open.
2. Remove the two panel-detach screws on the right edge of the panel, visible after you open the door.
3. Swing (clockwise) the entire front panel open 45 to 90 degrees—the hinges are on the left, as you look at the front of the unit.
4. Once you have swung the panel open on the hinges on the left, pull it straight out to remove it.

Figure 2-1

Removing the Front Panel



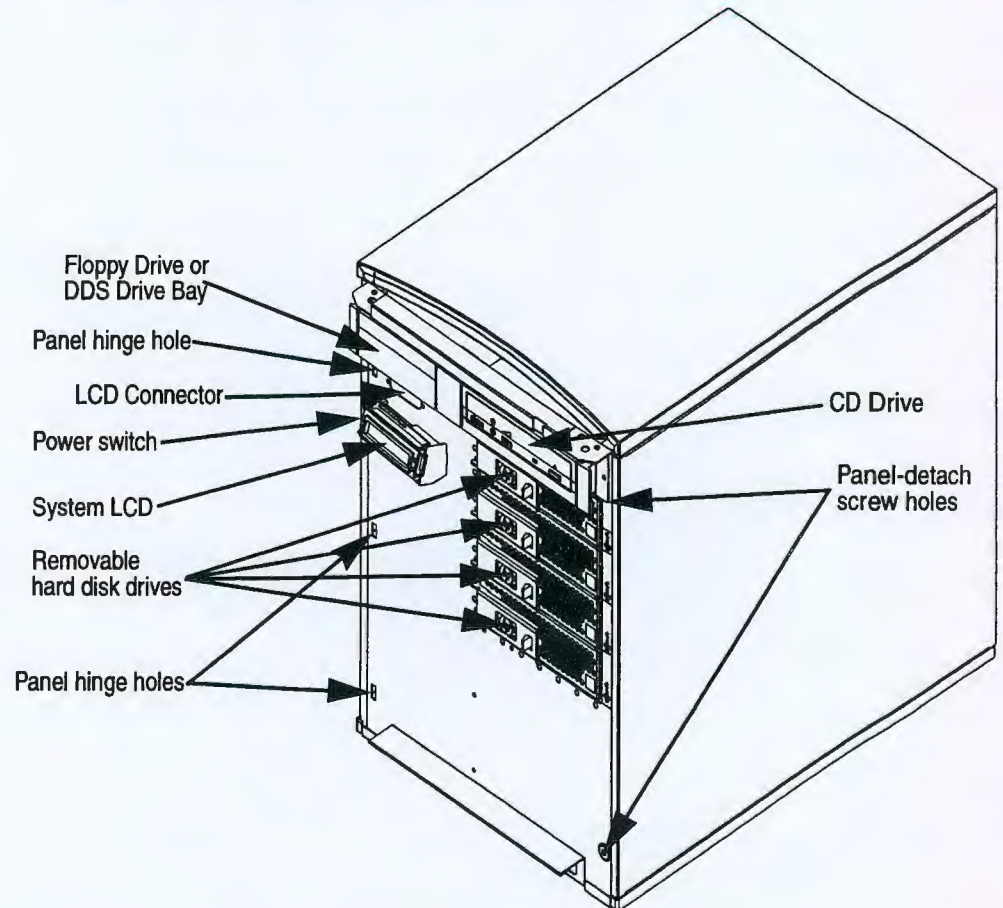
To replace the front panel, perform the above steps in the reverse order.



Changing Your Computer's Hardware Configuration Opening the System Unit

Figure 2-2

System Unit with Front Cover Panel Removed



Once the front panel has been removed, a CD drive, DDS drive, and/or a floppy drive can be installed or removed.

Changing Your Computer's Hardware Configuration

Opening the System Unit



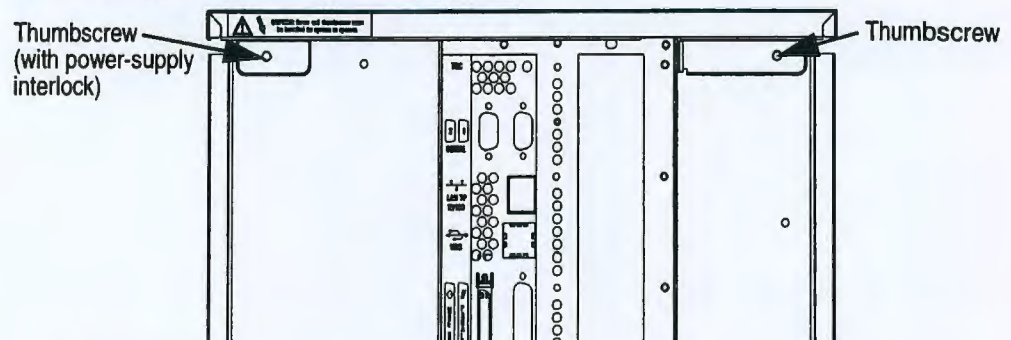
Opening the Top Cover

To open the top cover of the unit—to install or remove a removable-media drive (i.e., a CD drive, a DDS tape drive, or a floppy drive), DIMMs, or I/O cards, for example, or for other access to the inside of the unit—follow these steps:

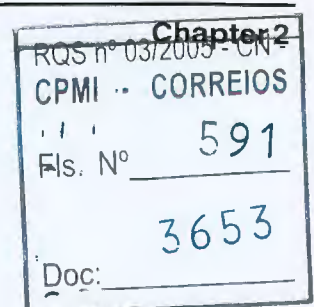
1. Shut down and unplug the system as described in “Opening the System Unit” on page 41.
2. Remove the two thumbscrews in the top corners of the back panel. The upper-left one (when looking at the back of the unit) has a power-supply interlock, and removing the screw disengages the power to the unit, reducing shock hazard during the configuration process. Note that cutting off power via the power-supply interlock does not do a clean shutdown like pressing the power switch does.

Figure 2-3

Removing the Thumbscrews



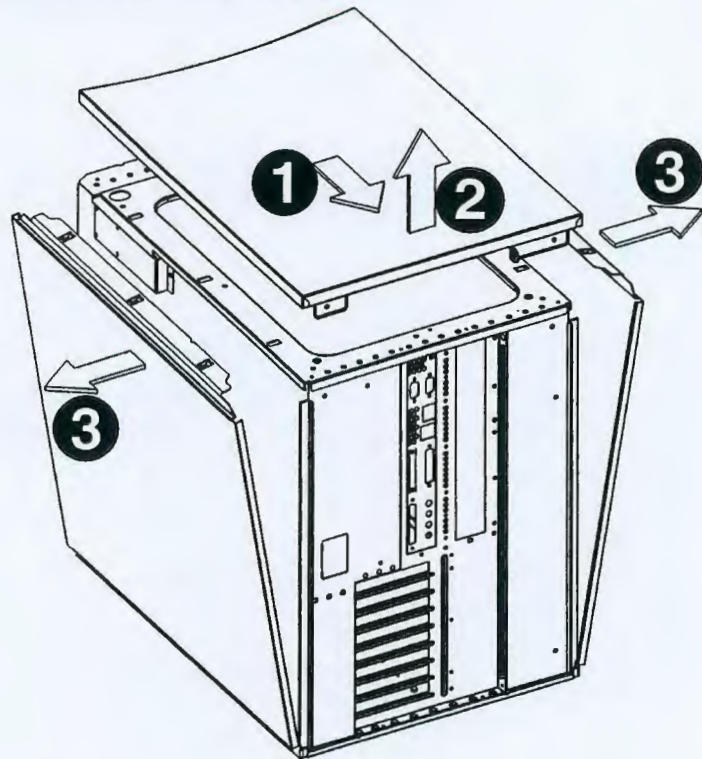
3. Slide the top panel an inch or two toward the rear of the machine, and then remove it by lifting straight up. The top panel fits snugly, so you may have to get a firm grip on it in order to slide it back.





Changing Your Computer's Hardware Configuration Opening the System Unit

Figure 2-4 Removing the Top and Side Panels



Removing the Left and/or Right Panels

In order to remove the left and/or right panels, you must first remove the top panel, as described above. Then, the left and right panels are free to tip out and away from the unit. The side panels stay in place after the top panel is removed because of three locations on the friction-fit tab running along the top edge of the side panels. After the desired side panel has been tipped out and away from the chassis, as shown in the illustration above, it can be lifted straight up.

The left panel (which on the right in the illustration above, since you are looking at the back of the machine) must be removed to install or remove memory (DIMMs), and the right panel (which on the left in the illustration above, since you are looking at the back of the machine) must be removed to install or remove I/O cards.

Changing Your Computer's Hardware Configuration Opening the System Unit



Reinstalling the Cover Panels

To replace the cover panels once you've taken them off, perform the following steps:

1. Place the left- and right-side panels into their grooves in the bottom edges of the left and right sides of the chassis, and then press the tops of the side panels together firmly.
2. Place the top cover on the top of the chassis, about an inch of its back edge protruding over the rear panel. Then, push it straight forward, so its front edge slides underneath the lip of the front panel's top edge. The top panel fits snugly, so you may have to get a firm grip on it in order to slide it forward.
3. Reinsert the two thumbscrews into the tabs in the upper corners of the back panel of the chassis. Note that the upper left one (as looking at the rear panel) is the power supply interlock screw, so make sure it is tightened snugly, or the power supply may not engage.

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Installing Memory

This section contains information regarding the installation of additional memory. However, before continuing with this section, please take time to read the following list of considerations:

- Use the procedure described in the chapter "The Boot Console Interface" to determine the current memory configuration for your computer. This should be done before trying to install additional DIMMs (Dual Inline Memory Modules) into your computer.
- Familiarize yourself with the order in which DIMMs must be inserted; the order differs, depending on whether you have a J5xxx (eight memory slots) or a J7xxx (sixteen memory slots). This information is on a label on the floor of the left side of the J5xxx, and on the main air guide in the J7xxx. The labels look like this:

Figure 2-5

DIMM-Insertion Order for J5xxx and J7xxx

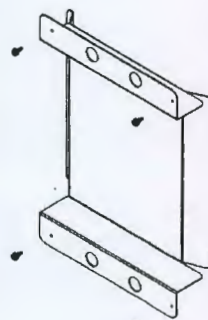
MEMORY INSTALLATION SEQUENCE

J5000 SLOTS	
0	Load 1st
6	Load 7th
2	Load 3rd
4	Load 5th
5	Load 6th
3	Load 4th
7	Load 8th
1	Load 2nd

MEMORY INSTALLATION SEQUENCE

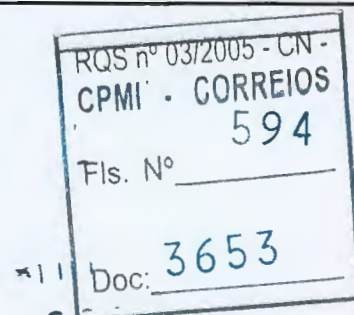
J7000 SLOTS*

0A	Load 1st
6A	Load 13th
2A	Load 5th
4A	Load 9th
5A	Load 11th
3A	Load 7th
7A	Load 15th
1A	Load 3rd
0B	Load 2nd
6B	Load 14th
2B	Load 6th
4B	Load 10th
5B	Load 12th
3B	Load 8th
7B	Load 16th
1B	Load 4th



*J7000 MEMORY MUST BE INSTALLED IN IDENTICAL PAIRS

- For the J5xxx—the two-processor model—insert the DIMMs in the sequence indicated in the left illustration above (or on the label inside the left side of the machine). For the J7xxx—the four-processor model—insert the DIMMs in pairs of equal memory size, and in the



Changing Your Computer's Hardware Configuration

Installing Memory



order indicated in the right illustration above (or on the label on the air guide). For details on the mechanics of inserting DIMMs, see the following pages.

- When you have finished installing the additional DIMMs, use the Boot Console Interface to verify that the computer recognizes them.

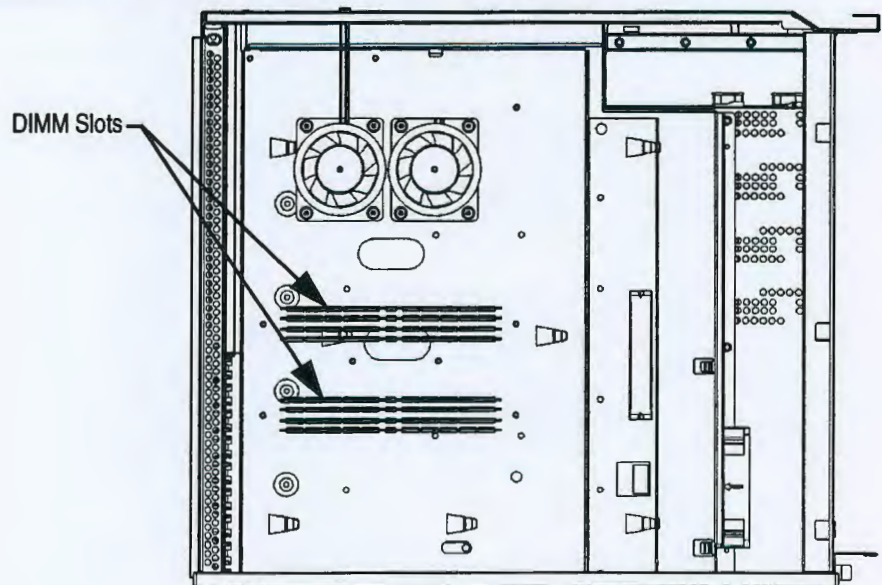
Installing DIMMs

Perform the following steps to add DIMMs to your computer.

1. Open the system unit according to the directions in "Opening the System Unit" on page 41. You'll need to remove the top panel and the left side panel (looking from the front). Here is roughly what the inside of a J5xxx looks like: the DIMMs are accessible as soon as you remove the side panel:

Figure 2-6

The J5xxx DIMM Slots (as seen from the open left side)



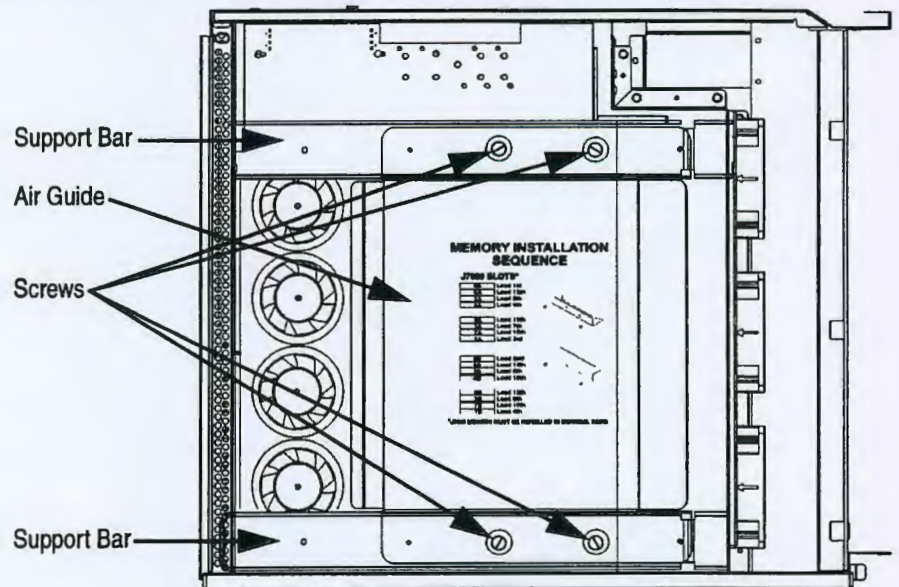
The J7xxx, on the other hand, requires one additional step before the DIMMs are accessible. Because it has twice the number of processors as the J5xxx, the J7xxx requires greater cooling capacity to prevent components from overheating. This is effected, in part, by two sheet-metal air guides that channel the airflow directly at the processors' turbocoolers. One of these air guides, in addition to channeling the airflow to the processors, also hides the DIMM slots,



Changing Your Computer's Hardware Configuration Installing Memory

so it must be removed before installing or removing DIMMs. Before the air guide is removed, the open left side of the J7xxx looks like this:

Figure 2-7 The J7xxx's Open Left Side Before Removing Air Guide



Remove the four screws that secure the air guide to the support bars. Be sure, as you remove the last screw, that you hold onto the air guide so it doesn't fall.

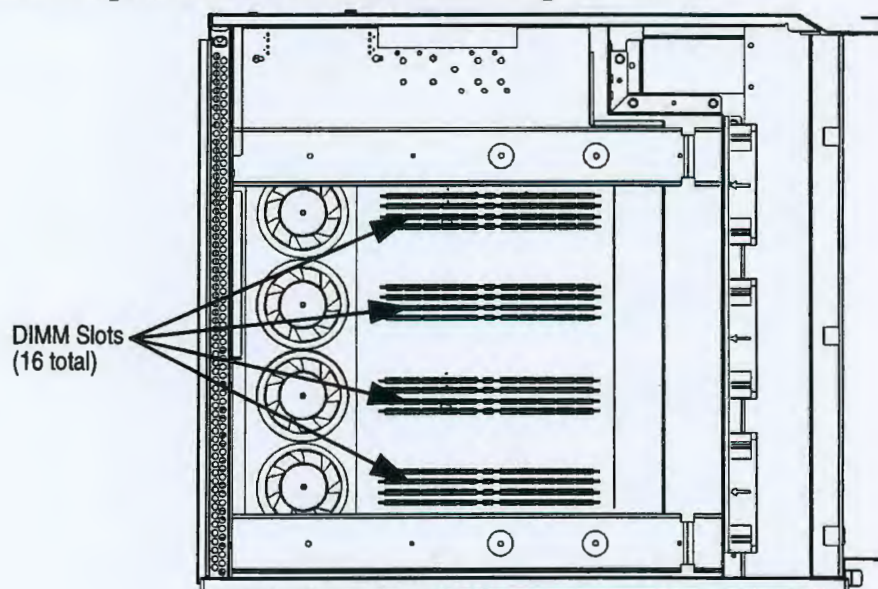


Changing Your Computer's Hardware Configuration Installing Memory

After the air guide is removed, the open left side of the J7xxx looks like this:

Figure 2-8

The J7xxx's Open Left Side After Removing Air Guide





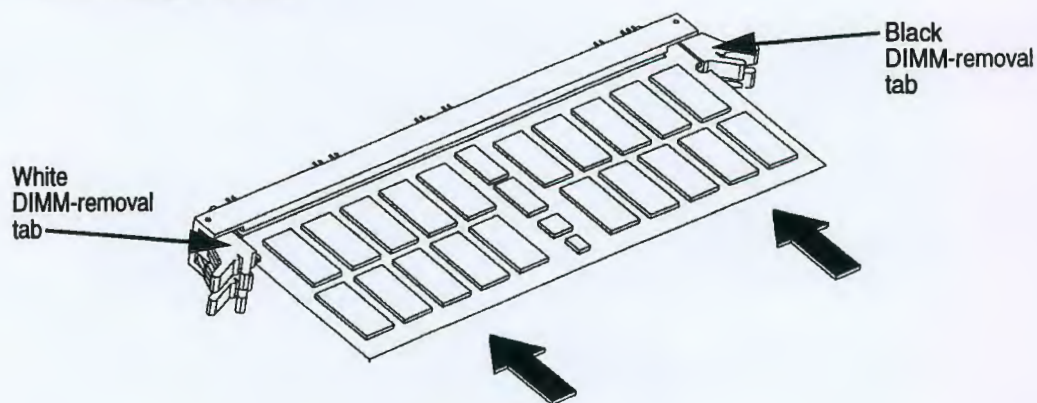
Changing Your Computer's Hardware Configuration

Installing Memory

2. Install DIMMs in the order indicated in Figure 2-5 on page 47, or on the label on the floor of the chassis (the J7xxx requires DIMMs to be installed in pairs of the same size). Make sure the DIMM-removal tabs are angled out—away from each other. The DIMMs are keyed; that is, there are notches in the edge (see Figure 2-10, below) that prevent the DIMM from being inserted upside down. Once the DIMM is oriented correctly (the notches in the DIMM lining up with the bumps in the slot), press firmly and evenly on each DIMM to ensure that it seats properly; the DIMM-removal tabs will rotate to become parallel as the DIMM is inserted:

Figure 2-9

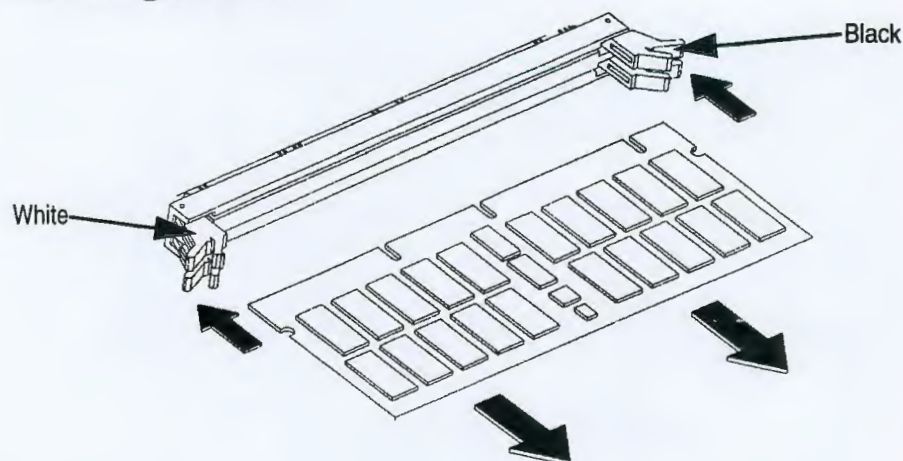
Inserting a DIMM



3. To remove a DIMM, push these tabs away from each other, and the DIMM will be removed from its socket.

Figure 2-10

Removing a DIMM





Changing Your Computer's Hardware Configuration

Installing Memory

4. Re-install the air guide with the four screws removed earlier (so it again looks like Figure 2-7 on page 49), close the system unit and reconnect all cables.
5. Verify that this installation was successful by following the steps in "Displaying the Memory Configuration" on page 154.

If you have only replaced a faulty DIMM, you must execute the `pdt clear` command in the service menu of the Boot Console Interface.

Answer yes (Y) to the prompt "Continue? (Y/N) >

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Installing a PCI-Type I/O Board

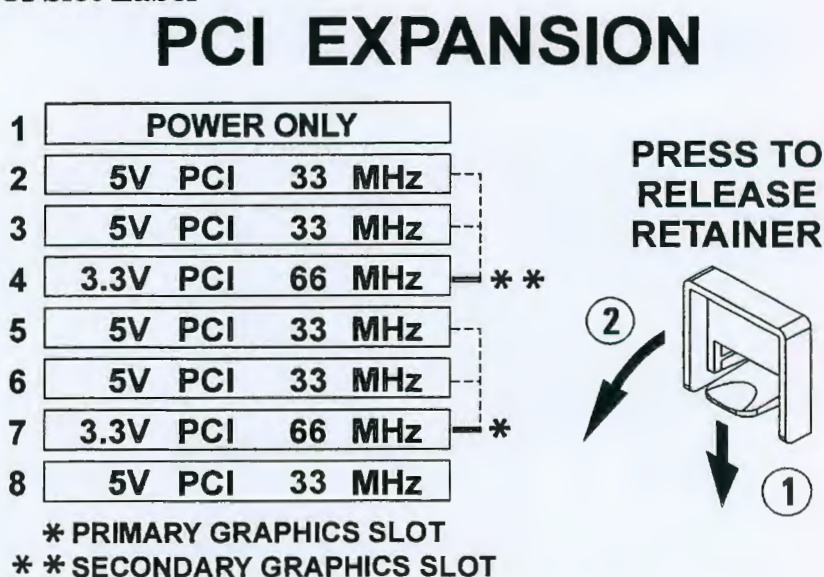
The J5 Class and J7 Class are extensible by means of I/O cards that offer a variety of functionalities, and the kind of I/O cards supported are called PCI (Peripheral Component Interconnect) cards. PCI cards can be 3.3-volt or 5-volt cards (or both; these are called "universal" cards), and they can also be 32-bit or 64-bit cards, and 33MHz or 66MHz.

The graphics boards supported by the J5 Class and J7 Class computers are the HP VISUALIZE-FX² Pro and the HP VISUALIZE-FX⁶ Pro. While these are universal cards and will work in any slot, they should be used in slots 4 or 7 to obtain optimal performance.

Your J5 Class and J7 Class computer's PCI assembly has eight 64-bit slots in the following arrangement (this information is also on the label on the floor of the right side of the chassis):

Figure 2-11

The PCI Slot Label



As the illustration above indicates, graphics cards should be inserted into the 66MHz slots in order to deliver maximum performance. Use Slot 7 first, and then Slot 4. Once Slots 7 and 4 are used, graphics cards can be added to any slot that physically has room, except Slot 1. *Slot 1 is a power-only slot; that is, it doesn't offer data communication to the card inserted there.* In other words, a two-board sandwich—main card in Slot



Changing Your Computer's Hardware Configuration Installing a PCI-Type I/O Board

2, drawing power and sending/receiving data, and daughter board in Slot 1, drawing only power—is supported. On the other hand, a standalone card that draws power *and* sends/receives data would be supported in Slot 2 but not Slot 1. Note that a two-card sandwich “in” Slot 7 means that the *bottom* card is in Slot 7, and top card is in Slot 6.

For non-graphics cards, insert them in this order: Slot 2, then 8, 3, 5, and finally 6. If Slots 7 and 4 are not needed for graphics cards, they can be used for very-high-bandwidth general I/O.

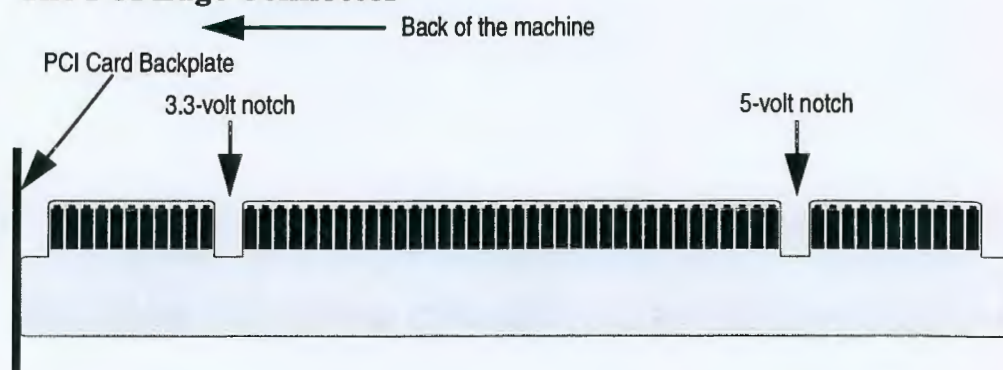
CAUTION

The J5xxx and J7xxx supply approximately 264 watts of power to the PCI slots. Thus, if you use three HP VISUALIZE-FX⁶ Pro cards simultaneously (in Slots 7, 4, and 2), as in the HP VISUALIZE Center configuration, there are some power constraints imposed on the remaining slots. Each HP VISUALIZE-FX⁶ Pro card, while electrically connected to only one slot, takes the physical space of two, and each card draws about 78 watts. So, three FX⁶ Pro cards will occupy six of the eight PCI slots and will draw 234 watts altogether, leaving only about 30 watts for the remaining two slots combined, should you choose to use them. Do not insert PCI cards that together draw more than 264 watts, or damage to your computer may result.

PCI card edge connectors have one or two small notches in them (see illustration below). The 3.3-volt notch indicates that the card can operate properly on 3.3 volts, and the 5-volt notch indicates that the card can operate properly on 5 volts. As you might expect, notches in both locations indicates that the card is a universal PCI card; that is, it will operate properly on either voltage.

Figure 2-12

The PCI Edge Connector



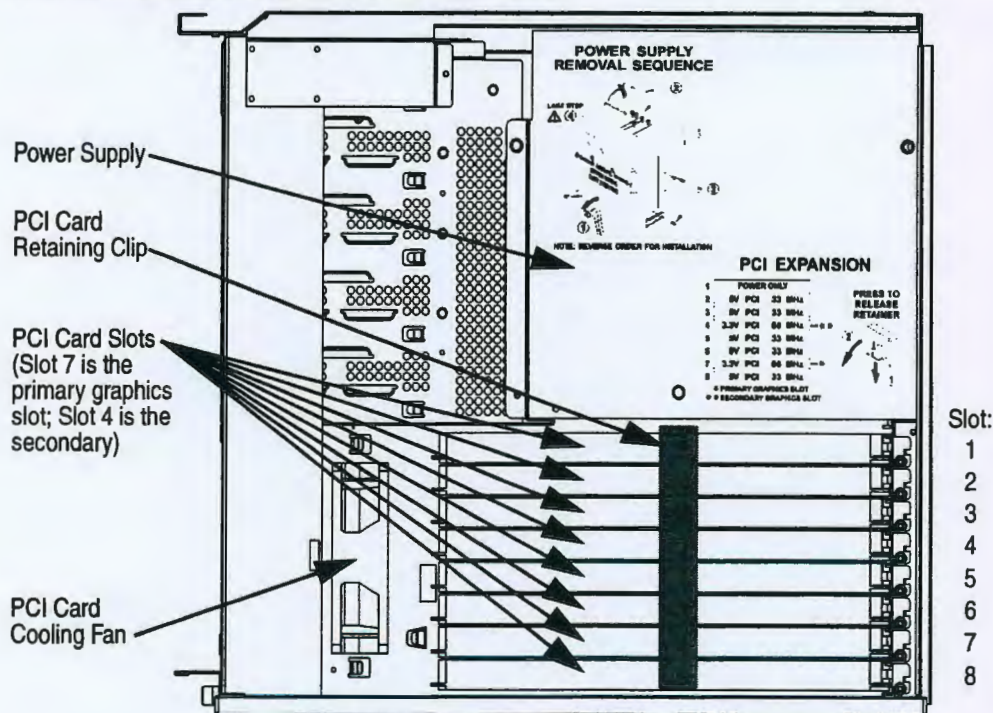


Changing Your Computer's Hardware Configuration Installing a PCI-Type I/O Board

The illustration below shows the physical layout of the PCI slots:

Figure 2-13

PCI Slots in a J5 Class and J7 Class



Follow these steps to install a PCI board into your computer:

1. Remove the top and right-side panels from your computer, as described in the section "Opening the System Unit," earlier in this chapter.
2. Remove the PCI card retaining clip—the instructions for doing so are on the label on the side of the power supply, right above the PCI slots. This is a simple snap-on clip; no tools are required to remove it or install it again. (Note: during re-installation of the retaining clip, make sure the hook on the bottom of the clip fits into the hole on the floor of the chassis.)
3. Determine the appropriate slot(s) for the card you are inserting. Relevant information includes the voltage (3.3 or 5 volts) and the speed (33 or 66 MHz). Again, when multi-card sets are inserted, it's the *bottom* card that goes into the indicated slot. Thus, to insert a VISUALIZE FX⁶ card (a two-card sandwich) "into" Slot 7, you'd put the bottom card into Slot 7, and the top card into Slot 6.

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Changing Your Computer's Hardware Configuration

Installing a PCI-Type I/O Board



4. Remove the screw that secures the filler plate corresponding to the slot into which you are installing the PCI card, and then remove the filler plate itself, saving it for future use. The filler plate must be removed in order for the PCI card's connectors to be accessible from outside the chassis.
5. Place the PCI board you are installing in the board guides and insert firmly into the connector. You may have to push hard to seat the board, but do not rock it from side to side during insertion, as this can damage the connectors. Check to see that the board is evenly inserted for proper seating.
6. Secure the board with the same screw that secured the filler plate.
7. Replace the PCI retainer clip to keep the boards from flexing or vibrating during normal computer operation. If necessary because of the width of the card, remove the black plastic extenders that are attached to the retainer clip before attempting to replace it.
8. Replace the computer's side panel and top cover, and replace the thumbscrews that secure the top panel onto the computer.
9. After bootup, use SAM (the System Administration Manager) to confirm that the computer recognizes the card. See the "Monitors" section of the Overview chapter for an example of doing this for a graphics card.

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Changing Your Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your monitor with a different type, you must reconfigure your computer to support it.

There are two ways to configure your computer to support a different monitor type. They are discussed in the subsequent sections.

Setting the Monitor Type at Power-On

If you replace your computer monitor with a different type of monitor, and you have not set the computer's graphics parameters by using the Boot Console Interface's monitor command, you can still configure your computer's new monitor type when you reboot the system.

To set the monitor type, do the following:

1. Press the **Tab** key after your keyboard's lights flash during the boot process to initiate the automatic monitor selection process. Your system will query you for a new monitor type.
2. Select one of the monitor types listed on the screen and press **Enter**.
3. Answer yes (by pressing **Y**), to the system query to confirm your selection. Note that if you do not make a selection, the system cycles through the possible monitor types continuously until you do make your selection.

Setting the Monitor Type from the Boot Console Interface

To change your computer's graphics parameters before you replace your monitor, go to the section "Displaying and Setting the Monitor Type" in the Boot Console Interface chapter.

To see how to examine and set your monitor's attributes, see the "Monitor" section in the Overview chapter.

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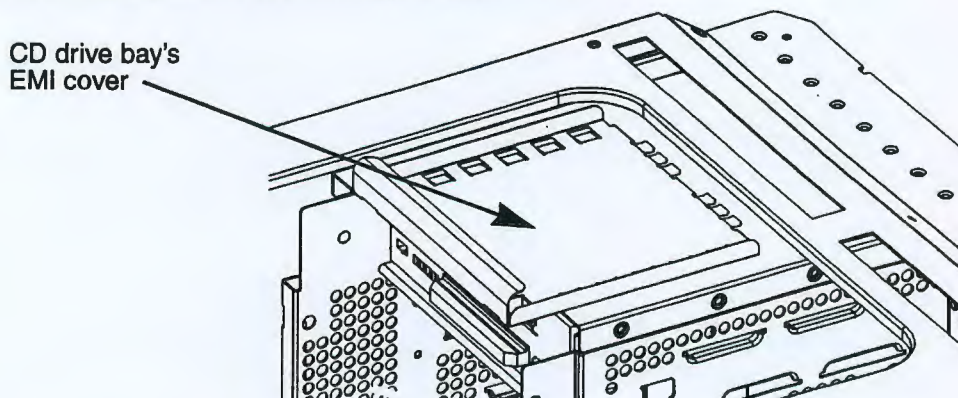
CD Drive Installation

To install a CD drive, follow the steps below:

1. Using standard static-suppression practices (described in the Preface of this document), remove the computer's front panel, as described in "Removing the Front Panel" on page 42, and top cover, as described in "Opening the Top Cover" on page 44. Then lift out the CD bay's EMI (electromagnetic interference) cover—the thin piece of metal above the CD drive bay, that is held in place by metal tabs along its edge:

Figure 2-14

Removing the CD Drive Bay's EMI Cover



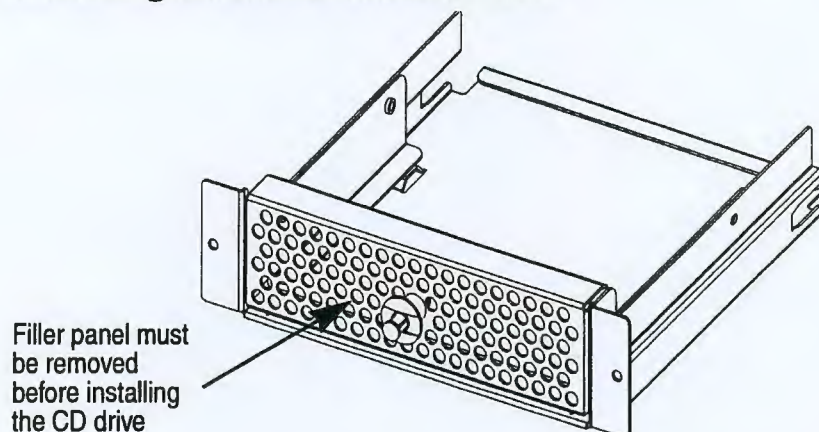
2. Remove the CD drive bracket from the main chassis.
3. Remove the filler panel from the bracket and save it for future use. The screws will be used to mount the CD drive into the bracket.

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Changing Your Computer's Hardware Configuration CD Drive Installation

Figure 2-15 Removing the CD Drive Filler Panel



4. Unpack the CD drive, avoiding shocks both mechanical and electrical. That is, never let it drop onto the floor or even onto a desk; always set it down gently. And take ESD (electrostatic discharge) precautions, so static-electric sparks do not damage the electronic components.

CAUTION

A drop of just a few inches onto a hard surface such as a desk or the floor can generate large accelerations (hundreds of gees), which may damage the device.

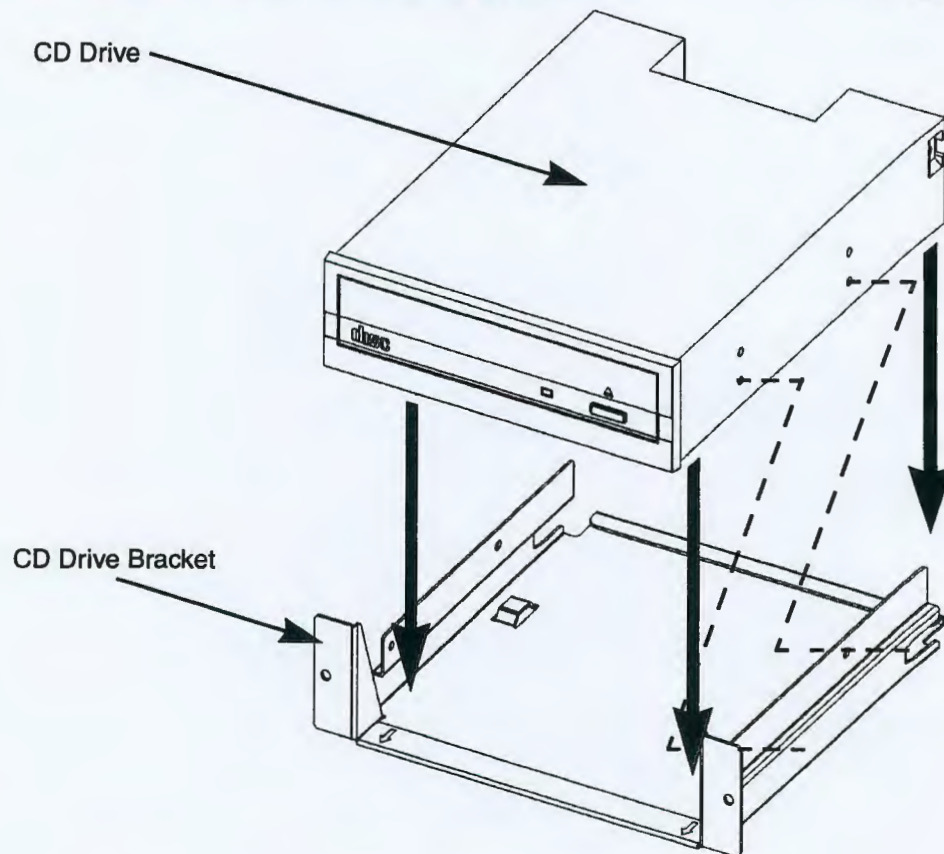
5. Install the CD drive into the bracket: the drive itself must be inserted into the CD drive bracket as shown below, and secured by four Torx T-10 screws (two on each side) driven into the holes indicated by the dashed lines. These screws ship with the filler.

Changing Your Computer's Hardware Configuration
CD Drive Installation



Figure 2-16

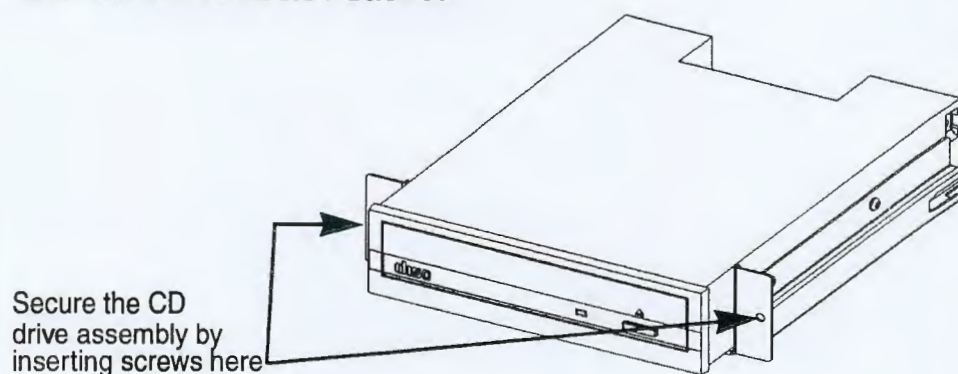
Inserting the CD Drive Into its Bracket



The assembly should now appear as follows:

Figure 2-17

The CD Drive in its Bracket





Changing Your Computer's Hardware Configuration CD Drive Installation

6. Slide the bracket, now containing the CD drive, halfway into the CD drive bay.
7. Connect the power, audio, and ribbon cables into their respective connectors, taking care to fold the ribbon cable neatly, so it won't be crushed during insertion.
8. Finish seating the CD drive bracket into the main chassis, taking care not to pinch the cables as the CD drive is being pushed into the bay. Insert the two screws through the front of the tray to secure the assembly to the main chassis.
9. Replace the CD EMI cover, again taking care not to pinch the cables.
10. Replace the computer's top panel and front panel.
11. After rebooting, use SAM (the System Administration Manager), or the steps in the next section, to confirm that the CD drive is recognized by the system.

For information on normal usage, see the chapter "Using Your CD Drive."

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Changing Your Computer's Hardware Configuration CD Drive Installation



Verifying the CD Drive Operation

To verify that your workstation can communicate with the CD drive, follow these steps:

1. In a terminal window, enter the following command:

```
/usr/sbin/ioscan -d sdisk Return
```

After a few moments the ioscan utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

H/W Path	Class	Description
10/0/14/0.0.0	disk	TEAC CD-532E-B CDROM
10/0/15/1.6.0	disk	SEAGATE ST39102LC

If ioscan does not see your CD drive it returns the following message:

```
ioscan: No hardware found
```

2. If the system does not recognize the drive, see the Troubleshooting chapter for hints on how to determine the problem and solve it.

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DDS Drive Installation

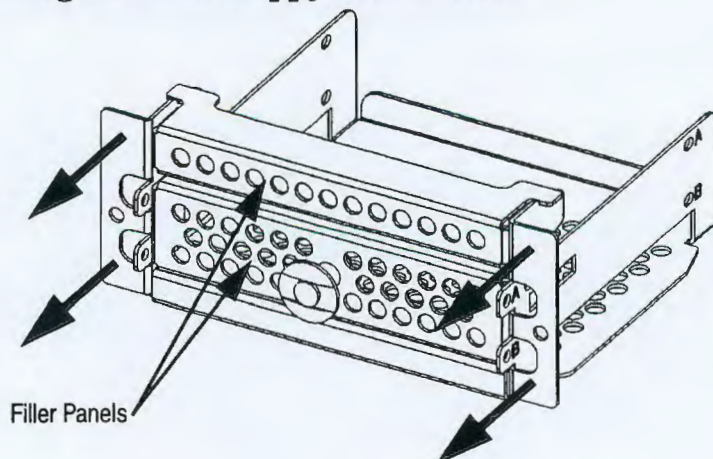
NOTE

Before opening the system unit to install a DDS drive, determine the SCSI IDs currently in use on your computer, so as to avoid SCSI ID conflicts.

To install a DDS drive, follow the steps below:

1. Using standard static-suppression practices (described in the Preface of this document), remove the computer's front panel, as described in "Removing the Front Panel" on page 42, and top cover, as described in "Opening the Top Cover" on page 44. Then remove the DDS-drive bay's EMI (electromagnetic interference) cover—the thin metal cover that is snapped in place above the DDS drive bay.
2. Remove the DDS/floppy drive bracket from the main chassis. The bracket is referred to as the "DDS/floppy drive bracket" because the same bracket can house either a DDS drive or a floppy drive (but not both simultaneously).

Figure 2-18 Removing the DDS/Floppy Drive Bracket

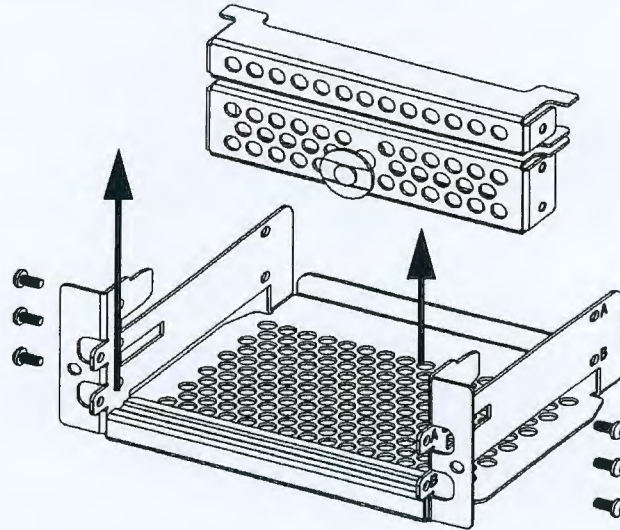


3. Remove the filler panels from the DDS drive bracket and save them for future use. Four of the six screws will be used to secure the DDS drive to its bracket; save the remaining two for future use.



Figure 2-19

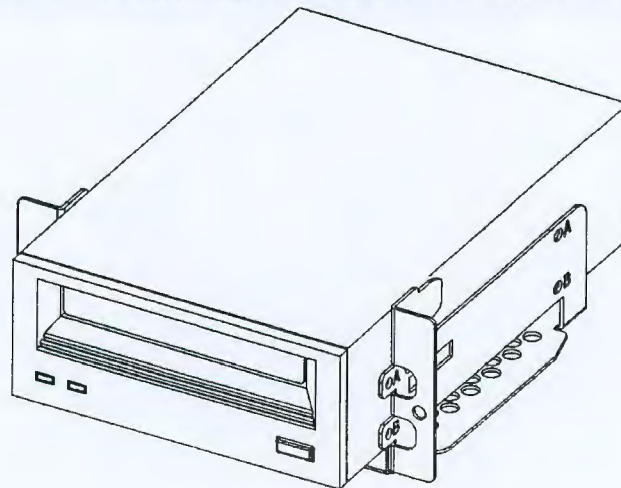
Removing the DDS/Floppy Drive Bracket



4. Install the DDS drive into the bracket: the drive itself must be inserted into the DDS drive bracket, and secured by four Torx T-10 screws (two on each side).

Figure 2-20

The DDS Drive Installed Into the DDS/Floppy Drive Bracket



5. Connect the power and ribbon cables to the DDS drive.
6. Slide the bracket, now containing the DDS drive, into the DDS drive bay.

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Changing Your Computer's Hardware Configuration DDS Drive Installation

7. Slide the bracket, now containing the DDS drive, into the DDS drive bay. Observing—and manipulating, if necessary—from above, make sure the drive's ribbon cable folds neatly and compactly, and its ferrite bead (the elongated loop of iron-containing material) does not hinder the folding process.
8. Insert the two screws through the front of the tray to secure the assembly to the main chassis.
9. Replace the computer's front panel.
10. After rebooting, use SAM (the System Administration Manager), or the steps described in the next section, to confirm that the DDS drive is recognized by the system.

For information on normal usage, see Chapter 5, "Using Your Digital Data Storage (DDS) Tape Drive," on page 101.

Verifying the DDS Tape Drive Operation

To verify that your workstation can communicate with the DDS-format tape drive, enter the following:

```
/usr/sbin/ioscan -d stape
```

After a few moments the ioscan utility returns a message similar to the following:

H/W Path	Class	Description
10/0/15/0.3.0	tape	HP C1533A

If ioscan does not see your tape drive, it will return the following message:

```
ioscan: No hardware found
```

If the system does not recognize the drive, see Chapter 9, "Troubleshooting," on page 165, for hints on how to determine the problem and solve it.



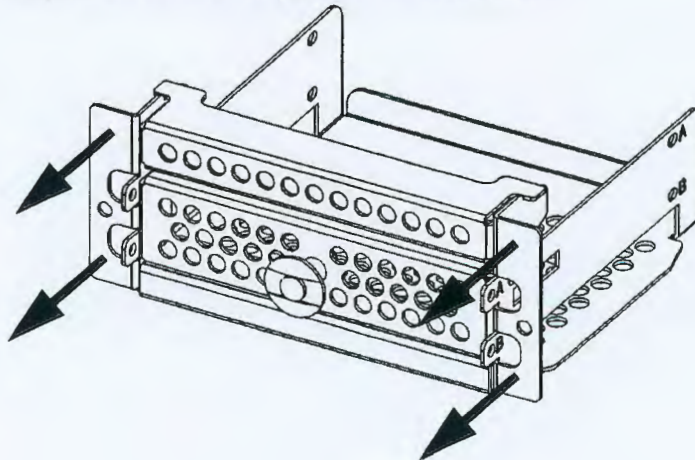
Floppy Drive Installation

To install a PC floppy drive into the J5 Class and J7 Class, follow the steps below:

1. Using standard static-suppression practices (described in the Preface to this document), remove the computer's front panel, as described earlier in "Removing the Front Panel" on page 42, and top cover, as described in "Opening the Top Cover" on page 44. Then remove the floppy-drive bay's EMI (electromagnetic interference) cover—the thin metal cover that is snapped in place above the floppy drive bay.
2. Remove the two screws securing the DDS/floppy drive bracket to the main chassis, and pull the bracket straight out. The bracket is referred to as the "DDS/floppy drive bracket" because the same bracket can house either a DDS drive or a floppy drive (but not both simultaneously).

Figure 2-21

Removing the DDS/Floppy Drive Bracket

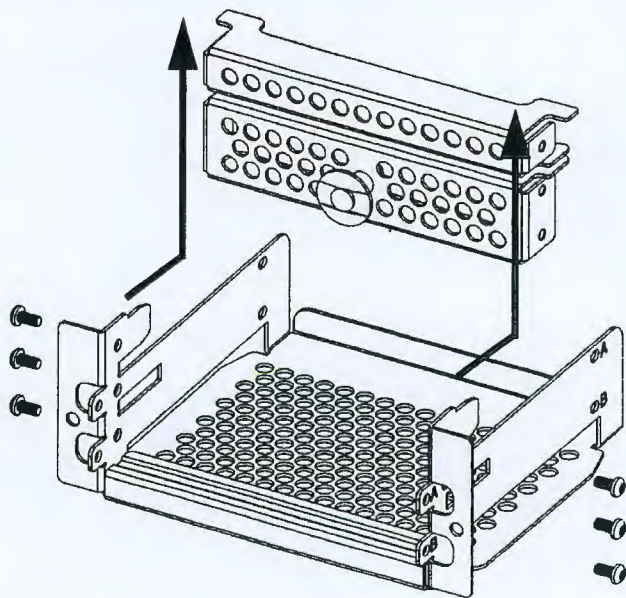




Changing Your Computer's Hardware Configuration Floppy Drive Installation

3. Remove the filler panels from the DDS/floppy drive bracket by removing the screws and sliding the panels back and then up, as indicated in the illustration below. Save the larger of the two filler panels for future use; the smaller of the two will be re-installed after the floppy drive itself has been installed onto the bracket. Four of the six screws will be used to secure the floppy drive to the bracket; the other two screws will be used to re-install the smaller filler panel onto the bracket.

Figure 2-22 Removing the DDS/Floppy Drive Filler Panels



4. Install the floppy drive into the bracket: the drive itself must be inserted into the DDS/floppy drive bracket where the larger of the two fillers had been, and secured by four Torx T-10 screws (two on each side; the four bottom screws in the illustration above).
5. Install the smaller of the two fillers back into the bracket, atop the floppy drive. Secure it with two remaining screws, and the assembly should appear as follows.

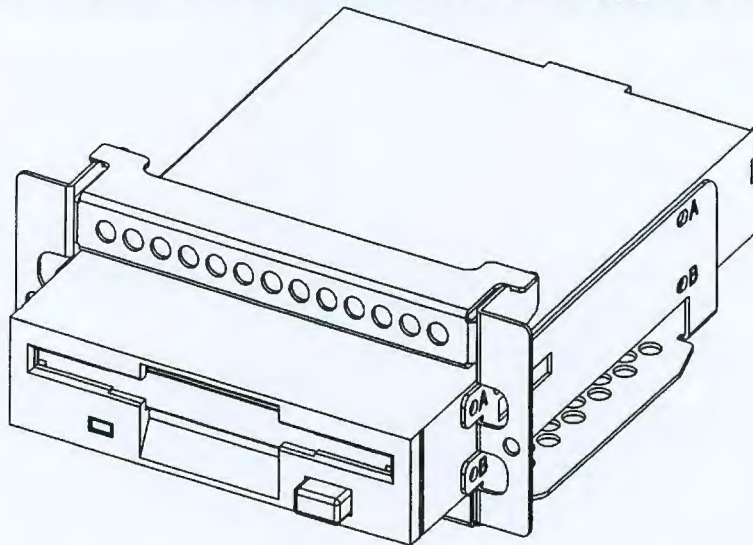
Changing Your Computer's Hardware Configuration

Floppy Drive Installation



Figure 2-23

Floppy Drive, Filler Installed into the DDS/Floppy Drive Bracket



6. Connect the power cable and the data (ribbon) cable to the floppy drive.
7. Slide the bracket, now containing the floppy drive, into the floppy drive bay. Observing—and manipulating, if necessary—from above, make sure the drive's ribbon cable folds neatly and compactly, and its ferrite bead (the elongated loop of iron-containing material) does not hinder the folding process.
8. Seat the bracket into the main chassis, again taking care not to pinch the cables as the floppy drive is being pushed into the bay. Insert the two screws through the front of the tray to secure the assembly to the main chassis.
9. Replace the floppy drive bay's EMI cover, and the computer's top cover and front panel.
10. After rebooting, use SAM (the System Administration Manager) to confirm that the `sioflop` and `siofdc` floppy drivers are in the kernel. If they are not, use SAM to add them to the kernel (after adding drivers to the kernel, rebooting is required in order to put them to use).

For information on normal usage, see the chapter "Using Your 3.5-Inch Floppy Disk Drive."

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Changing Your Computer's Hardware Configuration Floppy Drive Installation

Verifying the Floppy Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the `ioscan` command in a terminal window to see which devices are currently in use on your system. Note that you will have to be superuser or root to use the `ioscan` command.

Enter the following command at the prompt and press **Enter**:

```
/usr/sbin/ioscan -C floppy
```

After a few seconds, the `ioscan` utility lists all of the floppy disk devices it could find. The list appears similar to the following:

H/W Path	Class	Description
10/0/14/1/4.1	floppy	HP_PC_FDC_FLOPPY

If `ioscan` does not see any SCSI drives it returns the following message:

```
ioscan: No hardware found
```

If the system does not recognize the drive, see the Troubleshooting chapter for hints on how to determine the problem and solve it.

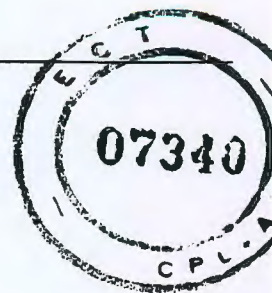
If the floppy driver is not configured, `ioscan` returns the following message:

```
ioscan: Device driver floppy is not in the kernel
```

Changing Your Computer's Hardware Configuration
Floppy Drive Installation



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3

Hot-Pluggable Hard Disk Drives

This chapter describes the hot-pluggable hard disk drives, and how to install and remove them.

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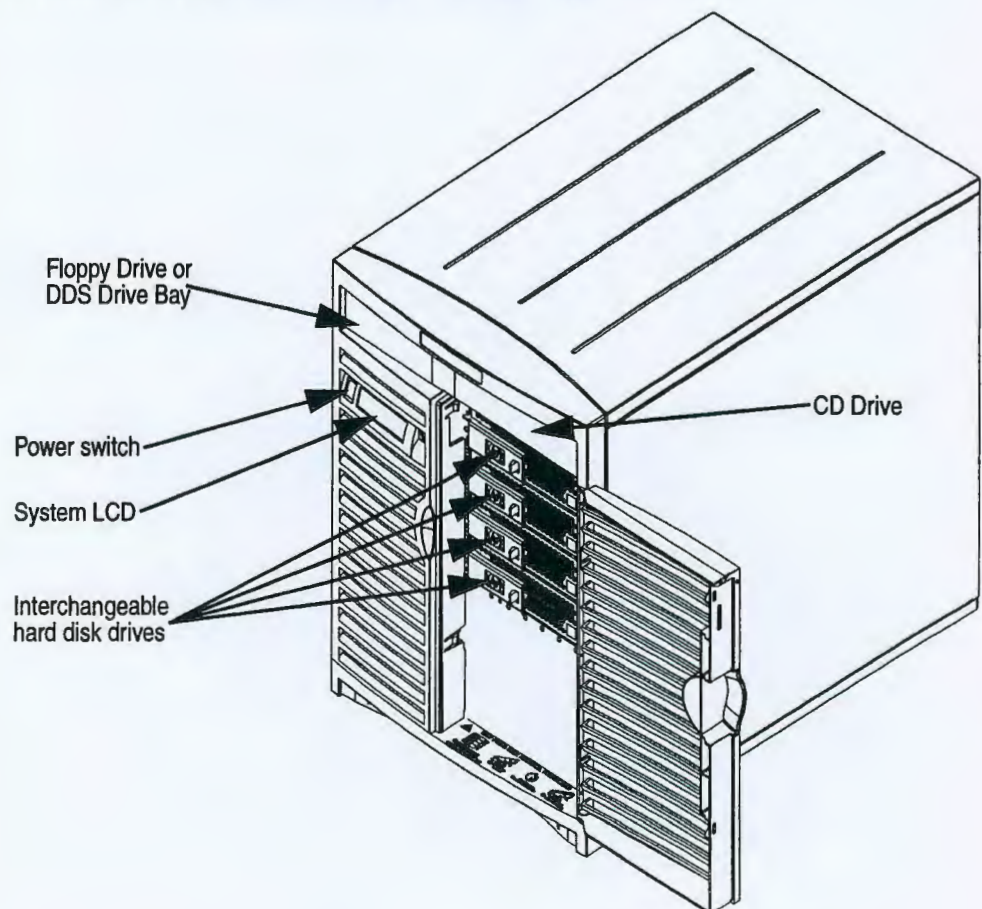


The Disk Drives

When reconfiguring your computer's internal hardware, always wear a properly grounded wrist strap to avoid damaging components.

Figure 3-1

System Unit with Front-Panel Door Open



The above illustration shows that the four hard disk drives are accessible simply by opening the door on the front panel (also known as the "bezel," pronounced "bezz-ull"); it is unnecessary to remove the entire panel. From a hardware point of view, these four disk drives are interchangeable: one drive will work as well as any other in any given slot. And, you need not set the SCSI bus addresses for these drives: their

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Hot-Pluggable Hard Disk Drives The Disk Drives

positions in the slots, not switches on the drives themselves, define the SCSI address for each drive. These addresses are labelled on the chassis. Finally, these hard drives are hot-pluggable: that is, you do not need to power down the entire machine to remove or insert a hard disk drive.

CAUTION

However, from a software point of view, there are two restrictions on the interchangeability of these drives:

- The boot device—that disk drive that contains the operating system—must be in drive bay 6, the uppermost bay.
- The boot device must not be removed while the system is running.

For details, see the section “The Hot-Plug Process” later in this chapter.

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Hot-Pluggable Hard Disk Drives The Disk Drives



Removing a Hard Disk Drive

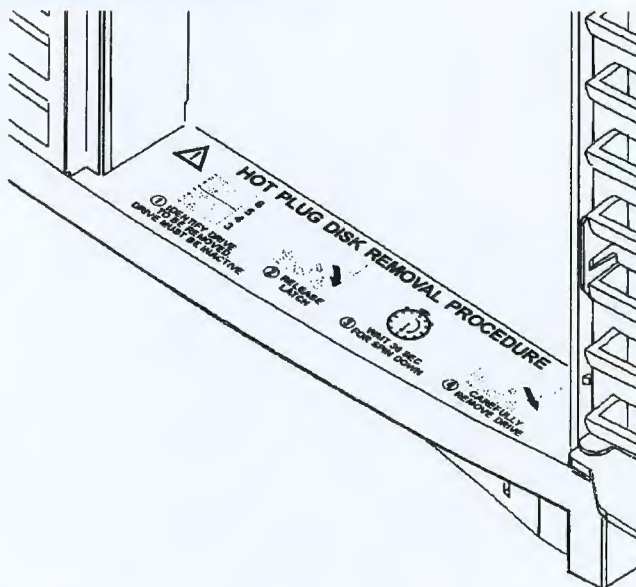
The instructions for removing a disk drive from the J5 Class and J7 Class are printed on the front panel, and are visible when the panel door is opened, as shown in the detail below.

CAUTION

If you are removing a hard disk drive while the system is running, you *must* perform the operations outlined in "The Hot-Plug Procedure" on page 81 *before* the physical removal of the drive, or data corruption is likely to occur.

Figure 3-2

Removing a Hard Disk Drive



The instructions are also printed here for your convenience:

1. Identify the drive to be removed, and make sure it is not currently in use. If the machine is to remain powered up, see the section "The Hot-Plug Procedure" on page 81 for the proper preparations.
2. Push the plastic retaining tab to the right, to release the drive-tray's handle. Pull the handle on the drive to unseat it from its power and data connections.

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Hot-Pluggable Hard Disk Drives The Disk Drives

3. Wait about 30 seconds for the drive to spin down (handling of a disk drive while it is still spinning can cause disk damage and/or loss of data).
4. Carefully pull the drive straight out.

If you also need to remove the disk drive from the disk-drive tray—to replace a faulty drive, for example—remove the four screws that secure the drive to the tray. These screws go through rubber grommets; leave the grommets in place as you remove the screws.

Putting a Disk Drive into its Tray

When you receive and unpack a new disk drive, it will not include the tray that is needed in order to insert it into your J5 Class and J7 Class computer; these trays are already in your computer's disk-drive bays. You will need to assemble the disk drive into its tray before you can slide the disk drive and tray assembly into the computer and expect its connections to be made correctly.

1. Unpack the new disk drive, avoiding both mechanical and electrical shocks; never let it drop onto the floor or onto a desk—always set it down gently—and observe ESD (electrostatic discharge) precautions, as described in the Preface of this document.

CAUTION

A drop of just a few inches onto a hard surface such as a desk or the floor can generate large accelerations (hundreds of gees), which may damage the device.

2. Unlock (if necessary) and open the door on the front of the computer. Remove the disk-drive tray from the slot into which you will insert the new drive. To remove the disk-drive tray, release the hook that locks the drive tray's release lever into place (see Figure 3-3, below), and pull the release lever toward you. The tray will come out.
3. If a disk drive was already in the tray (for example, if you're replacing a faulty drive), remove the four screws securing the drive to the tray, and pull the drive straight up out of the tray. If the tray never had a

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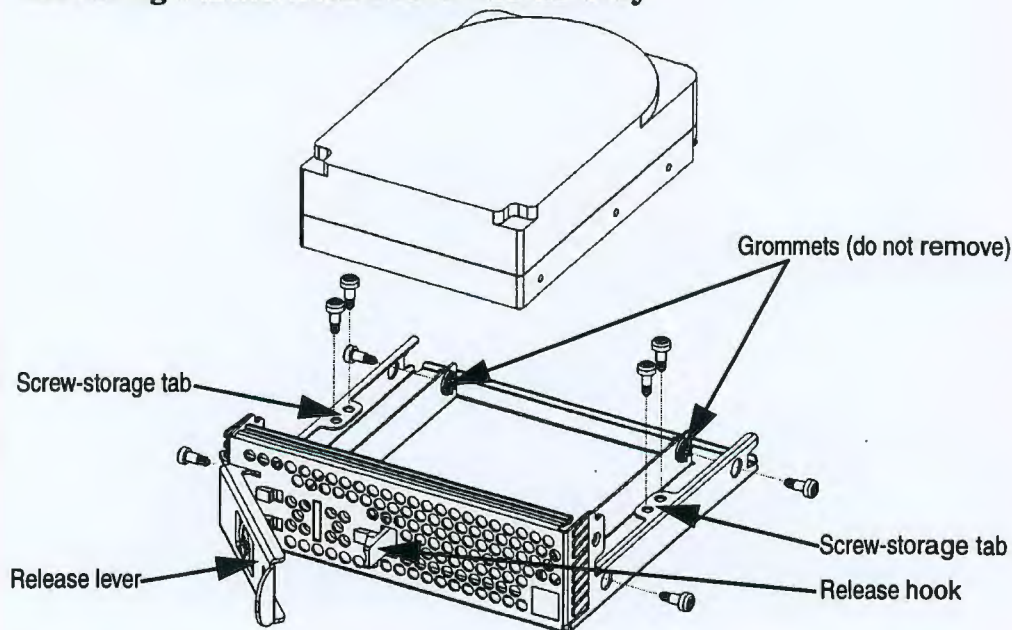


Hot-Pluggable Hard Disk Drives The Disk Drives

drive in it, the four screws required to secure the drive to the tray are stored in two tabs on the tray (see illustration below). Remove these four screws from the storage tabs.

Figure 3-3

Installing a Hard Disk Drive into its Tray



4. Insert these four screws through the rubber grommets and into the corresponding holes in the disk drive, and tighten them with a T15 Torx driver. There are four rubber grommets, although only two are visible in the illustration above.

NOTE

Do not remove the grommets; if they are removed, the drive would not be held securely in the tray and may be damaged as a result.

Once the disk drive is installed into the drive tray, the assembly can be inserted into the desired hard-drive slot.

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Inserting a Disk Drive

To insert a drive, the procedure is virtually identical to the “removing” steps above, except in the reverse order:

1. Carefully push the drive, which is already in its tray, straight into the desired slot, making sure the drive-tray's handle is pulled away from the front surface of the tray.
2. When the drive-tray's handle can engage the hooks on the left edge of the slot, push the right end of the handle flush to the front of the drive; this will seat the drive into its power and data connections. When the handle gets flush to the front of the tray, it should engage the retaining tab with a noticeable click.

NOTE

The drive tray will not go all the way into the slot if the handle has already been folded flat against the front of the tray. Push the drive tray into the slot firmly, and then push the handle flat against the front of the tray.



The Hot-Plug Process

The physical aspect of inserting and removing a disk drive, as discussed in the previous section, is straightforward. However, the operating system must be prepared for the insertion or removal of a disk, or unexpected and harmful effects may occur.

There is a significant difference between the terms "hot-pluggable" and "hot-swappable." Hot swapping happens at the device level; that is, a hot-swappable device manages insertion/removal on its own without assistance from HP-UX commands. *The disk drives in the J5xxx and J7xxx are not hot-swappable; they are merely hot-pluggable.* Thus, a manual software procedure must be done in order to safely remove or insert disk drives while the system is running.

The reason the hot-plug process exists is that you might need to replace a defective disk drive in a high-availability system while it is running.

Replacing a Failed Disk Drive

In the context of replacing a failed disk drive, the system administrator must determine which disk has failed. Depending on how the system was set up, the identity of the failed drive may or may not be obvious. This determination may be done in either of two ways:

- Tracking the error messages written by the LVM (Logical Volume Manager) to the system console and/or a log file. For information on LVM commands, see the man pages for `vgdisplay`, `vgchange`, `lvreduce`, `vgcfgrestore`, `lvlnboot`, `lvextend`, etc.
- If installed, run the diagnostic utility Support Tool Manager (`xstm`) to determine disk malfunction.

The removal of a defective disk drive from an active file system is supported through LVM commands if hot-pluggable disks have been configured into the HP-UX file system with LVM. To provide high availability, without impact to users, the disks must also be configured as mirrored disks. Disk-mirroring is accomplished through use of the MirrorDisk/UX software (HP part number B2491A); for information on classes, see <http://www.hp.com/education/courses/h6285s.html>.

No graphical user interface is currently offered through the System Administration Manager (SAM) for doing the required LVM commands,

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Hot-Pluggable Hard Disk Drives The Hot-Plug Process

because manipulation of the LVM requires specialized knowledge that only experienced system administrators are expected to have (see below for details).

Hot-Plug Example

The following example describes a particular system problem where the solution is to replace a hot-plug disk module.

Volume group `/dev/vg00` contains the three disks, with the logical volume configuration as shown:

Table 3-1

Example Configuration

Volume Description	Volume Description	Volume Description
Logical Volume 1	Logical Volume 3	Logical Volume 4
Logical Volume 2	Logical Volume 4	Logical Volume 5
Logical Volume 3	Logical Volume 5	

hardware address	10/0/12/0.0	10/0/13/0.0	10/0/14/0.0
device file (/dev/dsk/)	c2t6d0	c2t5d0	c2t4d0

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Hot-Pluggable Hard Disk Drives

The Hot-Plug Process

The system problem for this example is that the disk at hardware address 10/0/14/0.0 has a head crash, and as a result, is unusable. The steps described in the Hot-Plug Procedure section below outline a method that can be used to recover from this state.

1. All of the replaced disk's in-use extents must belong to mirrored logical volumes which were created with the "strict" option (-s); see the documentation for MirrorDisk/UX.
2. You must have an up-to-date configuration backup file. This is done automatically each time an LVM command changes LVM configuration.

The default backup file's path is:

`/etc/lvmconf/base_vg_name.conf`

3. The replacement disk must be the same product ID as the replaced one.

NOTE

HP often uses different manufacturers for disks having the same product number. The hot-plug manual procedure will not update the disk driver's internal information to that of the replaced disk.

The replacement disk will have the same capacity and block size as the defective disk because they have the same product number. The only field that could be incorrect is the string specifying the vendor's name. This will not affect the behavior of the LVM. If it is desired to update the manufacturers' name, the disk's volume group must be deactivated and reactivated. See the *HP-UX System Administration Tasks* manual for details.

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Hot-Pluggable Hard Disk Drives The Hot-Plug Process

The Hot-Plug Procedure

These are the steps required to properly hot-plug a disk drive:

Step 1

- Check if the LVM found the physical volume to be defective when the volume group was activated.
- The “vgchange -ey” would have printed the following message on the console:

WARNING:

VGCHANGE:WARNING: COULDN'T ATTACH TO THE VOLUME GROUP
PHYSICAL VOLUME “/DEV/DSK/cXtXdX”

THE PATH OF THE PHYSICAL VOLUME REFERS TO A DEVICE THAT
DOES NOT EXIST, OR IS NOT CONFIGURED INTO THE KERNEL.

- If the status of the “vgchange -v vg02” is unknown, you may check if this occurred by doing a vgdisplay command:

vgdisplay <VG name>

For our example:

vgdisplay /dev/vg00

- If the disk was defective at vgchange time, the following messages will be printed one or more times.

WARNING:

VGDISPLAY: WARNING: COULDN'T QUERY PHYSICAL VOLUME
“/DEV/DSK/cXtXdX”

THE SPECIFIED PATH DOES NOT CORRESPOND TO PHYSICAL VOLUME
ATTACHED TO THE VOLUME GROUP.

VGDISPLAY: WARNING: COULDN'T QUERY ALL OF THE PHYSICAL
VOLUMES

- If you see these messages, the disk was defective at the time the volume group was activated.

Otherwise, your disk became defective after the vgchange and you must continue with step 2 of this procedure.

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Hot-Pluggable Hard Disk Drives

The Hot-Plug Process

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Step 2

- Reduce any logical volumes that have mirror copies on the faulty disk so that they no longer mirror onto that disk (note the `-A n` option):

```
lvreduce -m 0 -A n <LV name> /dev/dsk/cXtXdX  
(for 1-way mirroring)
```

or

```
lvreduce -m 1 -A n <LV name> /dev/dsk/cXtXdX  
(for 2 way mirroring)
```

For our example:

```
lvreduce -m 0 -A n /dev/vg00/lvol4 /dev/dsk/c2t4d0  
lvreduce -m 0 -A n /dev/vg00/lvol5 /dev/dsk/c2t4d0
```

Step 3

- Replace the faulty disk. Refer to the instructions earlier in this chapter for details on how to replace the disk.
- Do an `ioscan` on the replaced disk to insure that it is accessible and also as a double check that it is a proper replacement.

For our example:

```
ioscan /dev/dsk/c2t4d
```

Step 4

- Restore the LVM configuration/headers onto the replaced disk from your backup of the LVM configuration:

```
vgcfgrestore -n <volume group name> /dev/rdisk/cxtxdx
```

where *x* is the logical unit number of the disk that has been replaced.

For our example:

```
vgcfgrestore -n /dev/vg00 /dev/rdisk/c2t4d0
```

Step 5

- Attach the new disk to the active volume group with the `vgchange` command.

```
vgchange -a y <volume_group_name>
```

For our example:

```
vgchange -a y /dev/vg00
```




Hot-Pluggable Hard Disk Drives The Hot-Plug Process

Step 6

- If this disk is not a mirror of a root disk, then skip this step.
- Run the `mkboot` command. For our example:
`mkboot /dev/rdisk/c2t4d0`
- Run `lvlnboot -R` to relink the replaced disk into the Boot Data Reserved Area of all the Physical Volumes in the Volume Group.
`lvlnboot -R`

Step 7

- Run `lvextend` to extend the mirrors back onto the replaced disk. This may take several minutes, as it will have to copy all the data from the original copy of the data to the mirrored extents. The logical volume(s) are still accessible to users' applications during this command.
`lvextend -m 1 <LV name> /dev/dsk/cxtxdx`
or
`lvextend -m 2 <LV name> /dev/dsk/cxtxdx (3-way mirroring)`

For our example:

```
lvextend -m 1 /dev/vg02/vg02 /dev/dsk/c3t5d0
lvextend -m 1 /dev/vg00/lvol4 /dev/dsk/c2t4d0
lvextend -m 1 /dev/vg00/lvol5 /dev/dsk/c2t4d0
```

At this stage, your system should be fully functioning; use `xstm` to verify.



Checking the SCSI IDs

To determine which SCSI IDs are currently in use on your system, use the `ioscan` command in a terminal window. Note that you will need to be superuser (`root`) in order to use the `ioscan` command.

Here are the steps necessary for determining SCSI IDs:

1. In a terminal, type the following at the shell prompt and press **Enter**:

```
/usr/sbin/ioscan -f
```

After a few moments, the `ioscan` utility lists all of the I/O devices it could find. The list appears similar (but likely not identical) to the following:

Class	I	H/W Path	Driver	S/W State	H/W Type	Description
bc	0		root	CLAIMED	BUS_NEXUS	
bc	1	10	ccio2	CLAIMED	BUS_NEXUS	I/O Adapter
ba	0	10/0	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
graphics	0	10/0/1/0	graph3	CLAIMED	INTERFACE	PCI(103c1005) -- 1
lan	0	10/0/12/0	btlan3	CLAIMED	INTERFACE	PCI(10110019)
audio	0	10/0/13/0	audio	CLAIMED	INTERFACE	Built-in Audio
ext_bus	0	10/0/14/0	side	CLAIMED	INTERFACE	IDE
target	0	10/0/14/0.0	tgt	CLAIMED	DEVICE	
disk	0	10/0/14/0.0.0	sdisk	CLAIMED	DEVICE	TEAC CD-532E-B CDROM
target	1	10/0/14/0.7	tgt	CLAIMED	DEVICE	
ctl	0	10/0/14/0.7.0	sctl	CLAIMED	DEVICE	Initiator
ba	1	10/0/14/1	superio	CLAIMED	BUS_NEXUS	PCI Core I/O Adapter
tty	0	10/0/14/1/1	asio0	CLAIMED	INTERFACE	Built-in RS-232C
tty	1	10/0/14/1/2	asio0	CLAIMED	INTERFACE	Built-in RS-232C
ext_bus	1	10/0/14/1/3	SCentIf	CLAIMED	INTERFACE	Built-in Parallel Interface
pc	0	10/0/14/1/4	siofdc	UNCLAIMED	UNKNOWN	Built-in Floppy Drive
usb	0	10/0/14/2	hcd	CLAIMED	INTERFACE	Built-in USB Interface
usbhub	0	10/0/14/2.1	hub	CLAIMED	DEVICE	USB Root Hub
usbhid	0	10/0/14/2.1.2	hid	CLAIMED	DEVICE	USB HID Kbd(0)
usbhid	1	10/0/14/2.1.3	hid	CLAIMED	DEVICE	USB HID Mouse(1)
ext_bus	2	10/0/15/0	c720	CLAIMED	INTERFACE	Ultra Narrow Single-Ended
target	2	10/0/15/0.7	tgt	CLAIMED	DEVICE	
ctl	1	10/0/15/0.7.0	sctl	CLAIMED	DEVICE	Initiator
ext_bus	3	10/0/15/1	c720	CLAIMED	INTERFACE	Ultra2 Wide LVD SCSI
target	3	10/0/15/1.6	tgt	CLAIMED	DEVICE	
disk	1	10/0/15/1.6.0	sdisk	CLAIMED	DEVICE	SEAGATE ST39102LC
target	4	10/0/15/1.7	tgt	CLAIMED	DEVICE	
ctl	2	10/0/15/1.7.0	sctl	CLAIMED	DEVICE	Initiator
ba	2	10/1	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ba	3	10/2	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ext_bus	4	10/2/3/0	c720	CLAIMED	INTERFACE	Ultra Wide SCSI
target	5	10/2/3/0.7	tgt	CLAIMED	DEVICE	
ctl	3	10/2/3/0.7.0	sctl	CLAIMED	DEVICE	Initiator

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ba	4	10/4	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ba	5	10/6	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
graphics	1	10/6/7/0	graph3	CLAIMED	INTERFACE	PCI(103c1008)
processor	0	32	processor	CLAIMED	PROCESSOR	Processor
processor	1	34	processor	CLAIMED	PROCESSOR	Processor
memory	0	49	memory	CLAIMED	MEMORY	Memory

- You can determine which SCSI IDs are currently in use by looking under the "H/W Path" heading. In the example display, the H/W Path for the built-in SCSI interface is 8/16/5. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing 8/16/5.2.0 tells you that there is a SCSI device (a disk) currently using ID 2 on the SCSI bus.

NOTE

Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what kind of device it is.

NOTE

The device file names depend on the naming conventions of your particular system.

To determine what device files are available for use with your disk drive, use the following procedure:

- In a terminal window, become root and type the following command at the prompt and press **Enter**:

```
sam
```

The System Administration Manager (SAM) window opens.

- Double click on the **Disks and File Systems** icon. The Disk and File Systems window opens.
- Click on a desired disk drive in the list of disk devices to select it.
- Select the **Actions** menu and then select the menu item **View More**

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Hot-Pluggable Hard Disk Drives
Checking the SCSI IDs



Information. A window opens with a list of information for the disk drive, including the device files.

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4

Using Your CD Drive

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Operating the CD Drive

This section describes how to use your CD drive.

NOTE

Be sure you read and understand the information on mounting and unmounting CDs before you begin using your CD drive.

This chapter provides an overview of the optional CD drive and media, and describes how to install and use the CD drive.

NOTE

Some procedures in this chapter require you to log in as root. If you cannot log in as root, contact your system administrator.

In this chapter, we use the terms "CD" and "CD drive" rather than "CD-ROM" and "CD-ROM drive" because the CD drives used in the J5xxx and the J7xxx can read the original CD-ROM disks, plus CD-R disks and the newer CD-RW disks (also called "CD-RAM" because they are rewritable). Thus, since not all CDs are ROMs any longer, that portion of the term has been dropped.

The CD drives also are multisession-capable.

Note that this chapter assumes you are running HP-UX 10.20 or 11.0.

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Using Your CD Drive Operating the CD Drive

The CD Drive

The CD drive is a random-access read-only mass storage device that uses removable CDs.

The drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except that you cannot write to the drive. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with an ATAPI interface.

Controls and Features

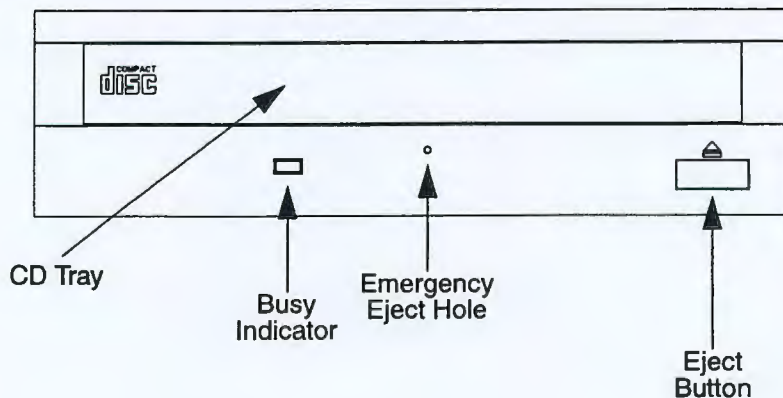
The figure below and the subsequent table illustrate and describe the operating controls and features of the CD drive.

NOTE

The Busy Indicator, Emergency Eject Hole, and Eject Button may not be in exactly the locations indicated in the illustration below.

Figure 4-1

The CD Drive's Controls



Using Your CD Drive
Operating the CD Drive



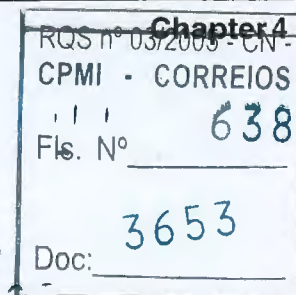
Table 4-1

CD Drive Controls and Indicators

Control/Feature	Purpose
Busy Indicator	The Busy Indicator blinks during various operations of the drive.
Eject Button	Press the Eject Button to open the disk tray to insert or remove a disk. When the drive is in use, you must press the eject button for more than one second to open the disk tray.
Emergency Eject Hole	By inserting the end of a straightened paperclip, you can open the disk tray when the workstation is powered down.
CD Tray	The CD Tray holds the CD. This CD drive does not use a CD caddy.

NOTE

There is neither a volume control nor a headphone jack on the front of the CD drive. To listen to an audio CD, use the headphone jack on the rear panel, and control the sound volume via software called "xmcd" (for details, see "Audio Control for the CD Drive" on page 93).





Using Your CD Drive Operating the CD Drive

CD Media

CDs are 120mm (4.7 in.) in diameter, and use one data surface with a capacity of approximately 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant linear speed (and hence a variable rotational speed). Originally, all CDs were CD-ROMs; i.e., you could access files and data stored on them, but could not write files or data to them; it was indeed a CD-ROM; i.e., Read-Only Memory. Since then, writable, and even rewritable CDs ("CD-RAMs") have come available; your workstation can read any of these types of CDs, but you cannot write CDs with your workstation without additional hardware and software.

CD data disks are identical to audio compact disks (CDs) except that they store computer data and information.

CAUTION

Handle CDs by the edges only. Always be sure a CD is either in the CD drive or its protective case or envelope when not in use. If you *must* set it down when it is not in its protective case or envelope, lay it down with the shiny side up (labelled side down); this will lessen the chance of scratch damage to the more-sensitive data side. Putting CDs back into their cases or envelopes will lessen the chance of exposing the disk surface to dust, fingerprints, and objects that could scratch the CD. These factors will reduce the reliability of the read head in the CD drive.

Caring for CDs

Observe the following guidelines to help prevent data loss and prolong the life of your CDs and drive:

- Use CDs in a clean environment to prevent dust particles from scratching disk surfaces.
- Store CDs in a cool, dry place to prevent moisture and heat damage.
- Don't try to clean the surface of a CD with cleaning solvents, as some cleaning solvents may damage the disk.

NOTE

You must mount a CD after loading it into the drive. Refer to "Mounting and Unmounting a CD" on page 96 for instructions on mounting a CD.

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Using Your CD Drive Operating the CD Drive



Loading and Unloading a CD in the disk Tray

This subsection describes how to load or unload a CD in the CD drive.

Loading a CD

This CD drive has an automatic loading/ejecting feature. To load a disk in the CD drive, follow these steps:

1. Check that the workstation is powered on.
2. To open the disk tray, press and release the Eject button on the CD drive.
3. Hold the disk by the edges with the label side up and place it in the disk tray.
4. To close the disk tray, push the Eject button again, as it also serves to close the tray.

Unloading a CD

You must unmount the disk before you eject it from the drive. Unmount the CD, using either the umount command or the instructions in "Unmounting a CD Using SAM" on page 98. Perform the following steps to unload a disk from the CD drive:

1. Press the eject button to eject the disk tray from the drive. If the drive is in use, you must press the eject button for more than one second to eject the disk tray.
2. Wait until the drive has fully ejected the disk tray. Remove the disk from the tray. Be careful to touch only the edges of the disk.
3. To close the disk tray, push the Eject button, as it also serves to close the tray

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Audio Control for the CD Drive

The audio controls for your CD drive are provided through the `xmcd` utility. This is a third-party CD player utility that runs on an X windows system using the Motif graphical user interface. The `xmcd` utility is not supported by Hewlett-Packard, and it is one of many audio controllers for CD drives available in the marketplace. Since the `xmcd` utility is not a part of HP-UX, you will need to download it off the web using your web browser and this URL:

<http://metalab.unc.edu/tkan/xmcd>

Installing the `xmcd` Utility

Here is the procedure for downloading the `xmcd` utility to your system:

1. Log in as root.
2. Type the previously given URL into the entry box on your web browser and press **Enter**.
3. Select the menu item labeled **Downloads** found on the `xmcd` homepage.
4. Scroll down to the section "Select your platform:" on the **Downloads** web page and select the item labeled "HP-UX 9.x and later (HP PA-RISC)."
5. Wait for a few seconds for the **Save As...** pop-up window to appear. In this window, click in the Selection entry box and type the following path and file name:

`/tmp/xmcdbin.tar.gz`

Next, click the **OK** button. This completes the download of `xmcd` to your system.

6. Follow the instructions in the section "Instructions to unpack `xmcd` binary" found on this **Binary Downloads** web page. This will complete the installation of the `xmcd` utility.

Using Your CD Drive
Audio Control for the CD Drive

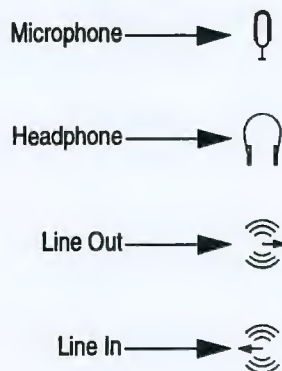


Using the xmcd Utility

The instructions in the section assume that you are using the HP-UX 10.20 or 11.0 operating system with the HP CDE interface. The `xmcd` utility must also be installed on your system. See the section "Installing the `xmcd` Utility" above.

To load and play an audio CD, follow the steps in this procedure.

1. Load the audio CD. See the section "Loading a CD" in this chapter.
2. Insert the headphone plug into the headphone jack located on the back of your system unit.



3. Double-click on the **Audio** icon located on your HP CDE control panel.



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Using Your CD Drive Audio Control for the CD Drive

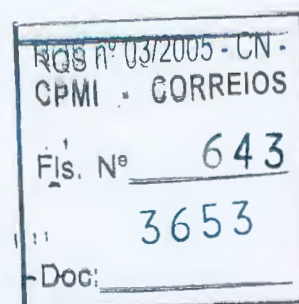
- Click on the **Monitoring** checkbox in the **Audio** window to select it. Then select the **Output** menu and click on the **Headphones** item in the menu list. In the **File** menu select the item **Close**, this will close the **Audio** window and save your settings.



- Start the utility by typing `xmcd` at the prompt and pressing **Enter**.



Now that you have your audio CD player started, put on your headphones and press the **Play** button to listen to the audio CD. Note that pressing the **Help** button will give you information on how to use the rest of the CD player's buttons.





Mounting and Unmounting a CD

In normal system use—i.e., other than installing the operating system or firmware—you must first mount a CD in order to access information on it (this applies to file system information only: if you wish to load a music CD, you would not need to mount the disk). Mounting a disk with file system information on it gives the disk a pathname that allows your workstation to communicate electronically with it. Similarly, you must unmount the CD before removing it from the drive.

CAUTION

To use a CD as a mounted file system, you must mount the CD every time you load it into the drive. You must also unmount the CD every time you unload it from the drive. Failure to mount or unmount a disk can cause a system error condition that can require rebooting the system.

To mount a CD as a file system, you can use the mount command (see the man page for mount for details). Or, you can use SAM (the System Administration Manager) if you prefer; the instructions for using SAM to mount and unmount CDs are in the next section.

If your workstation is running HP CDE, follow these instructions to mount and unmount a CD as a file system. If you're using something other than HP CDE, use the instructions for mounting and unmounting a CD that come with that product. For more information on configuring your CD drive, see the *System Administration Tasks* manual or online help.

The procedures in this chapter require you to log in as root. If you cannot log in as root, contact your system administrator.

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Using Your CD Drive Mounting and Unmounting a CD

Mounting a CD Using SAM

Use the following procedure to mount a CD:

- Log in as root. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.
- Load the CD into the disk tray and push the Eject button, or gently push the tray a short distance into the drive; the drive will then close the rest of the way by itself.
- In a terminal window, enter the following command:

```
sam Enter
```
- The System Administration Manager window opens, showing several icons, one of which looks like this:



- Double-click on the Disks and File Systems icon, and the **Disks and File Systems** window appears, showing several more icons, one of which looks like this:



- Double-click the File Systems icon, and a window containing a list of mounted file systems appears. The following screen message appears:

Scanning the system's hardware...

The **File Systems** window opens, containing a list of drives currently mounted on this system.

- From the **Actions** menu, select **Add a Local File System**, and submenu **Not Using Logical Volume Manager**.

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Using Your CD Drive

Mounting and Unmounting a CD

- The **Select a Disk to Add...** window opens with a list of unused mass-storage devices. Highlight the CD device containing the CD you want to mount.
- Click on **OK**.
- The **Add CD-ROM Disk** window opens. Enter the desired mount point (the directory under which the CD's contents will appear in your entire file system) and click on **OK**. A typical CD mount point is `/dev/CD`, although you can mount it wherever you want. If the directory you specify does not yet exist, SAM will create it for you.
- The following screen message appears:

Mounting file system...

Now you can access the CD as you would any other mounted file system.

Unmounting a CD Using SAM

Use the following procedure to unmount a CD:

NOTE

Before you unmount a CD, make sure that your working directory (the directory you're currently "in") is not set to any directory on the CD—this goes for all shell windows. If you attempt to unmount a file system when one or more working directories are set somewhere in the file system you're trying to unmount, you'll get an error message something like this:

cannot unmount /dev/CD: device busy

To avoid this error message, simply `cd` to some directory that is known to *not* be in the file system you want to unmount; for example, the root directory `/` or your home directory. Again, make sure you do this for *all* shell windows.

1. Log in as root. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.
2. In a terminal window, enter the following command:

`sam Return`

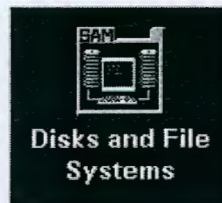
The System Administration Manager window opens, showing several

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Using Your CD Drive Mounting and Unmounting a CD

icons, one of which looks like this:



3. Double-click on **Disks and File Systems** -. The Disks and File Systems window opens, showing several more icons, one of which look like this:



4. Double-click on **File Systems**. A window appears, and at the bottom, the following screen message appears briefly:

Scanning the system's hardware...

The File Systems window opens, containing a list of drives currently configured on this system.

5. Highlight the CD you want to unmount (it has a Type of CDFS) and click on **Remove** from the **Actions** menu. A window with a message, similar to the following, appears:

Removing the file system, /dev/CD, means all files in the file system will no longer be available. Do you want to continue and remove this file system?

Note that the mount point of your CD may be different than the /dev/CD in the example above.

6. Click on **Yes**. After a few seconds, the CD entry in the list vanishes, and CD file system is unmounted.
7. Press the eject button on the CD drive and remove the CD from the disk tray.

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Using Your Digital Data Storage (DDS) Tape Drive

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Using Your Digital Data Storage (DDS) Tape Drive

This chapter describes how to use the optional Digital Data Storage (DDS) tape drive. It also describes how to maintain and care for the drive.

CAUTION

Use only data cassettes labeled DDS (Digital Data Storage). Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

Note that there is physically not room enough to have both a DDS tape drive and a floppy disk drive in the workstation simultaneously.

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Using Your Digital Data Storage (DDS) Tape Drive DDS Tape Drive and Cassette Descriptions

DDS Tape Drive and Cassette Descriptions

This section describes basic information needed for using your DDS tape drive and data cassettes.

The DDS Drive

The DDS-3 tape drive has a 3.5-inch form factor and a narrow single-ended SCSI interface. It incorporates data-compression capability and is a high-capacity, high-transfer-rate device for data storage on tape. With compression, a DDS-3 drive can store up to 24GB of data on a 125-meter tape.

Storage Capacities

The maximum storage capacities of different DDS tapes with and without data compression are shown in the following tables;

Table 5-1 DDS3 Tape Drive Capacities Without Data Compression

Tape Length	DDS3 Capacity
60 meters	1.3 GB
90 meters	2.0 GB
120 meters	4.0 GB
125 meters	12.0GB

DDS3 drives will write DDS1 on 60m and 90m tapes, DDS2 on 120m tapes and DDS3 format on 125m tapes. DDS3 format has the same track density as DDS2 but triples the linear bit density. This yields the non-intuitive native capacity (before compression) of 12Gbytes on a 125m tape.

Using Your Digital Data Storage (DDS) Tape Drive DDS Tape Drive and Cassette Descriptions



With compression, the capacities double:

Table 5-2 **DDS3 Tape Drive Capacities With Data Compression**

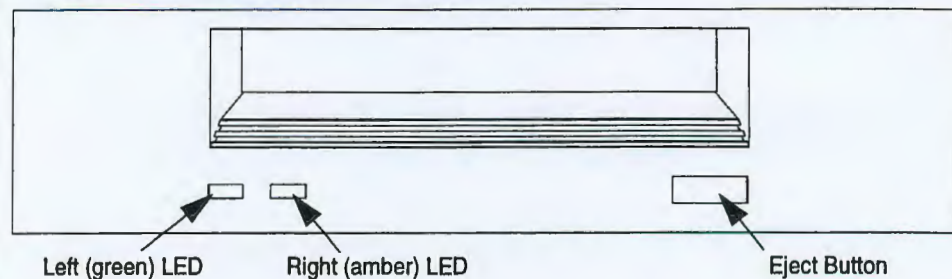
Tape Length	DDS3 Tape Drive
60 meters	2.6 GB
90 meters	4.0 GB
120 meters	8.0 GB
125 meters	24.0 GB

Controls and Indicators

The figures below show the LEDs and eject button of the DDS-format tape drives.

Figure 5-1

DDS-3 Drive Controls and Indicators



LEDs

This section describes the LED codes that are displayed.

The two LEDs on the front panels of the DDS drives indicate different activities or problems that occur.

The following illustration shows the LED codes and their meanings for the DDS3 drive.



Using Your Digital Data Storage (DDS) Tape Drive DDS Tape Drive and Cassette Descriptions

Figure 5-2

DDS3 Tape Drive LED Display Codes

Left (green) LED	Right (amber) LED	
		No power
		Cartridge loaded; no activity
		Cartridge loaded; activity
		Loading/unloading/ejecting/power-on
		Self-test failed
		No cartridge; caution (cleaning required)
		Cartridge loaded; caution (cleaning required)
		Cartridge loaded; drive active; caution (cleaning required)
		Cartridge loading/unloading; caution (cleaning required)
		CD Mode "warbling"

Legend:

Off

On



Flashing (4Hz)



Flashing (2Hz)

LED Warning Conditions

The following sections describe actions to take if the LEDs indicate a warning condition.

Self-Test Failure If the LEDs display the self-test (failure) signal, a fault was diagnosed during the self tests. Note the pattern of the pulses and contact your local service representative.

Caution Hewlett-Packard DDS drives continually monitor the number of errors they have to correct when reading and writing to a tape to determine tape wear and tape-head cleanliness. If excessive tape wear or dirty tape heads are suspected, the drive warns you by displaying the Caution signal on the LED indicators.

Using Your Digital Data Storage (DDS) Tape Drive DDS Tape Drive and Cassette Descriptions



If the LED indicators on your DDS-format drive display the Caution condition, follow this procedure:

- Check the system console for any tape-error messages. A hard error during a read or write operation may have occurred.
- Clean the heads with a cleaning cassette (HP92283K) as described in the next section, "Cleaning the Tape Heads".
- Repeat the operation you performed when a Caution signal displayed. If a Caution signal still displays, the data cassette should be replaced.
- If you are performing a backup from disk to tape, discard the data cassette and back up your files using a new data cassette.
- If you are performing a restore from tape to disk, complete the restore, back up the files to a new data cassette, then discard the old data cassette.

Data Cassettes

Media Life

HP DDS data cassettes are currently specified to 2000 passes over any part of the tape under optimal environmental conditions (50% relative humidity, 22 degrees C). During a tape operation, any one area of the tape may have multiple passes over the heads. This translates into approximately 200 to 300 backups or restores.

Under certain conditions, the life of your data cassette is less. Replace your data cassettes after 100 backups or restores if your operating conditions meet any of the following criteria:

- The relative humidity in your operating environment is consistently less than 50%.
- You know that the backup software you are using makes multiple passes over sections of the tape during backups or restores.
- You notice that when you do backups and restores the tape stops and starts frequently.

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Using Your Digital Data Storage (DDS) Tape Drive DDS Tape Drive and Cassette Descriptions

Cleaning the Tape Heads

Clean the heads of your tape drive after every 25 hours of tape drive use or if a Caution signal is displayed on the LED.

NOTE

Only use HP Cleaning Cassettes (HP92283K) to clean the tape heads. Do not use swabs or other means of cleaning the tape heads.

Follow this procedure to clean the tape heads:

1. Insert the cleaning cassette into the drive. The tape automatically loads the cassette and cleans the heads. At the end of the cleaning cycle, the drive ejects the cassette.
2. Write the current date on the label on the cleaning cassette so that you know how many times you have used it. Discard the cleaning cassette after you have used it 25 times.

Media Restrictions

If you interchange media between other DDS-format tape drives, note that data cassettes with compressed data can only be read by tape drives that have data-compression capabilities. This includes data cassettes that contain both compressed and noncompressed data.

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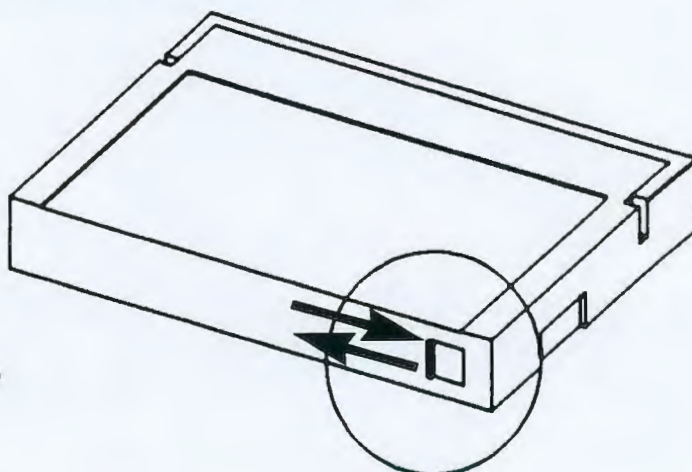
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DDS Tape Drive and Cassette Descriptions



Setting the Write-Protect Tab on a Data Cassette

You can only store or change information on a data cassette when the write-protect tab is in the write position. So, before trying to write to the data cassette, make sure that the write-protect tab is in the Write position, as shown below.

Setting the Write-Protect Tab on a DDS Tape



Push tab right (close the hole) to *write*.

Push tab left (open the hole) to *write-protect*.

To protect information on a data cassette from being overwritten, set the write-protect tab to the write-protect position, as shown above.

NOTE

The write-protect tab must be in the write position for transferring data to a cassette.

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Using Your Digital Data Storage (DDS) Tape Drive Operating the DDS Tape Drive

Operating the DDS Tape Drive

Loading and Unloading a Data Cassette

Follow these steps to load and unload a data cassette from the DDS tape drive:

- Insert the data cassette into the drive, the hinged door first, and the write-protect tab visible on the right side of the trailing edge.
- Push the data cassette about three quarters of the way into the drive. The drive automatically pulls the data cassette the rest of the way in. When the LEDs on the front of the drive stop flashing, the drive has loaded the data cassette.
- To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 5-1 on page 104. The LEDs on the drive flash on and off, and ten to twenty seconds later, the data cassette slides partway out of the drive. Remove the cassette from the drive.

Using Device Files

Device files are special files that tell your system which system hardware pathway to use when communicating with a specific device, and what kind of device it is. To determine what device files are available for use with your tape drive, use the following procedure:

1. In a terminal window, become root and enter the following command:
`sam Return`
The System Administration Manager window opens.
2. Double-click on **Peripheral Devices** ->. The Peripheral Devices window opens.
3. Double-click on **Tape Drives** ->. The Tape Drives window opens.
4. In the list of tape drives, click on the desired tape drive to select it.
5. From the **Actions** menu, click on **Show Device Files**. A window opens with a list of the device files for the selected tape drive with an explanation of each one.

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Using Your Digital Data Storage (DDS) Tape Drive Operating the DDS Tape Drive



Archiving Data

This section describes how to transfer data to and from a DDS-format data cassette (saving and restoring) using the HP-UX `tar` command and your tape drive's device file.

The `tar` command allows you to save files to a data cassette, restore files from a data cassette to your system, or list the files on your data cassette.

Writing to a Data Cassette

Use the following instructions to save files to a data cassette:

1. Check that the write-protect tab on the data cassette is in the write position.
2. Load the data cassette into the tape drive.
3. In a terminal window, enter the following command line to write to the tape:

```
tar -cvf /dev/rmt/<devicefile> <pathname>
```

where *<devicefile>* is one of the device files listed from `ioscan` and *<pathname>* is the pathname of the file or directory containing files that you want to write to the tape. To use the data-compression mode, use one of the device file names that `sa` listed as supporting compression.

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Using Your Digital Data Storage (DDS) Tape Drive Operating the DDS Tape Drive

Restoring Files from a Data Cassette to Your System

Use the following instructions to restore files from a data cassette to your system:

1. Load the data cassette into the tape drive.
2. In a terminal window, use `cd` to change to the directory in which you want the restored files to reside. (This only works if the tape archive was created using relative pathnames; if absolute pathnames were used, the files from the tape will be placed back into their original locations.)
3. Enter the following command line to restore data:

```
tar -xvf /dev/rmt/<devicefile> <pathname>
```

where *<devicefile>* is one of the device files listed from *sam* and *<pathname>* is the pathname of the file or directory containing files that you want to restore from the tape. If *<pathname>* is not specified, everything on the data cassette is restored. If the tape was made using data compression, use one of the device file names that *sam* listed as supporting compression.

Listing the Files on a Data Cassette

Use the following instructions to list the files on a data cassette:

1. Load the data cassette into the tape drive.
2. In a terminal window, enter the following command line to receive a file listing of the data cassette:

```
tar -tvf /dev/rmt/<devicefile>
```

where *<devicefile>* is one of the device files listed from *sam*. If the tape was made with data compression, use one of the device file names that *sam* listed as supporting compression.

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Further Command Information

For additional information on using tar and a complete list of the command arguments, refer to the tar man page by typing the following:

```
man tar Return
```

The man utility looks up man pages on the system.

You may also communicate with the tape drive with the cpio, ftio, mt, and fbackup commands. For more information on these commands, enter the following in a terminal window:

```
man command
```

Ordering Information

To order Hewlett-Packard data cassettes and cleaning cassettes for use in your DDS tape drive, use the following order numbers:

1. HP 92283A: Box of five 60-meter DDS data cassettes
2. HP 92283B: Box of five 90-meter DDS data cassettes
3. HP 92300A: Box of five 120-meter DDS data cassettes
(not supported on the DDS-DC drives)
4. HP C1517A: Box of five 125-meter DDS3 data cassettes
5. HP 92283K: Package of two head-cleaning cassettes
6. HP 92283L: Lockable storage box for 12 cassettes

CAUTION

Use only data cassettes labeled as DDS or DDS3 (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.



6

Using Your 3.5-Inch Floppy Disk Drive

This chapter describes how to perform tasks that allow you to archive to or transfer data from the 3.5-inch floppy disk drive.

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Using Your 3.5-Inch Floppy Disk Drive

The instructions in this chapter assume you are using the HP-UX 10.20 or 11.0 operating system, and the HP CDE interface.

NOTE

When examples of user input are given in this chapter, enter them at the command-line prompt in an HP CDE terminal window or HP-UX shell.

Some procedures in this chapter require you to log in as superuser (root). If you cannot log in as root, contact your system administrator.

To install your floppy disk drive into your computer, the procedure is very similar to that of installing a DDS tape drive (see Chapter 5, "Using Your Digital Data Storage (DDS) Tape Drive," on page 101.

Note that there is physically not room enough to have both a floppy disk drive and a DDS tape drive in the machine simultaneously.

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Using the Floppy Diskette

This section describes basic information needed for using your floppy diskettes.

Setting the Write-Protect Tab on a Diskette

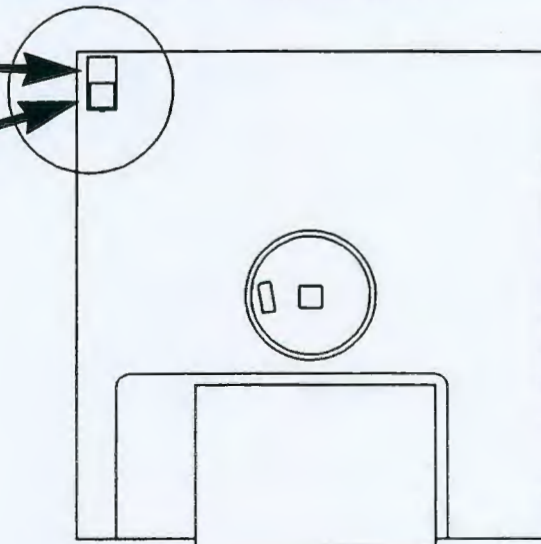
You can only store or change information on a diskette when the write-protect tab is in the write position. So, before trying to write to the diskette, make sure that the write-protect tab is in the write position, as shown below.

Figure 6-1

Setting the Write-Protect Tab on a Floppy Diskette

Push tab up to *lock*, or
write-protect, the disk.

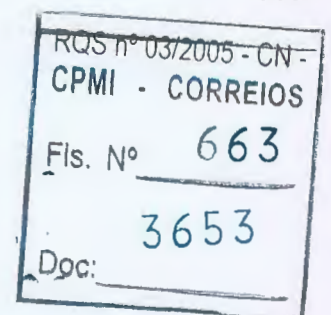
Push tab down to *unlock*, or
write-enable, the disk.



To protect files on a diskette from being overwritten, set the write-protect tab to the write-protect position.

NOTE

The write-protect tab must be in the write position for formatting a new diskette and transferring data to a diskette.





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Using Your 3.5-Inch Floppy Disk Drive
Using the Floppy Diskette



Inserting and Removing a Diskette

Follow these steps to insert and remove a diskette from the floppy disk drive.

1. Insert the diskette into the drive, sliding-door edge first, label side up.
2. Push the diskette into the floppy drive until it clicks into place.
3. Remove the diskette by pressing the eject button and taking it out of the drive.

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Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

Operating the Floppy Drive

This section describes how to perform tasks with your 3.5-inch floppy disk drive.

Formatting a New Diskette

Unless a floppy disk is preformatted for use on PCs, you must always format a new floppy diskette with the `mediainit` utility before using the diskette. To format a new floppy diskette, follow these steps:

1. Log in as root.
2. Make sure that the write-protect tab on the floppy diskette is in the write position, as shown in the illustration two pages back.
3. Insert the diskette into the floppy disk drive.
4. Type the following at the prompt and press **Enter**:

```
mediainit -i 2 <devicefile>
```

where `<devicefile>` is the device file as listed by SAM (double-click the **Peripheral Devices** icon, double-click **Device List** icon, single-click the CD drive from the list, and then select the **Actions** menu item **Show Device Files**).

Transferring Data To and From a Floppy Diskette

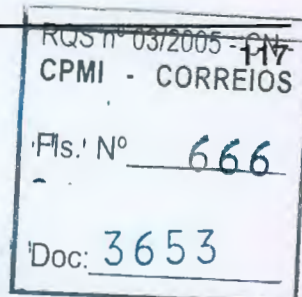
This section describes how to transfer data to and from your floppy diskette (saving and restoring) using the HP-UX `tar` command with your floppy drive's device file.

You need to set the write-protect tab to the write position to transfer data to the diskette. The write-protect tab can be in either position when restoring data from a diskette or listing the files on a diskette.

Saving Files to a Floppy Diskette

Use the following instructions to save files to a floppy diskette:

1. Check the write-protect tab on the floppy diskette to ensure that it is in the write position.



Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive



2. Load the formatted floppy diskette into the disk drive.
3. Type the following in a terminal window at the prompt and press **Enter**:

```
tar -cvf <devicefile> <pathname>
```

where *<devicefile>* is the device file as listed by SAM and *<pathname>* is the path name of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

Use the following instructions to restore files from a floppy diskette to your system:

1. Load the floppy diskette into the disk drive.
2. Type the following in a terminal window at the prompt and press **Enter**:

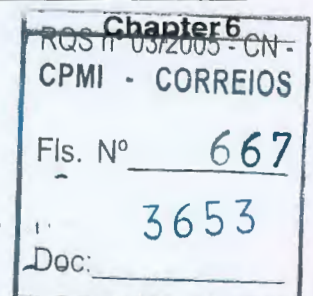
```
cd <directory_path>
```

This command changes you to the directory in which you want the files to reside.

3. Enter the following command at the prompt and press **Enter**:

```
tar -xvf <devicefile> <pathname>
```

where *<devicefile>* is the device file as listed in SAM and *<pathname>* is the path name of the file or directory containing files that you want to restore from the diskette. If you do not specify *<pathname>*, everything on the floppy diskette is restored.





Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

Listing the Files on a Floppy Diskette

Use the following instructions to list the files on a floppy diskette:

1. Load the floppy diskette into the disk drive.
2. Enter the following in a terminal window at the prompt and press **Enter**:

```
tar -tvf <devicefile>
```

where <devicefile> is the device file as listed by SAM. Note that this command will list all files on the floppy diskette.

For More Information

For more information on using `tar` and a complete list of the command arguments, refer to the `tar` man page by typing the following in a terminal window at the prompt and pressing **Enter**:

```
man tar
```

You can mount the floppy drive as a file system using either the `mount` command or the SAM utility. Be sure to unmount the floppy's file system before physically removing the floppy from the drive. For more information about how to mount and unmount the floppy drive, see the man page for `mount`, or the manual *Using HP-UX*.

For more information on copying data to or from your system to other media, including your floppy diskette, refer to the `cpio` man page by typing the following in a terminal window at the prompt and pressing **Enter**:

```
man cpio
```

For more information on copying to or from DOS files, refer to the `doscp` man page by typing the following in a terminal window at the prompt and pressing **Enter**:

```
man doscp
```

For more information on listing DOS directories, refer to the `dosls` man page by typing the following in a terminal window at the prompt and pressing **Enter**:

```
man dosls
```

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Using Your 3.5-Inch Floppy Disk Drive Operating the Floppy Drive

For more information on using you floppy disk drive and floppy diskettes, refer to the floppy man page by typing the following in a terminal window at the prompt and pressing **Enter**:

```
man floppy
```

For more information on using the mediainit command, refer to the mediainit man page by typing the following in a terminal window at the prompt and press **Enter**:

```
man mediainit
```

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your computer, you need to reconfigure the HP-UX kernel to add the floppy disk driver. Use the SAM utility to add the sioflop and siofdc flexible disk drivers and build a new HP-UX kernel.

For more information about how to reconfigure the kernel using SAM, see the following manuals:

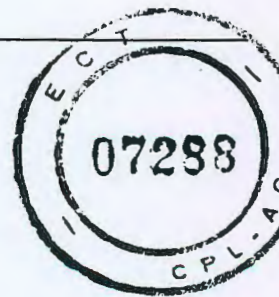
- *Managing Systems and Workgroups*
- *Using HP-UX*

Ordering Information

To order Hewlett-Packard micro flexible diskettes for use in your 3.5-inch floppy disk drive, use the following order number:

HP-92192X High-Density Micro Flexible Disks (1.44MB Formatted Capacity) – box of ten diskettes.

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7

SCSI Connections

This chapter provides information about connecting Small Computer System Interface (SCSI) devices to an HP VISUALIZE J5 Class and J7 Class computer.

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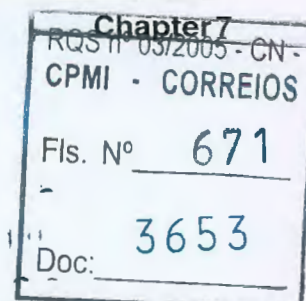
SCSI Connections



The instructions in this chapter assume you are using HP-UX 10.20 or 11.0 operating system with HP CDE.

NOTE

When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. Note that these terminators were shipped with your system.





SCSI Bus Differences

A Small Computer Systems Interface (SCSI) bus is an IEEE standard bus for connecting your workstation to internal and external devices (SCSI devices) running at different speeds. There maybe one device connected to the external SCSI port or several SCSI devices may be daisy chained together and connected to the external SCSI port. Examples of these SCSI devices are 4mm DDS-format tape drives and hard disk drives.

There are two types of SCSI buses available with this workstation—an Ultra Narrow Single-Ended SCSI bus (NSE SCSI), and an Ultra2 Wide Low-Voltage Differential SCSI bus (LVD SCSI). The following table shows the specification differences between these SCSI buses.

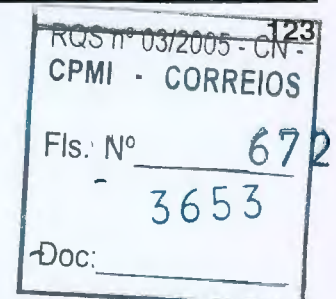
CAUTION

Currently Hewlett-Packard does not support mixing Ultra Narrow Single-Ended and Ultra2 Wide Low-Voltage Differential devices on any one bus type.

Table 7-1 SCSI Bus Differences

Type	Data Transfer Rate	Data Bus Width	Available SCSI Addresses ¹	Maximum Cable Length	Device Physical Location ²
Ultra Narrow Single-Ended	Up to 20 Mbytes/sec	8 bits	0 through 6	3.0 meters (9.84 feet)	Internal and external
Ultra2 Wide Low-Voltage Differential	Up to 80 Mbytes/sec	16 bits	0 through 6; 8 through 15	12 meters (39.37 feet)	Internal and external

1. Address 7 is reserved for host controller use on all buses.
2. This information is specific to the HP Visualize B1000/C3000 and J5 Class and J7 Class computers.





SCSI Restrictions

This section describes the SCSI restrictions that apply to your workstation in the following areas:

- Cables
- Terminators
- Number of Devices Per SCSI Bus
- Considerations for Selecting SCSI Devices

Note that the narrow single-ended SCSI bus supports only 7 devices because address 7 is reserved by the system. The Ultra2 Wide Low-Voltage Differential SCSI bus supports only 15 devices because address 7 is reserved by the system.

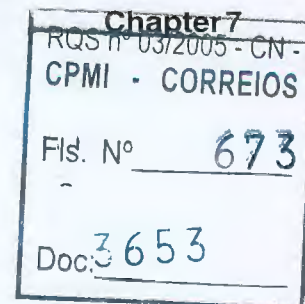
Cables

Only SCSI cables approved by HP can be used to connect your workstation to any SCSI devices. HP offers the following SCSI cables for Ultra Narrow Single-Ended SCSI devices:

Table 7-2

Ultra Narrow Single-Ended SCSI Cables

Cable Number	Cable Length	Description
C2955A	0.5m	50-pin HDTS (High-Density Thumbscrew) to 50-pin HDTS
C2908A	1.0m	
C2956A	1.5m	
C2957A	2.0m	





SCSI Connections SCSI Restrictions

HP offers the following SCSI cables for connecting externally connected devices to the system Ultra2 Wide Low-Voltage Differential port:

Table 7-3

Ultra2 Wide Low-Voltage Differential SCSI Cables

Cable Number	Cable Length	Description
C2978A	0.5m	68-pin HDTS (High-Density Thumbscrew) to 68-pin HDTS
C2911B	1.0m	
C2979A	1.5m	
C2924B	2.5m	
C2361A	1.0m	68-pin VHDCI (Very High Density Cabled Interconnect) to 68-pin HDTS
C2362A	2.5m	
C2365A	5.0m	
C2363A	10.0m	

CAUTION

SCSI cables approved by HP are designed to function within the SCSI tolerances for HP devices. Use of other cables can result in significant problems with system operation.

Always use the shortest possible cable(s) for your configuration.

NOTE

See "SCSI Bus Length Constraints" later in this chapter to determine the total length of your cables.

SCSI Connections SCSI Restrictions



Terminators

The terminators for Ultra2 Wide Low-Voltage Differential SCSI (LVD SCSI) and Ultra Narrow Single-Ended SCSI (NSE SCSI) are different. The NSE SCSI terminator has 50 pins and will fit on an NSE SCSI connector. The LVD SCSI terminator has 68 pins and will fit on a LVD SCSI connector. Note that these SCSI terminators were shipped with your system.

CAUTION

It is necessary to put a terminator on unused SCSI connectors on the back panel of the system; *these terminators are shipped with your computer*. However, if SCSI devices are attached to the bus via these connectors, the external device connected to the SCSI bus must be terminated with a SCSI terminator. If you do not already have the SCSI terminators, you must order terminator A1658-63012 (for the 50-pin terminator; NSE SCSI) or A4986-63008 (for the 68-pin terminator; LVD SCSI) from Hewlett-Packard.

Number of Devices Per SCSI Bus

The number of SCSI devices per bus is limited (see Table 7-1). Before adding another SCSI device, determine if the system can support the additional device.

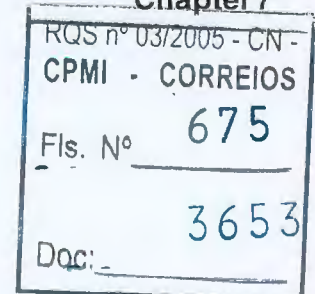
This workstation offers the following types of SCSI bus, each with its own configuration constraints:

- Ultra Narrow Single-Ended SCSI bus
- Ultra2 Wide Low-Voltage Differential SCSI bus

Considerations for Selecting SCSI Devices

SCSI devices supported by the Hewlett-Packard Company for the Ultra Narrow Single-Ended (NSE) and Ultra2 Wide Low-Voltage Differential (LVD) SCSI buses have been qualified as SCSI devices which meet NSE and LVD specifications. Contact your local HP sales representative for a current list of SCSI devices supported by HP for use on the Ultra Narrow Single-Ended and Ultra2 Wide Low-Voltage Differential SCSI buses.

If devices other than those supported by HP are connected to the Ultra





SCSI Connections SCSI Restrictions

Narrow Single-Ended or the Ultra2 Wide Low-Voltage Differential SCSI bus on this system, they must adhere to cabling, termination and bus length restrictions discussed in this chapter to assure functionality of the SCSI busses.

Because Ultra2 Wide Low-Voltage Differential SCSI is a relatively new technology, there can be products which are advertised as LVD compliant, but may not meet LVD specifications. Therefore, additional caution must be exercised when choosing Ultra2 Wide Low-Voltage Differential SCSI devices other than those supported by Hewlett-Packard Company to connect to the Ultra2 Wide Low-Voltage Differential SCSI bus on this system. For example, the cabling inside one of these devices in question may not have a differential impedance between 110 and 135 ohms and it may be constructed in a way such that the device has considerable crosstalk on critical signals, such as Reset, Select and Busy. Failure to strictly adhere to the Ultra2 Wide Low-Voltage Differential SCSI bus specifications will impact the performance of the LVD bus. The Ultra2 Wide Low-Voltage Differential interface is a much higher performance SCSI bus than previous SCSI busses and is more sensitive to adherence to the electrical specifications.

Low-voltage differential signaling specifications are described in the SCSI Parallel Interface-2 (SPI-2) document and in the Electrical Characteristics of Low Voltage Differential Signaling (LVDS) Interface Circuits TIA/EIA-644 document. Both of these documents can be obtained from:

Global Engineering Documents
15 Inverness Way East
Englewood, CO 80112-5704
800-854-7179 or 303-397-7956

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SCSI Bus Length Constraints

This section discusses SCSI bus length constraints for the Ultra Narrow Single-Ended SCSI bus and the Ultra2 Wide Low-Voltage Differential SCSI bus.

Ultra Narrow Single-Ended SCSI Bus Length

The maximum cable length for an Ultra Narrow Single-Ended SCSI bus is 3 meters. The HP VISUALIZE J5 Class and J7 Class system uses 0.15 meters of this maximum cable length.

NOTE

When calculating the total Ultra Narrow Single-Ended SCSI cable/bus/trace length used externally, remember to account for cables connecting external devices together as well as the bus length internal to those devices.

There are two total cable length specifications that apply to the Ultra Narrow Single-Ended SCSI bus on your computer. Note that these specifications are based on the requirement that the SCSI device being connected to the NSE SCSI bus does not exceed the maximum capacitance of 25 picofarads (pF). Please check with the vendor of your SCSI device if you are not sure of your devices maximum capacitance.

Here are the total cable length specifications:

- For a total of one to four devices being connected to the NSE SCSI bus the total length of cable used should not exceed 3.0 meters.
- For a total of five to eight devices being connected to the NSE SCSI bus the total length of cable used should not exceed 1.5 meters.

Note that the computer is counted as one of the total devices, and the internal length of its cabling is 0.15 meters. This length needs to be considered in your total cable length determination.



SCSI Connections SCSI Bus Length Constraints

Ultra2 Wide Low-Voltage Differential SCSI Bus Length

The maximum cable length for an Ultra2 Wide Low-Voltage Differential SCSI bus is 12 meters. The HP VISUALIZE J5 Class and J7 Class system uses 1 meter of this maximum cable length internally. This means that up to 11 meters of cable can be used for connecting external Ultra2 Wide Low-Voltage Differential SCSI devices to this workstation.

NOTE

When calculating the total Ultra2 Wide Low-Voltage Differential SCSI cable/bus/trace length used externally, remember to account for cables connecting external devices together as well as the bus length internal to those devices.

WARNING

Do *not* attach FWD SCSI devices to the LVD SCSI port, or damage will occur.

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SCSI Connections Assigning SCSI Device IDs



Assigning SCSI Device IDs

Before assigning a SCSI device ID to a new SCSI device, you need to determine which SCSI device IDs are available. To view the SCSI IDs already in use, type the following command at the prompt and press Enter:

```
/usr/sbin/ioscan -f
```

After a few moments, the ioscan utility lists all of the I/O devices it could find. The list appears similar to the following:

Class	I	H/W	Path	Driver	S/W State	H/W Type	Description
=====							
bc	0			root	CLAIMED	BUS_NEXUS	
bc	1	10		ccio2	CLAIMED	BUS_NEXUS	I/O Adapter
ba	0	10/0		lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
graphics	0	10/0/1/0		graph3	CLAIMED	INTERFACE	PCI(103c1005) -- 1
lan	0	10/0/12/0		btlan3	CLAIMED	INTERFACE	PCI(10110019)
audio	0	10/0/13/0		audio	CLAIMED	INTERFACE	Built-in Audio
ext_bus	0	10/0/14/0		side	CLAIMED	INTERFACE	IDE
target	0	10/0/14/0.0		tgt	CLAIMED	DEVICE	
disk	0	10/0/14/0.0.0		sdisk	CLAIMED	DEVICE	TEAC CD-532E-B CDROM
target	1	10/0/14/0.7		tgt	CLAIMED	DEVICE	
ctl	0	10/0/14/0.7.0		sctl	CLAIMED	DEVICE	Initiator
ba	1	10/0/14/1		superio	CLAIMED	BUS_NEXUS	PCI Core I/O Adapter
tty	0	10/0/14/1/1		asio0	CLAIMED	INTERFACE	Built-in RS-232C
tty	1	10/0/14/1/2		asio0	CLAIMED	INTERFACE	Built-in RS-232C
ext_bus	1	10/0/14/1/3		SCentIf	CLAIMED	INTERFACE	Built-in Parallel Interface
pc	0	10/0/14/1/4		siofdc	UNCLAIMED	UNKNOWN	Built-in Floppy Drive
usb	0	10/0/14/2		hcd	CLAIMED	INTERFACE	Built-in USB Interface
usbhub	0	10/0/14/2.1		hub	CLAIMED	DEVICE	USB Root Hub
usbhid	0	10/0/14/2.1.2		hid	CLAIMED	DEVICE	USB HID Kbd(0)
usbhid	1	10/0/14/2.1.3		hid	CLAIMED	DEVICE	USB HID Mouse(1)
ext_bus SCSI	2	10/0/15/0		c720	CLAIMED	INTERFACE	Ultra Narrow Single-Ended
target	2	10/0/15/0.7		tgt	CLAIMED	DEVICE	
ctl	1	10/0/15/0.7.0		sctl	CLAIMED	DEVICE	Initiator
ext_bus	3	10/0/15/1		c720	CLAIMED	INTERFACE	Ultra2 Wide LVD SCSI
target	3	10/0/15/1.6		tgt	CLAIMED	DEVICE	
disk	1	10/0/15/1.6.0		sdisk	CLAIMED	DEVICE	SEAGATE ST39102LC
target	4	10/0/15/1.7		tgt	CLAIMED	DEVICE	
ctl	2	10/0/15/1.7.0		sctl	CLAIMED	DEVICE	Initiator
ba	2	10/1		lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ba	3	10/2		lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ext_bus	4	10/2/3/0		c720	CLAIMED	INTERFACE	Ultra Wide SCSI
target	5	10/2/3/0.7		tgt	CLAIMED	DEVICE	



SCSI Connections Assigning SCSI Device IDs

ctl	3	10/2/3/0.7.0	sctl	CLAIMED	DEVICE	Initiator
ba	4	10/4	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
ba	5	10/6	lba	CLAIMED	BUS_NEXUS	PCI Bus Bridge - lba
graphics	1	10/6/7/0	graph3	CLAIMED	INTERFACE	PCI(103c1008)
processor	0	32	processor	CLAIMED	PROCESSOR	Processor
processor	1	34	processor	CLAIMED	PROCESSOR	Processor
memory	0	49	memory	CLAIMED	MEMORY	Memory

Assigning Ultra Narrow Single-Ended SCSI Device IDs

You can determine which Ultra Narrow Single-Ended SCSI (NSE SCSI) devices are currently in use by reviewing the output from the `ioscan` command discussed above and looking under the "H/W Path" heading. The entry `10/0/15/0` is the built-in Ultra Narrow Single-Ended SCSI bus. For devices connected to the built-in Ultra Narrow Single-Ended SCSI bus, such as disks, the number between the two decimals and after the third "/" in the hardware path specifies the SCSI ID for that device. For example, a hardware path of `10/0/15/0.2.0` specifies a NSE SCSI device at SCSI ID 2. Here is the break down of the hardware path:

SCSI device 10/0/15/0.2.0

NSE SCSI 10/0/15/0.2.0

SCSI ID 2 10/0/15/0.2.0

CAUTION

Do not use SCSI device ID 7 for any device. It is reserved for the built-in SCSI bus controller.

SCSI Connections
Assigning SCSI Device IDs



Assigning Ultra2 Wide Low-Voltage Differential SCSI Device IDs

You can determine which Ultra2 Wide Low-Voltage Differential SCSI (LVD SCSI) devices are currently in use by reviewing the output from the `ioscan` command discussed above and looking under the "H/W Path" heading. The entry `10/0/15/1` is the built-in Ultra2 Wide Low-Voltage Differential SCSI bus. For devices connected to the built-in Ultra2 Wide Low-Voltage Differential SCSI bus, such as disks, the number between the two decimals and after the third "/" in the hardware path specifies the SCSI ID for that device. For example, a hardware path of `10/0/15/1.5.0` specifies a LVD SCSI device at SCSI ID 5. Here is the break down of the hardware path:

SCSI device 10/0/15/1.5.0

LVD SCSI 10/0/15/1.5.0

SCSI ID 5 10/0/15/1.5.0

CAUTION

Do not use SCSI device ID 7 for any device. It is reserved for the built-in SCSI bus controller.

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Connecting to the SCSI Ports

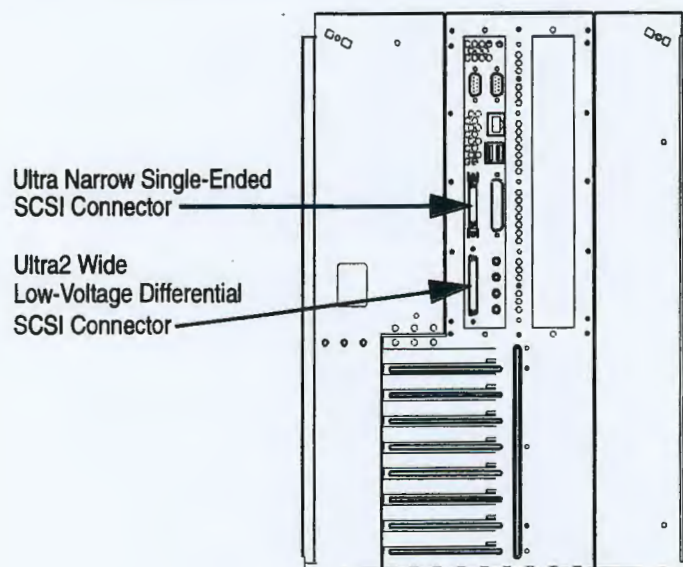
This section describes how to connect to the system SCSI ports (Ultra Narrow Single-Ended and Ultra2 Wide Low-Voltage Differential).

System SCSI Port Connection

The system contains two SCSI connectors:

- Ultra Narrow Single-Ended SCSI (NSE SCSI) connector
- Ultra2 Wide Low-Voltage Differential SCSI (LVD SCSI) connector

The illustration below shows the two SCSI connectors. SCSI cables connect to these ports with a high-density thumbscrew connector.



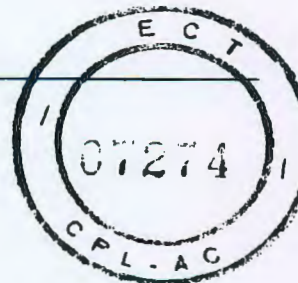
NOTE

It is necessary to put a terminator on unused SCSI connectors on the back panel, or the last device connected to the SCSI bus. Terminators are shipped with the system. Be sure to use a NSE SCSI terminator for the NSE SCSI bus and an LVD terminator for the LVD SCSI bus.

SCSI Connections
Connecting to the SCSI Ports



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8

The Boot Console Interface

This chapter describes the different features of the boot console interface and how to use them.

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Boot Console Interface Features

There are times when you want to interact directly with the hardware of your computer before it boots the operating system. Your computer provides a menu-driven boot console interface that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

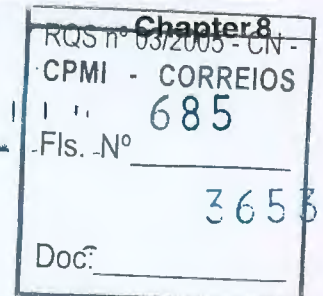
- Boot your computer
- Search for bootable media
- Reset your computer
- Display and set boot paths
- Display and set your monitor type
- Display memory configuration information
- Display the status of the PCI slots
- Set Auto Boot, Auto Search and Auto Start
- Set Fastboot
- Display LAN information
- Display system information
- Display PIM information

NOTE

All of the tasks in the boot console interface should be performed by a system administrator or superuser (root).

The boot console menus follow, showing the various tasks you can perform and the available information.

The shortened version of all commands is indicated by the uppercase letters. Help is available for all the menus and commands by typing either "help", "he", or "?", followed by the menu or command for which you want help.





The Boot Console Interface Boot Console Interface Features

Here are the menus:

----- Main Menu -----

Command	Description
-----	-----
BooT [PRI ALT <path>]	Boot from specified path
PAth [PRI ALT CON KEY] [<path>]	Display or modify a path
SEARch [Display IPL] [<path>]	Search for boot devices
COntfiguration [<command>]	Access Configuration menu/commands
INformation [<command>]	Access Information menu/commands
SERvice [<command>]	Access Service menu/commands
DIisplay	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESEt	Restart the system

----- Configuration Menu -----

Command	Description
-----	-----
AUto [BooT SEARch STart] [ON OFF]	Display or set specified flag
BooTID [<proc>] [<boot ID>]	Display or modify processor boot ID
BooTInfo	Display boot-related information
BooTTimer [0 - 200]	Seconds allowed for boot attempt
CPUconfig [<proc>] [ON OFF]	Config/deconfig processor
DEfault	Set the system to predefined values
FastBooT [ON OFF]	Display or set boot tests execution
LANconfig [<params>]	Display or set LAN configuration
MONitor [LIST <path> <type>]	Change the current monitor type
PAth [PRI ALT CON KEY] [<path>]	Display or modify a path
SEARch [Display IPL] [<path>]	Search for boot devices
SECure [ON OFF]	Set/show security mode
TIme [c:y:m:d:h:m:[s]]	Read or set the real time clock in GMT
PreviousPower [ON OFF]	Set previous power state
BooT [PRI ALT <path>]	Boot from specified path
DIisplay	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESEt	Restart the system
MAin	Return to Main menu

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The Boot Console Interface

Boot Console Interface Features



----- Information Menu -----

Command	Description
ALL	Display all system information
BootInfo	Display boot-related information
CACHE	Display cache information
ChipRevisions	Display revisions of VLSI and firmware
CoProcessor	Display coprocessor information
FwrVersion	Display firmware version
IO	Display I/O interface information
LanAddress	Display built-in system LAN address
MEemory	Display memory information
Processor	Display processor information
Warnings	Display selftest warning messages
Boot [PRI ALT <path>]	Boot from specified path
Display	Redisplay the current menu
Help [<menu> <command>]	Display help for menu or command
RESET	Restart the system
Main	Return to Main menu

----- Service Menu -----

Command	Description
ChassisCodes [<proc> ON OFF]	Display/enable/disable chassis codes
CLEARPIM	Clear (zero) the contents of PIM
EepromRead [<addr>] [<len>]	Read EEPROM locations
MemRead <addr> [<len>] [<type>]	Read memory locations
PciDelay [<value>]	Display or set PCI delay value
PDT [CLEAR]	Display or clear the Page Deallocation Table
PIM [<proc> [HPMC LPMC TOC]]	Display PIM information
ScRoll [ON OFF]	Display or change scrolling ability
Boot [PRI ALT <path>]	Boot from specified path
Display	Redisplay the current menu
Help [<menu> <command>]	Display help for menu or command
RESET	Restart the system
Main	Return to Main menu

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The Boot Console Interface Accessing the Boot Console Interface

Accessing the Boot Console Interface

To access the boot console interface, follow these steps:

NOTE

This procedure should be done by a system administrator or superuser with root login permission.

1. Close any files and applications on your computer.
2. Press the power switch on the front panel of the computer.

NOTE

There is no need to manually shut down the HP-UX operating system on your computer before powering it off. When you turn off the power switch, your computer automatically shuts down the operating system cleanly before terminating the power.

Make sure you do not unplug the system's power cord or otherwise interrupt power to the computer at this time.

3. Power on your computer after your system has completely shut down.

If Autoboot is turned off, the boot sequence automatically stops at the boot console Main Menu.

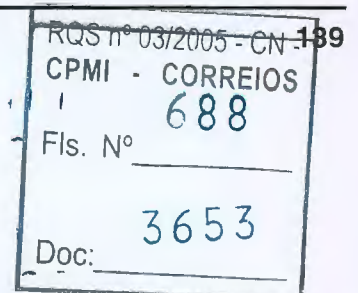
If Autoboot is turned on, you will see the following message:

Processor is starting Autoboot process. To
discontinue, press any key within 10 seconds.

If Autoboot and Autosearch are both turned on, you will see the following message:

Processor is booting from first available device.
To discontinue, press any key within 10 seconds.

If you are using a power-saving monitor, you will have less than 10 seconds from the time this message appears to press a key, since of that time will be spent during the monitor's warm-up.



The Boot Console Interface

Booting your Computer



4. Press a key. You will then see the message:

Boot terminated

The Main Menu of the boot console appears.

Booting your Computer

You usually start your computer by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual sequence to occur.

For example, you may want to start your computer from an operating system that is stored on a device that is different from your usual boot device. If your normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps another type of device, such as a CD drive.

Here are some possible booting scenarios you may encounter:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in "Accessing the Boot Console Interface" above, and then type the following at the prompt:

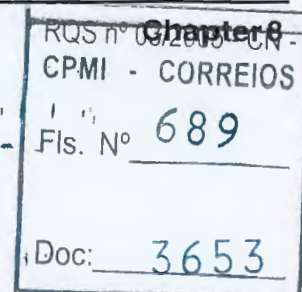
Main Menu: Enter command > boot *<device>*

where *<device>* is the hardware path to the device, specified in Mnemonic Style Notation. For example, if you wish to boot an operating system that is stored on a CD in a drive that is located at the hardware path *scsi.1.0*, you would type the following command at the prompt and press **Enter**:

Main Menu: Enter command > boot *scsi.1.0*

- If you do not know which device you want to boot from, then type the following at the prompt and press **Enter**:

Main Menu: Enter command > search





The Boot Console Interface Booting your Computer

A message similar to the following will be displayed:

Main Menu: Enter command > search

Searching for potential boot device(s)...

This may take several minutes.

To discontinue search, press any key (termination may not be immediate).

Path Number	Device Path	Device Type
P0	LAN.15.11.162.224.3.254	15.11.162.224 100/Half Dx
P1	LAN.15.11.160.173.3.254	15.11.160.173 100/Half Dx
P2	LAN.15.11.160.154.3.254	15.11.160.154 100/Half Dx

Search terminated.

At the prompt, you might type the following and press Enter:

Main Menu: Enter command > boot P1

Note that the operating system on the specified device (P1) is used to boot your computer (also see the section "Searching for Bootable Media").

- If you wish to interact with the Initial System Loader (ISL) before booting your computer, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt:

Main Menu: Enter command > boot <device>

The following prompt will appear:

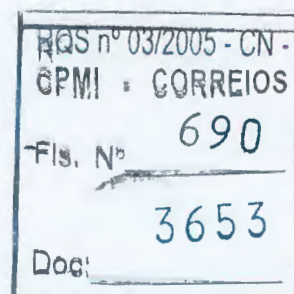
Interact with ISL (Y,N,Q)>

Answering yes (Y) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your screen:

ISL>

ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system. To interact with the ISL, you must enter no (N).

For example, if the usual kernel (/stand/vmunix) on your root disk (fwscsi.6.0) has become corrupted, and you wish to boot your





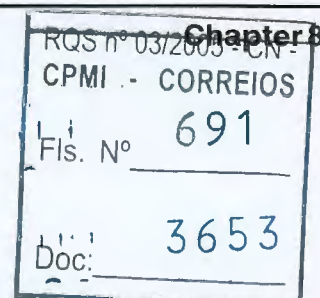
The Boot Console Interface

Booting your Computer

computer from the backup kernel (/stand/vmunix.prev), type the following at the ISL> prompt and press **Enter**:

```
ISL> hpux /stand/vmunix.prev
```

- If you do not know which media in your file systems have bootable operating systems, you can find them with the `search ipl` command. See the subsequent section "Searching for Bootable Media."





Searching for Bootable Media

To list devices that contain bootable media, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> search ipl

The search command searches all buses. The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal's keyboard by using these keystrokes:

Ctrl-S Temporarily suspends the search.

Ctrl-Q Continues the search.

Any Key Stops the search.

These flow-control keystrokes do not work with a bitmapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of just one type that actually contain bootable media, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> search ipl <device_type>

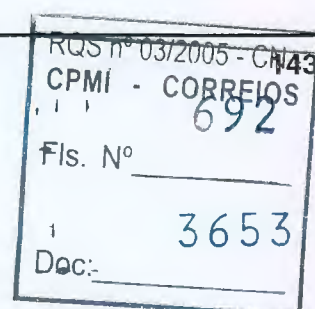
where <device_type> is one of the following:

fwscsi Is the built-in fast, wide SCSI bus.

scsi Is the built-in single-ended SCSI bus.

lan Is all connections to the built-in LAN.

pcin Is an optional fast, wide SCSI interface in slot number *n*.





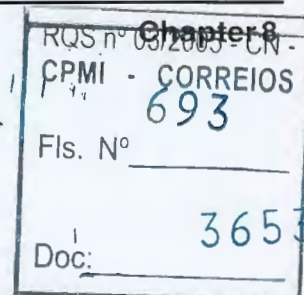
Resetting Your Computer

To reset your computer to its predefined values, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

Main Menu: Enter `command> configuration`

When the Configuration Menu appears, type the following at the prompt and press **Enter**:

Configuration Menu: Enter `command> reset`





Displaying and Setting Paths

A path is the hardware address of a device that is attached to the I/O system of your computer. The path command sets the system paths shown in the table below.

The path command sets and displays the hardware address of a specified device attached to the I/O bus of your computer.

Table 8-1

System Paths

Path Type	Device
primary or pri	Your computer's default boot device (usually the root disk)
alternate or alt	Your computer's alternate boot device (often a CD drive)
console or con	Your computer's primary display device
keyboard or key	Your computer's primary input ASCII device

To display the current settings for the system paths, type the following at the prompt and press Enter:

Main Menu: Enter command> path

The paths are displayed in Mnemonic Style Notation, as shown below.

Table 8-2

Mnemonic Style Notation for Boot Paths

I/O Type	Specification Format
Built-in LVD SCSI	fwscsi.scsi_address.logical_unit_number
Built-in SCSI	scsi.scsi_address.logical_unit_number
Built-in LAN	lan.server_address.init_timeout.io_timeout

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The Boot Console Interface

Displaying and Setting Paths



To display the current setting for a particular system path, follow the directions in "Accessing the Boot Console Interface" on page 139, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> path *<path_type>*

where *<path_type>* is one of the path types listed in Table 8-1.

For example, to get the path to the primary boot device, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt and press **Enter**:

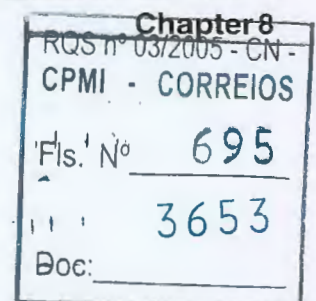
Main Menu: Enter command> path primary

To set a system path to a new value, follow the directions in "Accessing the Boot Console Interface" on page 139, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> path *<path_type>* *<path>*

where *<path_type>* is one of the path types listed in Table 8-1 and *<path>* is the specification of the path in Mnemonic Style Notation (as described in the table above). For example, to set the primary boot path to a SCSI disk with ID of 6.0, follow the directions in "Accessing the Boot Console Interface" on page 139, and then type the following at the prompt and press **Enter**:

Main Menu: Enter command> path pri scsi.6.0





Displaying and Setting the Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your computer's monitor with a different type of monitor, you may have to reconfigure your computer to support the new monitor.

The Monitor Command

The monitor command lets you change your computer's graphics configuration. This command is available in the Configuration Menu of the boot console interface.

NOTE

The monitor command lets you change your computer's graphics configuration before you replace your monitor. For information about changing the configuration after you replace your monitor, refer to "Changing Your Monitor Type" on page 57.

To display the current graphics and console information, type the following set of commands and press **Enter** at each prompt:

Main Menu: Enter command> co

Configuration Menu: Enter command> mo

The correct usage for setting the graphics configuration is:

monitor *<graphics_path>* *<type>*

where valid *<graphics_path>* parameters are:

graphics(4) Graphics card installed in slot 4

graphics(7) Graphics card installed in slot 7

and *<type>* is the numerical monitor type.



Displaying the Current Monitor Configuration

To display the current monitor configuration for your system from the Configuration Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter. Once you are in the Boot Console Interface Main Menu, type the following command and press **Enter**:

Main Menu: Enter command> configuration

This places you in the Configuration Menu. From here, type the following command at the prompt and press **Enter**:

Configuration Menu: Enter command> monitor

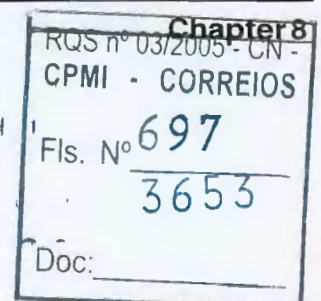
The message on your display is a list of the current graphics adapters and their monitor types configured for your computer.

Configuration Menu: Enter command > monitor

MONITOR INFORMATION

Path	Slot	HPA	Resolution	Freq	Type	Class
GRAPHICS (4)	4	fff6000000	1280x1024	75Hz	1	VESA, Double buffered
GRAPHICS (7)	7	fff4000000	1280x1024	72Hz	1	

In this example, only GRAPHICS (4) and GRAPHICS (7) are configured. The monitor type for GRAPHICS (4) is set to type 1, which is a 1280 by 1024 monitor that uses a frequency of 75 Hz.





The Boot Console Interface Displaying the Current Monitor Configuration

Setting the Monitor Type

You can set the monitor type for a graphics adapter by typing the following at the prompt and pressing **Enter**:

Configuration Menu: Enter command> monitor graphics(*n*)*tt*

where *n* is the number of the graphics adapter and *tt* is the monitor type. To display a list of supported monitors that are used by your graphics card, type the following command at the prompt and press **Enter**:

Configuration Menu: Enter command> monitor list

A list of valid monitor types similar to the following is displayed:

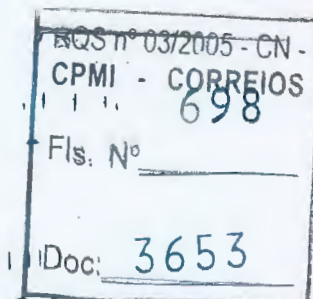
Configuration Menu: Enter command > monitor list

MONITOR INFORMATION

Path	Slot	Head	Type	Size	Freq	Class
----	----	----	----	-----	----	-----
GRAPHICS(4)	4	1	1	1280x1024	75Hz	VESA,Double buffered
GRAPHICS(4)	4	1	2	1280x1024	75Hz	VESA
GRAPHICS(4)	4	1	3	1280x1024	75Hz	VESA,Greyscale
GRAPHICS(4)	4	1	4	1280x1024	75Hz	VESA,Double buffered,Greyscale
GRAPHICS(4)	4	1	5	1024x768	75Hz	VESA
GRAPHICS(4)	4	1	6	800x600	75Hz	VESA
GRAPHICS(4)	4	1	7	640x480	75Hz	VESA
GRAPHICS(4)	4	1	8	1600x1200	75Hz	VESA
GRAPHICS(4)	4	1	9	1600x1200	75Hz	VESA,Greyscale
GRAPHICS(4)	4	1	10	1200x1600	75Hz	VESA
GRAPHICS(4)	4	1	11	1200x1600	75Hz	VESA,Greyscale
GRAPHICS(4)	4	1	12	1280x1024	72Hz	
GRAPHICS(4)	4	1	13	1280x1024	72Hz	Double buffered
GRAPHICS(4)	4	1	14	640x480	60Hz	
GRAPHICS(4)	4	1	15	-----user defined-----		
GRAPHICS(7)	7	1	1	1280x1024	72Hz	
GRAPHICS(7)	7	1	2	1280x1024	75Hz	VESA
GRAPHICS(7)	7	1	3	1024x768	75Hz	
GRAPHICS(7)	7	1	4	0x0	0Hz	SAM Selection
GRAPHICS(7)	7	1	5	-----user defined-----		

To set the monitor type for GRAPHICS(4) to monitor type 1, type the following at the command prompt and press **Enter**:

Configuration Menu: Enter command> monitor graphics(4) 1





The Boot Console Interface

Displaying the Current Monitor Configuration

The boot console displays a message that tells you that your new monitor selection will take effect the next time you reboot your system. The boot console also displays the new monitor information.

NOTE

You must set the console path to get console messages on the monitor:

```
path con graphics(4)
```

Trying to change the monitor type to a number not listed for that graphics device fails and gives you the following warning message:

```
Value of monitor type n out of range (n - nn)
```

Trying to change the monitor type on an empty slot fails and gives you the following warning message:

```
No such graphics card.
```




Setting the Monitor Type at Power On

If you replace your computer's monitor with a different monitor type, and you do not set the computer's graphics parameters by using the monitor command before doing so, you may need to perform the following if your screen is blank:

Wait two seconds after the **Num Lock** light flashes near the end of the boot sequence, then press **Tab** to initiate the automatic monitor selection process.

NOTE

It takes approximately one to two minutes after powering on the computer before the **Num Lock** light flashes.

The system cycles through all of the available monitor types one at a time. When you can see a message similar to the following clearly and legibly, select the monitor type that will meet your needs by pressing **Enter**:

Path	Slot	Head	Type	Size	Freq	Class
GRAPHICS(4)	4	1	n	nnnnxn	nnHz	

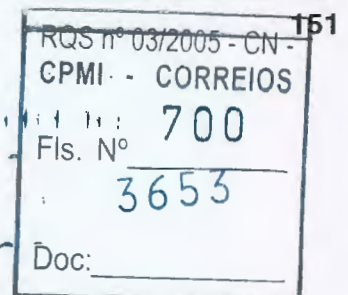
Press [Return] to select this monitor type
(type *n* of *n* types).

The system queries you to confirm your selection. Press **Y** to save this monitor type.

If you press any key other than **Y**, the following message is displayed:

Monitor type not saved.

At this point, the new monitor type is active, but not saved. Because you did not save the monitor type, the next time you reboot the system, the original monitor type will be used.



The Boot Console Interface
Setting the Monitor Type at Power On



Next, the following message is displayed:

To select a new Graphics Monitor Type press
the <TAB> key now, otherwise EXIT by entering
any other key (or will time out in 15 seconds)...

To restart the monitor selection process,
press TAB.

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Changing the Console to External Terminal

In the event that your console stops displaying to your graphics device, use the following procedure to display the console to an external serial terminal so that you can configure the graphics console:

1. Turn the system's power off.
2. Disconnect the USB keyboard connector from the system rear panel.
3. Connect a serial terminal to the serial connector 1 on the system rear panel. The serial parameters are: 9600 baud, 8 data bits, no stop bits.
4. Power on the system.

The system will now display the console to the terminal connected to Serial 1 port.



Displaying the Memory Configuration

The following sample screen output uses the memory command to show memory configurations both with and without errors.

To display the current memory configuration for your system, from the Information Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter. Once you are in the Boot Console Interface Main Menu, type the following at the prompt and press **Enter**:

Main Menu: Enter command> information

This places you in the Information Menu. From here, type the following at the prompt and press **Enter**:

Information Menu: Enter command> memory

The screen displays status and configuration information for the memory DIMMs installed in your computer. For the J5xxx and J7xxx sections below, the first listing below shows the memory information for a system with incorrectly installed or configured memory modules, and the second listing shows the information for a system that has memory modules correctly installed and configured.

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The Boot Console Interface Displaying the Memory Configuration

Memory Information Examples: 8-Slot J5xxx

The following example, from a J5xxx, shows the Memory Information display when memory modules are improperly installed and configured:

MEMORY INFORMATION

MEMORY STATUS TABLE

Slot	Size	Status
0	512MB	Active
1	256MB	Active-MBE
2	256MB	Active

TOTAL MEMORY = 1024MB

MEMORY FAULT TABLE

Slot	Size	Status
1	256MB	Active-MBE

Active, Installed Memory : 1024MB of SDRAM
Deallocated Pages : 1 Page
Available Memory : 1023MB
Good Memory Required by OS : 0 (Not Initialized)

Memory
HVERSION SVERSION
0x0860 0x0900

The fact that there is an entry beneath the “Memory Fault Table” indicates that there was a problem detected. The “MBE” stands for “Multi-Bit Error,” which means the computer detected a memory defect in one or more 4KB areas of the indicated DIMM, and flagged the defective areas as unusable, although the rest of the DIMM (the huge majority) will still be used properly—compare the “Active Installed Memory” value to the “Available Memory” value.



The Boot Console Interface

Displaying the Memory Configuration

Below is a sample from a J5xxx in which the memory checks out fine; note the *lack* of entries in the Memory Fault Table:

MEMORY INFORMATION

MEMORY STATUS TABLE

Slot	Size	Status
0	512MB	Active
1	256MB	Active
2	256MB	Active

TOTAL MEMORY = 1024MB

MEMORY FAULT TABLE

Slot	Size	Status
---	---	-----

Active, Installed Memory	: 1024MB of SDRAM
Deallocated Pages	: 0 Pages
Available Memory	: 1024MB
Good Memory Required by OS	: 0 (Not Initialized)

Memory	
HVERSION	SVERSION
0x0860	0x0900

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The Boot Console Interface Displaying the Memory Configuration

Memory Information Examples: 16-Slot J7xxx

The following sample shows the memory-analysis display when memory modules are not properly installed and configured. In this sample, the DIMM in Slot 4A is of a different size than the DIMM in Slot 4B (they must be equal in size). Also, there is a DIMM in Slot 5A, but none in Slot 5B (they must be added in pairs). This information is shown in the Memory Fault table in the display below.

MEMORY INFORMATION

MEMORY STATUS TABLE

Slots	Size(A)	Status(A)	Size(B)	Status(B)
0a/0b	512MB	Active	512MB	Active
1a/1b	512MB	Active	512MB	Active
2a/2b	512MB	Active	512MB	Active
3a/3b	512MB	Active	512MB	Active
4a/4b	256MB	Mismatch	512MB	Mismatch
5a/5b	256MB	Mismatch	-	Mismatch

TOTAL MEMORY = 5120MB

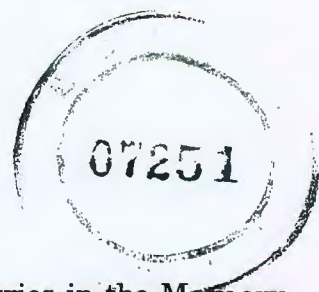
MEMORY FAULT TABLE

Slots	Size(A)	Status(A)	Size(B)	Status(B)
4a/4b	256MB	Mismatch	512MB	Mismatch
5a/5b	256MB	Mismatch	-	Mismatch

```
Active, Installed Memory      : 4096MB of SDRAM
Deallocated Pages             : 0 Pages
Available Memory              : 4096MB
Good Memory Required by OS    : 0 (Not Initialized)

      Memory
HVERSION  SVERSION
-----
0x0890    0x0900
```

The Boot Console Interface Displaying the Memory Configuration



And here is a good memory display; the lack of entries in the Memory Fault Table indicates that the configuration is correct:

MEMORY INFORMATION

MEMORY STATUS TABLE

Slots	Size(A)	Status(A)	Size(B)	Status(B)
0a/0b	512MB	Active	512MB	Active
1a/1b	512MB	Active	512MB	Active
2a/2b	512MB	Active	512MB	Active
3a/3b	512MB	Active	512MB	Active
4a/4b	256MB	Active	256MB	Active
5a/5b	256MB	Active	256MB	Active

TOTAL MEMORY = 5120MB

MEMORY FAULT TABLE

Slots	Size(A)	Status(A)	Size(B)	Status(B)
Active, Installed Memory : 5120MB of SDRAM				
Deallocated Pages : 0 Pages				
Available Memory : 5120MB				
Good Memory Required by OS : 0 (Not Initialized)				
Memory				
HVERSION SVERSION				
0x0890 0x0900				



The Boot Console Interface Displaying the Status of the System I/O

Displaying the Status of the System I/O

The I/O command lets you identify all built-in I/O devices and optional I/O devices installed in the option slots. It is available in the Information Menu.

To use the IO command from the Information Menu of the boot console, type the following command at the prompt and press **Enter**:

Information Menu: Enter command> IO

Information about the built-in and optional I/O devices is displayed.

Information Menu: Enter command > io

I/O MODULE INFORMATION

Path	Decimal	Type	Location	HVER	SVER	IODC Vers	IODC Dep
LAN	10/0/12/0	Ethernet	built-in	03b0	a200	0x02	0x00
AUDIO	10/0/13/0	Comm Device	built-in				
IDE	10/0/14/0	IDE	built-in	0040	a300	0x00	0x00
SUPERIO MISC	10/0/14/1	Bridge Device	built-in				
FLOPPY	10/0/14/1/0	Bridge Device	built-in				
SERIAL_1	10/0/14/1/1	RS232 port	built-in	03b0	8c00	0x01	0x00
SERIAL_2	10/0/14/1/2	RS232 port	built-in	03b0	8c00	0x01	0x00
PARALLEL	10/0/14/1/3	Bridge Device	built-in				
USB	10/0/14/2	USB	built-in	0040	a900	0x00	0x00
SCSI	10/0/15/0	SCSI	built-in	03b0	a300	0x00	0x00
FWSCSI	10/0/15/1	SCSI	built-in	03b0	a300	0x00	0x00
GRAPHICS (1)	10/1/1/0	Display	slot 1	0040	8500	0x01	0x00
GRAPHICS (3)	10/1/3/0	Display	slot 3	0040	8500	0x01	0x00

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Setting the Auto Boot and Auto Search Flags

The auto boot and auto search flags are variables stored in your computer's nonvolatile memory. (Nonvolatile memory retains its contents even after power is turned off.) If you reset these flags to new values, the change takes effect the next time you reboot the computer.

The auto boot flag boots the operating system whenever your computer is turned on.

To examine the state of the auto boot and auto search flags, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> auto

If auto boot is set to on, your computer automatically attempts to boot the operating system when turned on. If auto boot is set to off, your computer enters the boot administration mode of the boot console user interface.

The state of the auto search flag determines how your computer seeks a boot device during autoboot. If auto search is set to on, your computer will search for other boot devices if the primary boot device is not available. If auto search is off, your computer will default to the boot administration mode if it can't see the primary boot device.

To change the state of the auto boot or auto search flags, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> auto boot <state>

or

Configuration Menu: Enter command> auto search <state>

where <state> is on or off.

Autosearch searches for devices in the following order:

- Primary boot path
- Alternate boot path
- Built-in fast, wide SCSI devices
- Built-in single-ended SCSI devices
- Built-in LAN bootp servers

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Displaying and Setting the Security Mode

The SECure flag is a variable stored in non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset this flag to a new value, the change takes effect the next time you reboot the computer.

When the SECure flag is set to on, auto boot and auto search are enabled and cannot be stopped. The system boots from the default boot paths regardless of user intervention.

To display the current setting for the SECure flag, enter the following command at the prompt and press **Enter**:

```
secure
```

To set the SECure flag on or off, type one of the following commands at the prompt and press **Enter**:

```
secure on
```

```
secure off
```

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Displaying and Setting the Fastboot Mode

When fastboot is enabled (set to on), your computer does a quick check of the memory and skips I/O interface testing during its power-on self tests. This enables your computer to complete its boot process quicker. The default factory setting is for fastboot to be enabled (set to on).

The fastboot mode allows your computer to boot quickly by performing a less extensive check of the system's memory.

When fastboot is disabled (set to off), more extensive memory testing and I/O interface testing is performed during the self tests, causing the boot process to take longer.

If you are experiencing difficulty in booting your computer, set fastboot to off and reboot the system. More extensive testing may reveal the error condition.

To display the status of fastboot, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> fastboot

To disable fastboot, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> fastboot off

To enable fastboot, type the following at the prompt and press **Enter**:

Configuration Menu: Enter command> fastboot on



Displaying the LAN Station Address

It is sometimes necessary to supply a LAN station address of your computer to other users. For example, if your computer is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your computer to the cluster.

A LAN station address for your computer is the label that uniquely identifies the LAN connection for your computer at the link level (the hardware level).

To display your workstation's LAN station addresses, type the following at the prompt and press **Enter**:

Information Menu: Enter command> lanaddress

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

LAN Station Addresses: 001083-789abc

The address is for the system's built-in LAN.

Displaying System Information

The all command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information from the Information Menu, type the following at the prompt and press **Enter**:

Information Menu: Enter command> all

This information is paged to allow you to view it as necessary.

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The Boot Console Interface
Displaying System Information



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Troubleshooting

This chapter contains information to help you determine what is wrong with your system when you have problems. If you have a problem that is not listed in this chapter, or if your problem persists, contact your designated service representative.

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Troubleshooting



To help speed up your service request, have your system's model number and serial number available. Your service representative will always ask for these numbers.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP CDE graphical interface. When using HP CDE, you will have to use command line options in a terminal window to perform tests.

NOTE

This chapter requires you to log in as root. If you cannot log in as root, contact your system administrator.

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Common Problems and Solutions

The tables in this section list common problems you may encounter with your computer. The tables also tell you what to do to help solve the problems.

Table 9-1

Problems Powering Up the System

Problem	Solution
The power LED does not light.	Make sure all AC power cables are connected securely to the system. Make sure the power cord is plugged into a working AC outlet. Make sure the power switch is set to the On position. Make sure the power-supply interlock screw is sufficiently tightened.
The power LED lights, but the screen is blank or flickers	Adjust the brightness control on the monitor. If the screen is still blank, turn off the system and monitor power switches. When the system is completely powered off, check the video cable connections. Go to the section "Displaying and Setting Your Monitor Type" in the Boot Console Interface chapter for information about displaying and setting your computer's monitor configuration.
LCD messages	See "LCD-Indicated Problems" later in this chapter.
Boot Failure	Make sure the SCSI terminators are in place, either directly on the back of the machine, or on the last external SCSI device you have attached to each bus.
If problems persist, contact your system administrator or call your designated service representative.	

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Troubleshooting
Common Problems and Solutions



Table 9-2

Problems Loading and Booting the Operating System

Problem	Solution
The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.	Make sure that all SCSI devices are set to the proper SCSI ID. (See the SCSI chapter for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that each SCSI bus is correctly terminated. (See the SCSI chapter for information on SCSI cabling and termination.)
The system stops or hangs while booting.	If a DIMM failure is indicated by the LCD: • Make sure all DIMMs are securely seated. • In the J7xxx, make sure that all DIMMs are in equal-sized pairs. • Remove DIMMs one at a time, attempting to reboot after every DIMM (or pair of DIMMs, in the J7xxx) is removed. When the DIMM failures cease, the most recently removed DIMM (or pair of DIMMs) was the faulty one. Also, see the instructions in "Dealing with a Boot Failure" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 9-3

Problems with the 802.3 Network

Problem	Solution
Cannot reach other systems on the network. Applications that rely on the network will not run.	Check the network connector on the back of the system unit. Make sure the network cable or transceiver is fastened securely to the connector.
If problems persist, contact your system administrator or call your designated service representative.	

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Table 9-4

Problems Using a Hard Disk Drive

Problem	Solution
The disk drive is not accessible or does not respond.	Make sure that all SCSI devices are set to the proper SCSI ID. (See the SCSI chapter for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See the SCSI chapter for information on SCSI cabling and termination.) Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in the SCSI chapter. Follow the instructions in "Dealing with a Boot Failure" later in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Table 9-5

Problems Using the CD-ROM Drive

Problem	Solution
The CD-ROM drive does not respond to commands.	Re-enter the commands and make sure you have typed them correctly. Follow the instructions in the section "Running System Verification Tests" later in this chapter to verify that the CD-ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Troubleshooting
Common Problems and Solutions



Table 9-6

Problems Using the DDS Tape Drive

Problem	Solution
The DDS drive does not respond to commands.	Re-enter the commands and make sure you have typed them correctly. Make sure you specified the correct device file name for commands that require a device file name. Make sure the write-protect tab is set to write if you are trying to copy data to a data cassette. Make sure the system can communicate with the drive as described in "Checking the SCSI IDs" in the SCSI chapter. Follow the instructions in the section "Running System Verification Tests" later in this chapter to verify that the CD-ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative.	

Table 9-7

Problems Using the Floppy Disk Drive

Problem	Solution
The floppy drive does not respond to commands.	Re-enter the commands and make sure you have typed them correctly. Make sure you specified the appropriate device file for commands that require a device file name. Make sure the write-protect tab is set to write if you are trying to copy data to a floppy diskette. Follow the instructions in the section "Running System Verification Tests" later in this chapter to verify that the floppy drive is functioning properly.

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Troubleshooting
Common Problems and Solutions

Table 9-7

Problems Using the Floppy Disk Drive

Problem	Solution
If problems persist, contact your system administrator or call your designated service representative.	



Dealing with a Boot Failure

If your usual boot device (typically a disk) is not responding as it should, you must try to boot from the disk (or another boot device) by selecting it manually. Note that you must be superuser (root) to perform the steps in this section.

To boot a device manually, follow these steps:

1. Follow the directions in Chapter 8, "The Boot Console Interface," on page 135.

NOTE

Your computer automatically shuts down the operating system before it terminates the power.

2. At the Main Menu prompt, type the following and press **Enter**:

Main Menu: Enter a command or a menu > search ipl

This causes your computer to search exhaustively for bootable media.

3. Boot from one of the listed devices by typing the following at the prompt and press **Enter**:

Main Menu: Enter a command or a menu > boot <device>

where <device> is the hardware path to the device, specified in mnemonic style notation, such as FWSCSI.5.0.

4. If your computer still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual *Using HP-UX* for help on dealing with file system failures (And make sure the SCSI terminators are in place!) If you think that something is wrong with the hardware, continue reading this chapter for more troubleshooting information.

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Memory Failures

The J5 Class and J7 Class systems use Memory Page Deallocation, a feature that allows the system to provide information to the operating system about memory failures. Note that you must be superuser (root) to use the commands in this section.

HP-UX 10.20 uses Memory Page Deallocation information to map out the failing memory areas, and continue normal operation. You can use the command `memrpt` with the detail switch to obtain information about the Memory Page Deallocation Table (PDT) as well as single-bit errors logged by the system. To test this command, type

```
/usr/sbin/sysdiag
```

at the shell prompt (#) and press **Enter**. At the `DUI>` prompt, type

```
logtool
```

and press **Enter**. At the `LOGTOOL>` prompt, type

```
memrpt detail
```

and press **Enter**.

To exit the `sysdiag` and `logtool` utilities, use the `exit` command.

The PDT can also be checked using the `pdt` command in the Service menu of the boot console handler. If a failing DIMM is replaced, use the Service menu `pdt clear` command to clear out the PDT.



LCD-Indicated Problems

Your computer uses an LCD panel to display firmware/OS progress codes. The codes, referred to as chassis codes, consist of one of the mnemonics listed below, followed by a 4-digit hexadecimal number identifying the code module being executed. The mnemonics and the meaning are:

FLT	Fault: A hardware error has been detected
TST	Test: Hardware being tested
INI	Initialize: Hardware being initialized
SHU	Shutdown: System being shutdown
WRN	Warning: A non-optimal operating condition exists
RUN	Running: Computer is running operating system

During a normal boot sequence, a set of "windows" appears. In general, the LCD has the following format:

MMM CCCC: FFFFFFFF ← Line 1
DDDDDDDDDDDDDDDDDD ← Line 2

MMM 3-character chassis-code mnemonic
CCCC 4-digit hexadecimal code
FFFFFF 6-character FRU (field-replaceable unit) description
DDD... 16-character description of chassis code

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Running System Verification Tests

HP-UX uses a diagnostics product called the Support Tools Manager that allows system operation verification. If this software is not already on your system, it is available on the System Recovery CD (part of the HP-UX 10.20 media kit).

If the Support Tools Manager is installed, you can access it in a terminal window. If you are using HP CDE as your interface, you can also access the Support Tools Manager through the `sys_admin` directory.

Three interfaces are available with the Support Tools Manager: a command line interface (accessed through the `cstm` command), a menu-driven interface (accessed through the `mstm` command), and the graphical user interface (accessed through the `xstm` command).

For more information on these user interfaces, see the online man pages by entering one of the following at the command line prompt and pressing **Enter**:

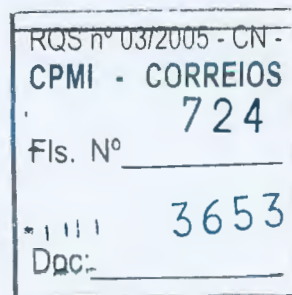
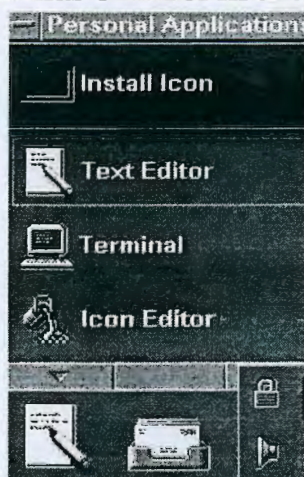
```
man cstm
man mstm
man xstm
```

To access the Support Tools Manager, perform the following steps:

1. Select Terminal from the Personal Applications pop-up menu, which is located on the front panel of your HP CDE workspace.

Figure 9-1

HP CDE Terminal Control in the Personal Application Menu



Troubleshooting

Running System Verification Tests



A terminal window opens.

2. Move the mouse cursor into the terminal window and click the left mouse button.
3. Type the following at the shell prompt and press **Enter**:

```
cstm
```

The following is displayed on the screen:

```
Support Tool Manager      Version A.01.00
Type 'help' for a list of available commands.
CSTM>
```

At the CSTM> prompt, you can enter several commands. To see what commands are available, type the help command.

4. To verify the system operation, type the following at the CSTM> prompt and press **Enter**:

```
CSTM> verify all
```

Messages similar to the following appear:

```
Verification has started on device (CPU)
Verification has started on device (FPU)
CSTM>Verification of (FPU) has completed.
CSTM>Verification of (CPU) has completed.
```

5. Press **Enter** to return to the CSTM> prompt after all test results are reported.
6. Exit the Support Tools Manager by typing the following at the CSTM> prompt and pressing **Enter**:

```
CSTM> exit
```

If any tests failed, further diagnosis is necessary by qualified service personnel. You should contact your designated service representative.

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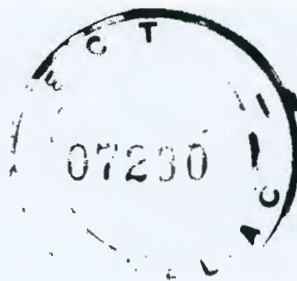
Safety and Regulatory Statements
Declaration of Conformity



Declaration of Conformity

Declaration of Conformity	
according to ISO/IEC Guide 22 and EN 45014	
Manufacturer:	Hewlett-Packard Company 3404 East Harmony Road Fort Collins, CO 80528 USA
Declares that the:	
Product Name:	HP VISUALIZE Workstation
Model Numbers:	J5000 / J7000
Base Product Number:	A4978A / A4981A
Product Options:	all
conforms to the following specifications:	
Safety	IEC 950:1991+A1+A2+A3+A4+A11/ EN 60950:1992+A1+A2+A3+A4+A11 IEC 60825-1:1993/EN60825-1:1994+A11 USA 21CFR Subpart J - for FC Laser module China GB4943-1995 Russia GOST R 50377-92
EMC	CISPR 11: 1990 / EN 55011: 1991 Class B CISPR 22: 1993 / EN 55022: 1994 Class B EN 50082-1:1992 IEC 1000-3-2: 1995 / EN 61000-3-2: 1995 IEC 1000-3-3: 1995 / EN 61000-3-3: 1995 IEC 1000-4-2: 1995 / EN 61000-4-2: 1995 - 4kV CD, 8 kV AD IEC 1000-4-3: 1995 / EN 61000-4-3: 1995 - 10 V/m IEC 1000-4-4: 1995 / EN 61000-4-4: 1995 - 2 kV Signal, 4 kV Power Lines US FCC Part 15, Class B Japan VCCI Class B Australia/New Zealand AS/NZS 2046.1/2:1992, AS/NZS 3548:1995, and AS/NZS 4251.1:1994 China GB9254-1988 Taiwan CNS13438 Class A Russia GOST R 29216-94
and is certified by:	
UL Listed to UL1950, 2nd edition, File E146385 cUL Listed to CSA 22.2 No.950-M93 T V Certified to EN60950 2nd edition with A1+A2+A3+A4+A11 HP Fort Collins CCQD HQE	
supplementary information:	
The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly: - the EMC directive 89/336/EEC and 92/31/EEC and 93/68/EEC - the Low Voltage Directive 73/23/EEC and 93/68/EEC	
This product was tested in a typical Hewlett Packard workstation configuration.	
Ruth Lutes, Site Quality Manager Fort Collins, CO, USA	
For Compliance Information ONLY, contact:	
European Contact:	Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE Standards Europe, Herrenberger Straße 130, D-71034 Böblingen (FAX: +49-7031-14-3143)
Americas Contact:	Hewlett-Packard, Fort Collins Site Quality Manager, mail stop 46, 3404 E. Harmony Rd., Ft. Collins, CO 80528, USA

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Emissions Regulations

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), you can correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Ask the dealer or an experienced radio/television technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP-shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept interference received, including interference that may cause undesired operation.
- Cables used with this device must be properly shielded to comply with the requirements of the FCC.

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Special Video Configuration Statements

The following statements apply only to those applications which include a cable connected to the S-Video connector on the A4248A card. No modification to the regulatory statements is necessary for applications which include cables connected to other connectors on the card but not to the S-Video connector.

For EN55022 or CISPR 22 Applications:

WARNING

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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VCCI Class 2 ITE

Figure A-1

EMI Class A RRL (Korea)

시용시 안내문 (A급 기기)

이 기기는 업무용으로 전자파장애감정을 받은
기기이오니, 만약 잘못 구입하셨을 때에는 구입
한 곳에서 비업무용으로 교환하시기 바랍니다.

Figure A-2

VCCI Class B ITE (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準
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とを目的としています。この装置がラジオやテレビジョン受信機に近接して
使用されると受信障害を引き起こすことがあります。

取り扱い説明書に従って正しい取り扱いをして下さい。

Figure A-3

EMI Class A (Taiwan)

警告使用者:

這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻
干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

Safety and Regulatory Statements
Declaration of Conformity



Emissions Regulations Compliance

Any third-party I/O device installed in HP system(s) must be in accordance with the requirements set forth in the preceding Emissions Regulations statements. In the event that a third-party noncompliant I/O device is installed, the customer assumes all responsibility and liability arising therefrom.

Acoustics

**Table A-1 Regulation On Noise Declaration For Machines -3.
GSGV**

Lpa <70dB operator position normal operation per ISO 7779	Lpa <70dB am Arbeitsplatz normaler Betrieb nach DIN 45635 T.19
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Laser Safety Statement (U.S.A. Only)

The CD-ROM mass-storage system is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

This means that the mass-storage system does not produce hazardous laser radiation. Because laser light emitted inside the mass-storage system is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

Visible LEDs

The visible LED on this product is classified as "Class 1 LED PRODUCT" in accordance with EN 60825-1.

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Safety and Regulatory Statements Declaration of Conformity

Warnings and Cautions

WARNING:

Removing device cover may expose sharp edges in equipment chassis. To avoid injury, use care when installing customer add-on devices.

WARNUNG:

Das Entfernen der Geräteabdeckung legt die scharfen Kanten im Inneren des Gerätes frei. Um Verletzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

AVERTISSEMENT:

Des bords tranchants du châssis de l'équipement peuvent être exposés quand le cache de l'unité n'est pas en place. Pour éviter des blessures, faire très attention lors de l'installation de modules supplémentaires par le client.

WARNING:

Disconnect power plug from wall outlet or source power before moving or removing the device, or installing add-on components.

WARNUNG:

Entfernen Sie die Stromzuführung von der Steckdose oder der Stromquelle bevor Sie das Gerät bewegen, abbauen, oder zusätzliche Bauteile installieren.

AVERTISSEMENT:

Débrancher la fiche de la prise de courant ou de la source d'alimentation électrique avant de déplacer ou de retirer l'unité, ou avant d'installer des modules supplémentaires.

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Safety and Regulatory Statements
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B

Environmental and Electrical Specifications

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Environmental Specifications

Altitude

Operating: 0-10,000 ft. (0-3000m)
Non-operating (storage or shipping): 0-15,000 ft. (0-4500m)

DC Magnetic Field Interference

Operating: <1 Gauss at surface of product
Non-operating: <2 mGauss @ 7 feet

Temperature

Operating: 5 to +40° C
Non-operating (shipping or storage): -40 to +70° C

Humidity (Non-condensing)

Operating: 15 to 80%
Non-operating: 0 to 90% (storage or shipping)

Leakage Current

Less than 3 milliamps

Shock

Operating: 20g at 3ms, 1/2 sine in normal axis with no hard errors
Non-operating (shipping): 80g at 3ms, 1/2 sine, normal axis

Vibration

Operating random: 0.21 G rms, 5-500 Hz
Swept sine survival (shipping): 0.5 G peak, 5-500 Hz
Random survival (shipping): 2.09 G rms, 5-500 Hz

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Environmental and Electrical Specifications
Electrical Specifications

Electrical Specifications

Power Requirements

Table B-1 Input Power (Maximum Current RMS)

Voltage	J5xxx	J7xxx
100V	12.2A	19.3A
120V	10.2A	16.0A
200V	6.1A	9.7A
230V	5.4A	8.4A

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Environmental and Electrical Specifications
Electrical Specifications



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A

Absolute pathname The full pathname of a file, including all the directories leading to it, starting with the root directory ("/") and ending with the filename itself. *See also File, Filename, Pathname.*

Access permissions Settings that allow (or prevent) a user or group of users to read, write, or execute files. *See also File Access Permissions.*

Active window The window that is receiving input from the keyboard at the present time. If there is no active window, anything you type is lost. Only one window can be active.

ANSI The American National Standards Institute, a non-profit organization made up of various expert committees, that publishes standards for use by national industries. ANSI has adopted the IEEE standards for local area networks.

Argument A part of a command line or line of source code that identifies the file, directory, or other data to be used; a parameter.

Attachment Unit Interface (AUI) A transceiver cable that conforms to IEEE 802.3 specifications.

B

Back up v. To make a copy of one or more files on a tape or disk that can be stored separately from the original files.

Backup n. A spare copy of one or more files on a tape or disk that can be used to restore data to its original location.

Bitmap Generally speaking, an array of data bits that define a graphical image. Strictly speaking, a bitmap is a pixmap whose depth is one bit, capable of representing two-color (black-and-white) images.

Boot Short for "bootstrap," from the phrase "pulling oneself up by one's bootstraps." Indicates the beginning of a process from the lowest possible level. A boot service is provided by a short program, stored in the boot ROM (read-only memory) of your workstation, that loads the operating system (or any complex program) into main memory. Partner workstations provide bootstrap service to

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diskless workstations. See also boot ROM.

Boot Console Interface The interactive firmware that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console interface allows you to perform special tasks, display information, and set certain system parameters.

Boot ROM A read-only memory that is incorporated into a workstation for the purpose of loading and starting the operating system, and modifying the configuration or changing the booting behavior.

Bootstrap Service See *Boot*.

Byte A fundamental character-code unit, usually consisting of 8 bits.

C

CD-ROM Compact Disk Read-Only Memory. See also CD-ROM drive. CD-ROMs are identical to the audio compact disks (CDs) used to record stereo music, except that they store computer data. CD-ROMs are 120 mm (4.7 inches) in diameter, use

one data surface, and have a capacity of about 650 MB. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant linear speed

CD-ROM Drive A random-access, read-only, mass-storage device that uses removable CD-ROM disks. The drive contains a semiconductor laser for reading data optically and an embedded controller.

Central Processing Unit (CPU)

The part of a workstation that interprets and executes instructions; the "brain."

Child Directory See *Subdirectory*.

Click To press and immediately release a mouse button. The term comes from the fact that pressing and releasing most mouse buttons makes a clicking sound. Compare drag and drop.

Cluster A group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, acts as a

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file-system server for the cluster clients. *See also Cluster client, Cluster node, Cluster server.*

Cluster client. A cluster node that does not have a local HP-UX file system. Its file system resides on the cluster server. *See also Cluster, Cluster node, Cluster server.*

Cluster node A member of a group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, acts as a file server to the other machines in the cluster. *See also Cluster, Cluster client, Cluster server.*

Cluster server A workstation that provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also Cluster, Cluster client, Cluster node, Host.*

Cold install. A process that requires the booting of an install kernel from an install server over a network and answering some networking and configuration questions.

Command. An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also Shell command.*

Command argument

Information you provide on a command line to describe the object (often a file or directory) to be operated on by the command.

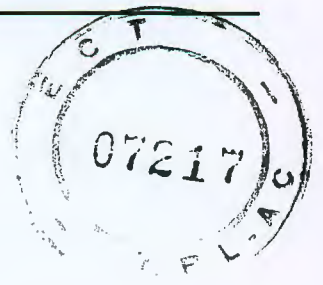
Command interpreter A program that reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute commands or programs. An HP-UX command interpreter is called a shell. *See also Shell.*

Command option Information you provide on a command line to indicate any special action you want the command to take, or mode in which to operate. *See also Default.*

Configuration The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term "configuration" may refer to a hardware configuration or a software configuration.

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Console. The tty (terminal) the system was booted from. The console is associated with the monitor where all system messages are displayed. The system administrator sends messages to other system users from this tty.

Control-key sequence A keystroke combination used as a shorthand way of specifying commands. To enter a control key sequence, hold down the "Ctrl" key while pressing another key.

CPU *See Central Processing Unit.*

Current directory *See Current working directory.*

Current session The work and processes that have been created since you logged into the system (and before you log out again).

See also Session.

Current working directory The directory from which a relative-pathname search begins, as well as the directory in which you are currently working. It is also called the "working directory" or "current directory."

Cursor The small, usually blinking, box or underline displayed in whatever screen or window is active at any particular time. The cursor marks your current typing position on the screen and indicates which program (HP CDE terminal window or shell) will receive your typed commands.

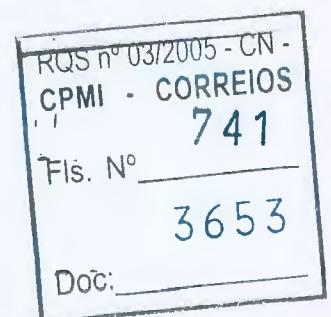
D

Daisy-chaining A method of connecting devices in which the signal passes from one device to the next in serial fashion along a bus.

DDS tape drive A device that stores data on Digital Data Storage (DDS) cassettes.

Default Most commands give you a choice of one or more options. If you don't specify an option, the command automatically assigns one. This automatic option is called the "default" *See also Command option.*

Dialog box A special type of HP CDE screen that contains controls and settings, and with which the user can carry on an interactive "dialog" in the process of setting whatever parameters the dialog



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box requests. To display an example of a dialog box, click the Style Manager button on the Workspace Manager's front panel, then click on Color.

DIMM *See Dual Inline Memory Module.*

Dual Inline Memory Module A memory board that contains memory chips on both sides. *See also Single Inline Memory Module*

Directory A special type of "container" object that contains information about the objects beneath it in the HP-UX organizational structure. Basically, it is a file that stores names and links to files and other directories *See also File.*

Disk A thin, round plate with a magnetic or optical surface coating on which data is stored by magnetic or optical means. *See also floppy diskette, hard disk, CD-ROM disk.*

Disked workstation A workstation that has its own hard disk drive. *See also diskless workstation, node, partner node, workstation.*

Diskette *See Floppy diskette.*

Double click To press and release a mouse button twice in rapid succession. The amount of time that discriminates between a double click and two single clicks is usually user-configurable. Double clicking usually invokes a different, but related, function than single clicking.

Drag and Drop To move the mouse (and hence the pointer on the screen) while holding down one or more of its buttons. This process specifies two separate locations on the screen for those operations that require two: the location when the mouse button is pressed, and the location when it is released. This is used, for example, to initiate a file-copy by pressing the mouse button on the file to be copied, dragging the file's icon to the destination window, and releasing the mouse button there. Another common using of dragging is to specify the upper-left and lower-right corners of a new window or similar rectangle *See also Drop.*

Drive *See CD-ROM drive, DDS tape drive, Floppy drive, Hard disk drive*

Drop To release the mouse button after having moved the mouse with

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its button held down, in order to position an icon or other object that has been "dragged" to a new position *See also Drag and Drop.*

E

EEPROM. Electronically erasable read-only memory. A non-volatile storage device using a technique similar to the floating gates in EPROMs but with the capability to discharge the floating gate electrically. Usually bytes or words can be erased and reprogrammed individually during system operations.

Environment The conditions in which your commands or programs are executed. These conditions include your workstation characteristics, home directory, and default search paths *See also Environment variables.*

Environment variables The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, and HOME) that define the conditions in which, or values with which, your commands are executed. These conditions and values include your workstation characteristics, home directory, and default search paths *See also Environment.*

Ethernet The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

F

Fast-wide Low-Voltage Differential SCSI A 16-bit-wide bus with high-power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 20 MB per second

See also Ultra Narrow Single-Ended SCSI, Small Computer System Interface.

File The basic named unit of data stored on disk *See also Directory, Filename.*

File access permissions The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it) *See also Access permissions.*

File Manager The HP CDE application that allows you to

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manage your files and directories, and to set viewing preferences.

Filename The name given to a particular file. *See also Absolute pathname, File, Pathname.*

File server A workstation whose primary task is to control the storage and retrieval of data from hard disks. Any number of other workstations can be linked to the file server via a LAN in order to use the file server to access data.

File system The hierarchically organized set of files and directories on a hard disk.

Firmware The control software that is embedded in ROM and is always resident regardless of the status of the operating system. It handles the booting of the system, initialization of I/O, and starts the loading of the operating system.

Floppy diskette A thin, flexible, disk-shaped sheet of plastic that magnetically stores data on its coated surfaces. Floppies are contained within stiff plastic "envelopes" to protect them from dust, fingerprints, and abrasion. The floppy drive uses heads (similar to heads in tape recorders)

to read and write data on concentric disk tracks.

Floppy drive A device that stores data on a floppy diskette.

H

Hard disk A type of disk that is rigid—often aluminum—as opposed to a thin plastic diskette, which is flexible.

Hard disk drive A device that stores data on a hard disk. The hard disk can be a permanent part of the drive and thus be unremovable, or it can be removable. If it is removable, it is contained in a protective cover that is opened by the drive when access is needed.

Help Manager The HP CDE application that provides online help.

\$HOME The environment variable that contains the name of a user's home directory. This is the directory in which you are placed upon logging in. Typically, this is /home/login, where login is your username. *See also Home directory.*

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Home directory A shorthand way of referring to a frequently used directory, almost always the login directory.

Host A computer that offers one or more services; may be local or remote (accessible via a network) *See also Cluster server.*

Host name The name of a particular machine, in the context of its identity to the network *See also Internet Protocol Address.*

HP CDE *See HP Common Desktop Environment.*

HP Common Desktop Environment A user interface that draws a graphical layer over the complexities of the other layers of the system (the hardware, operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command-line prompt.

HP-UX. This is Hewlett-Packard Company's version of the UNIX® operating system.

HP-UX cluster *See Cluster node, Cluster server.*

I

Icon A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

Iconify *See iconize.*

Iconize To turn a window or shell into an icon *See also Icon.*

Initial System Loader The program that actually controls the loading of the operating system.

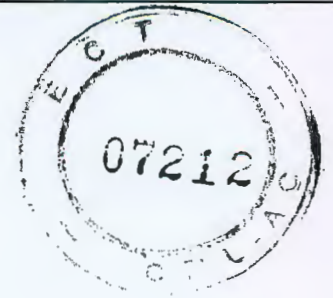
Input device Any of several pieces of hardware equipment used to give information to a system. Examples include the keyboard and the mouse *See also Output Device.*

Input window The window that displays a program's prompt and any commands typed but not yet executed.

Instant ignition. When the user's computer is turned on and it automatically boots up and is

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ready for use. Instant ignition is the result of the computer's operating system being preloaded at the factory.

Install server. This is a networked computer from which file sets and operating systems can be installed.

Internet Protocol address (IP address) A string of characters, in the format *nnn.nnn.nnn.nnn*, that uniquely identifies a workstation in a network. The *nnn* in the format specifier above is a one- to three-digit decimal integer between 0 and 255, inclusive, in which leading zeroes are optional. The internet protocol address is also referred to as the "IP address."

Invisible filename A filename in which the first character is a period (.). Invisible filenames are not displayed by the listing commands such as *ls* and *ll* without additional options, such as *-a*.

IP address *See Internet Protocol address.*

ISL *See Initial System Loader.*

K

Kernel The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

L

LAN *See Local Area Network.*

LAN station address *See Local Area Network station address.*

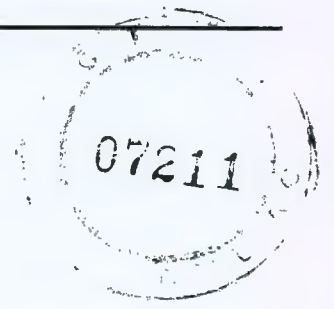
Link n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

Link, v. To establish a relationship between two objects such that one of the objects contains only the information required to associate it with the other, "real," object.

Local Area Network (LAN) A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters that share data, hardware, and

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software resources via Networking Services software.

Local Area Network station address The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level. This 48-bit number is preassigned by HP on their computers and it must never be changed.

Log in v. To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also Username*

Login n. A session. Or, a string of characters that uniquely identifies a user of the system *See also Session, User account, and Username.*

Login directory The directory in which you are placed when you log in, usually your home directory
See also Home directory.

Login Manager The program that controls the initial startup of HP CDE and accepts the user's username and password.

Login script The shell program that runs at each login, and sets

the login environment for your system.

M

Menu bar An area at the top or bottom of a window that contain the titles of the pull-down or pop-up menus for that application.

Minimize button In HP CDE, a push-button on the window frame that turns a screen into an icon
See also Icon, Iconize.

Monitor type. A monitor path name (graphics(1) through graphics(6)) that is associated with a particular resolution and frequency at which you want your monitor to operate. The monitor type is selected using the Boot Console Interface. *See the Boot Console Interface chapter.*

Mouse pointer *See pointer.*

N

Name A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character
See also Pathname.

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Network Two or more workstations sharing information *See also Cluster, Workstation.*

Network controller A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

Node A computer that is on a network. Each node in the network can use the data, programs, and devices of other network nodes, assuming permissions are set up properly. Each node contains main memory and has its own disk or shares one with another node

See also Disked workstation, Diskless workstation, Workstation.

Node name A unique identifying name given to a workstation in a cluster. Synonymous with Hostname *See also Cluster, Node.*

Nonvolatile memory System memory that retains its contents even after workstation power is turned off.

O

Object Any file, directory, or link in the network. *See also directory, file, link, pathname.*

Operating system The program that supervises the execution of other programs on your workstation. For example, the entire HP-UX system, including the kernel and all HP-UX commands *See also kernel.*

Option *See Command option.*

Output device Any of several pieces of hardware used for receiving messages from the computer and storing them, or making them perceptible by humans. Disks and tapes, computer monitors, printers, plotters are examples of output devices *See also Input device.*

Output window The window that displays a process response to your command.

P

Parent directory A directory that contains other directories,

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each of which is then called a subdirectory *See also Subdirectory.*

Password The secret word you enter next to the password prompt at login time to permit only authorized access. Keep your password secret and change it occasionally in order to protect your account from unauthorized use *See also User Account.*

Path The hardware address of a device that is attached to the I/O system of your workstation.

Pathname A slash-separated series of zero or more directory names followed by a filename, that together describe the path within the file system from some starting point to a destination object. Pathnames (other than the degenerate empty case) begin with the name of the starting point, and include every directory name between the starting point and the destination object. A pathname ends with the name of the destination object *See also Name, Object.*

Permissions A set of rights (read, write, and execute/search) associated with an object in the file

system. Determines who may use the object and how.

PID Process Identifier. Also referred to as a process ID *See also process ID.*

PIM. Processor Internal Memory. The pim command is a command used by the Boot Console Interface for determining specific memory faults. *See also Processor Internal Memory.*

Pointer Sometimes called the "mouse pointer," the pointer's location on the display corresponds to the mouse's location. The pointer's shape often depends on the object its hot-spot covers (this is used as a visual feedback mechanism from a program to the user). In the HP CDE Workspace, the default pointer is an X; on a window frame, it is either a simple arrow, or an arrow with one or more straight lines touching it (to indicate any of the eight window-resizing regions).

Process A computing environment in which you may execute programs; a program currently running in the system.

Process ID A unique identification number assigned to

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all processes by the operating system. Also referred to as a PID

See also PID.

Processor internal memory.

The memory contained in the processor chip where instructions are stored.

Program A unit of executable code, in source-code or binary form. Most HP-UX commands and routines consist of programs.

Prompt A message or symbol displayed by the system to let you know that it is ready for your input.

Pushbutton A graphic control that simulates a real-life pushbutton. Use the pointer and mouse to push the button and start an action or set a state.

R

RAM Random-access memory.

ROM Read-only memory.

Root *See Superuser.*

S

Scroll bar A vertical or horizontal bar located on the side or bottom of a window that allows the user to view information that does not fit within the window.

SCSI *See Small Computer System Interface.*

SCSI ID. The address of a peripheral device connected to the SCSI bus. Addresses one through six are available to the user, and addresses 0 and 7 are for system use only.

Server A program that controls all access to input and output devices.

Session The time between when you log in and when you log out. Also called a "work session" or a "login session." *See also Current Session.*

Shell A command-line interpreter program used to invoke programs. Some examples of HP-UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a "command interpreter." *See also Command interpreter.*

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Shell command An instruction you give the system to execute a utility program or shell script

See also Shell script, Utility program.

Shell script A file that contains commands that the system can interpret and run in a shell.

Shutdown The process of taking the system from multi-user state to system administration state.

Slider One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause the window's contents to move, exposing previously hidden content.

Small Computer System Interface (SCSI) An IEEE standard for interfacing a computer to multiple, disparate high-speed peripherals such as a disk drive, a CD-ROM drive, and scanner, etc., singly or in combination *See also Fast-Wide Low-Voltage Differential SCSI, Narrow Single-Ended SCSI.*

SPA. Soft Physical Address. *See also Soft Physical Address.*

Soft physical address. This is a location in system memory associated with the DIMM cards.

Standalone A workstation that is not part of a cluster *See also Cluster.*

Style Manager The HP CDE application that provides the ability to customize various user-interface aspects of your system, including colors, fonts, keyboard and mouse attributes, session start-up and termination behavior, and access to other workstations.

Subdirectory A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the "parent directory." A subdirectory is also referred to as a "child directory" *See also Parent directory.*

Superuser A user with permission to enter any directory and make changes to files and programs that typical users are not allowed to change. To "become superuser" or "become root" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system

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as user root, or by typing su (switch user) at a command-line prompt. You must know the root password to become root.

System administrator The person responsible for system and network installation, updating, maintenance, and security at your site.

System call Invocation of a kernel process by a user program.

System name Same as Hostname or Nodename *See also Internet Protocol Address.*

T

Terminal window A terminal window is a type of HP CDE window that emulates a complete display terminal. Terminal windows are typically used to fool window-dumb programs into believing they are running in their favorite terminal. When not running programs or executing operating system commands, terminal windows display the command-line prompt *See also HP Common Desktop Environment.*

Title bar The rectangular area, between the top of the window and the window frame, that contains the title of the window object.

Transceiver A device that transmits and receives signals.

U

Ultra Narrow Single-Ended SCSI An 8-bit-wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters *See also Fast-Wide Low-Voltage Differential SCSI, Small Computer System Interface.*

User account The system administrator defines a user account for every person authorized to use the system. Each user account contains the name the computer uses to identify the person (user ID), and the person's password. User accounts also contain project and organization names, to help the system determine who can use the system and what resources each person or organization is authorized use *See also user ID, Password.*

User ID The name the computer uses to identify you. Your system administrator assigns you a user

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ID. Enter your user ID during the login procedure when the system displays the login prompt *See also user account.*

Username The name that the system recognizes as uniquely yours. Also known as your "login name." The username is also the name that identifies you to the mail system and other software requiring secure entry.

Utility *See Utility program.*

Utility program A program provided with the operating system to perform a frequently required task, such as printing a file or displaying the contents of a directory *See also Command, Shell command.*

W

Window A rectangular area of the screen for viewing information. HP CDE allows you to create several types of windows on the screen. Each window is a separate computing environment in which you may execute programs, edit text, display graphical images, etc. *See also Workspace Manager.*

Window Manager The HP CDE program that controls the size, placement, and operation of windows.

Working directory *See Current Working Directory.*

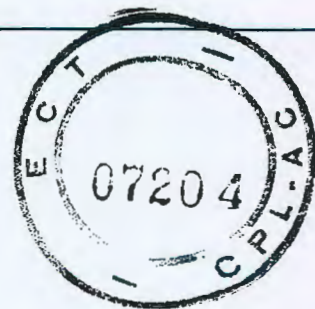
Workspace What the screen becomes when you start HP CDE. Although you can hide the workspace under terminal windows or other graphic objects, you can never position anything behind the workspace. All windows and graphic objects appear stacked "on top of" the workspace *See also HP Common Desktop Environment, Terminal Window.*

Workspace Manager The program that controls the size, placement, and operation of windows on the HP CDE Workspace. The Workspace Manager is a special Window Manager *See also Window Manager.*

Workstation A compact, graphics-oriented computer having high speed and high memory capacity. A workstation usually includes a keyboard, a monitor, and a system unit *See also Node, Disked workstation, Diskless workstation.*

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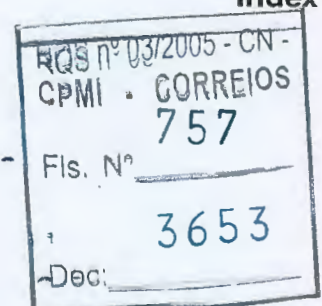
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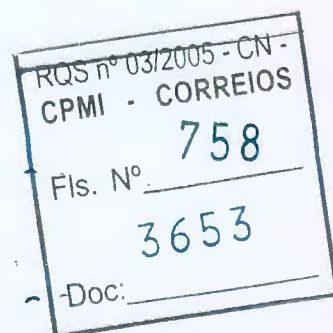
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E0200

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Version 1.0





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Using this information

Going outside this site:

Some of the topics will hyperlink to information that is accessed through sites which are not under our control. If you are accessing this information via CD-ROM, you will need internet access.



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What's New?



Visit this page to find out what new information has been released since the last web site publish and CD-ROM on July, 1999. The additions and modifications to the web site listed here are effective as of October, 1999.

New Sections On the Web Site:

- *Cable Management* - This section describes how to effectively route and bundle cables in the back of the System Cabinet.
- *Accessing the GSP Port* - This section outlines the steps to configure the Guardian Service Processor port on the Core I/O card.

Modified Sections On the Web Site:

- *Calculate Physical Space Requirements* - This portion of the N-Class Site Preparation information defines the space requirements for installing an N-Class system.
- *Determine Service Access Needs* - This portion of the N-Class Site Preparation information aides the customer in determining the space requirements for installing an N-Class system.

The current version of the N-Class Customer CD-ROM is 2.0, released on November, 1999.

The web site will be identical to the CD-ROM on November, 1999.

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3

N-Class System Hardware Overview/Reference Information

System Overview

The following sections provide or point to an overview of the N-Class server hardware and software.

Hardware overview

For an overview of the Enterprise Server Family hardware - [Click Here](#)

For an overview of the HP-9000 N-Class Server hardware - [Click Here](#)

Software Overview

The N-Class server is designed to operate using HP-UX version 11.0 or newer.

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N-Class Enterprise Server System Safety and Regulatory Information

Overview

Regulatory Compliance statements are required by some countries for international importation of N-Class Enterprise Servers. The following information is provided:

- “Regulatory Information”
- “Electrical Safety”
 - “Electrostatic Discharge (ESD) Precautions”
 - “Battery Notice”
- “Cabinet Safety Precautions”
- “Declaration of Conformity”
- “FCC Statement (USA Only)”
- “Canada RFI Statement”
- “European Union RFI Statement”
- “Korean RFI Statement”
- “Taiwan RFI Statement”
- “Japan Safety and Regulatory Statements”
- “Acoustics (Germany)”
- “Australian C-Tick Label”
- “Laser Safety”

Product Information

For detailed information on the N-Class Enterprise Server product, please go to the <http://docs.hp.com> web site (in the *Systems Hardware* selection), or the <http://eproducts.hp.com> web site.

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Regulatory Information

For your protection, this product has been tested for conformance to various national and international regulations and standards. The scope of this regulatory testing includes electrical and mechanical safety, electromagnetic emissions, immunity, acoustics and hazardous materials.

When required, approvals are obtained from third party test agencies. Approval marks appear on the product label. In addition, various regulatory bodies require some information under the headings listed in this section.

Electrical Safety

This product has not been evaluated for connection to an "IT" power system (AC distribution system having no direct connection to earth according to IEC 950).

Locate the AC outlet near the computer! The AC power cords are this product's main AC disconnect devices and must be easily accessible at all times.

Electrostatic Discharge (ESD) Precautions

When handling any electronic component or assembly (such as, a PCI card or Memory SIMM), you must observe the following antistatic precautions to prevent damage. An ESD kit (HP P/N A3024-80004) is available (or supplied with Memory additions). This kit contains one wrist strap, one conductive sheet, and one anti-static foam pad.

- Always wear a grounded wrist strap when working around the system, and when handling printed circuit boards.
- Treat all assemblies, components and interface connections as static-sensitive.
- Avoid working in carpeted areas, and keep body movement to a minimum while removing or installing boards, to minimize buildup of static charge.

Battery Notice

This product contains a Lithium battery.

This battery is not to be removed or replaced by the user. If the battery needs to be replaced, contact your Hewlett-Packard authorized service personnel.

CAUTION

Lithium batteries may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire.

Please properly recycle all used batteries.

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Cabinet Safety Precautions

WARNING	Cabinets are heavy even when empty. Exercise caution when moving cabinets whether equipment is installed in the cabinet or not. Avoid rolling cabinets on rough or uneven surfaces or inclines greater than 10 degrees. Unloading cabinets from the pallet and movement of cabinets should be performed by at least two people.
----------------	---

WARNING	Slideable products are not to be extended from the cabinet while the equipment is on the shipping pallet. The cabinet must be unloaded from the pallet and both front and rear anti-tip feet properly installed prior to extending any slideable product.
----------------	---

WARNING	Once installed, both the front and rear anti-tip feet must remain in place to maintain stability. Only one slideable product must be extended at a time.
----------------	--

Sicherheitsvorkehrungen für Einbaugehäuse

WARNING	Einbaugehäuse haben auch ohne Inhalt ein hohes Gewicht. Seien Sie also vorsichtig, wenn Sie ein Gehäuse hin und her bewegen, sei es mit oder ohne installierten Innenteilen. Rollen Sie das Gehäuse nach Möglichkeit nicht über rauhe oder unebene Oberflächen bzw. Oberflächen mit mehr als 10 Grad Neigung. Das Abladen von der Palette und Positionieren muß von mindestens zwei Personen durchgeführt werden.
----------------	---

WARNING	Ziehen Sie keine beweglichen Teile heraus, solange sich das Einbaugehäuse auf der Palette befindet. Laden Sie es zunächst von der Palette ab, und stellen Sie es mit den kippsicheren Vorder-und Hinterfüßen ordnungsgemäß auf, um bewegliche Teile sicher herausziehen zu können.
----------------	--

WARNING	Nach deren Installation dürfen die kippsicheren Füße nicht wieder entfernt werden, um sicheren Stand zu gewährleisten. Ziehen Sie jeweils nur ein bewegliches Teil heraus.
----------------	--

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Consignes de sécurité relatives aux armoires**WARNING**

Une armoire est lourde même lorsqu'elle est vide. Faites preuve de prudence lorsque vous en déplacer une, peu importe si des éléments y sont installés ou non. Évitez de faire rouler l'armoire sur un sol irrégulier ou incliné à plus de 10 degrés. Il faut au moins deux personnes pour décharger une armoire de la palette d'expédition et la déplacer.

WARNING

Ne faites pas glisser les éléments coulissants hors de l'armoire alors qu'elle se trouve sur la palette d'expédition. Vous devez d'abord décharger l'armoire de la palette et installer correctement les pieds antibasculement, en avant et en arrière, avant de faire glisser les éléments coulissants.

WARNING

Lorsqu'ils sont installés, les pieds antibasculement situés à l'avant et à l'arrière doivent tous deux rester en place pour assurer la stabilité de l'armoire. Vous ne devez faire glisser hors de l'armoire qu'un seul élément coulissant à la fois.

Medidas de seguridad para armarios**WARNING**

Los armarios son pesados aun cuando estén vacíos. Tenga cuidado cuando mueva los armarios independientemente de que haya equipo instalado en el armario o no. Evite desplazar los armarios sobre superficies rugosas o dispares o pendientes de más de 10 grados. Dos personas, como mínimo, tienen que realizar la descarga de los armarios de la plataforma de carga y mover los armarios.

WARNING

Los productos deslizables no deben extenderse del armario cuando el equipo se encuentre en la plataforma de carga. Se debe descargar el armario de la plataforma e instalar bien las punteras delanteras y traseras de protección antes de extender cualquier producto deslizable.

WARNING

Una vez instalado, se deberán dejar puestas las punteras de protección, delanteras y traseras, para mantener la estabilidad. Se deberá extender un solo producto deslizable cada vez.

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Procedimentos de Segurança - Armários

WARNING

Os armários são pesados, mesmo quando vazios. Tenha cuidado ao movimentar os armários, quer haja equipamentos instalados quer não. Evite deslizar os armários sobre superfícies acidentadas, irregulares ou com inclinação superior a 10 graus. A retirada dos armários do palete e sua movimentação deverão ser feitas por, no mínimo, duas pessoas.

WARNING

Partes deslizantes não deverão ser abertas enquanto o armário encontrar-se no palete de embarque. O armário deve ser descarregado do palete e os anteparos nos pés dianteiros e traseiros devem ser instalados adequadamente antes de se abrir qualquer parte deslizante.

WARNING

Uma vez instalados, tanto os anteparos nos pés dianteiros quanto nos traseiros devem permanecer em seus lugares adequados para garantir a estabilidade da peça. Deve-se abrir apenas uma parte deslizante por vez.

Precauzioni di sicurezza sugli armadi

WARNING

Gli armadi sono molto pesanti anche quando sono vuoti. Esercitare la massima cautela durante lo spostamento degli armadi indipendentemente dal fatto che l'apparecchiatura sia installata o meno. Evitare di far scorrere gli armadi su superfici irregolari, disagiati o con un'inclinazione superiore ai 10 gradi. Servirsi di almeno due persone sia per scaricare che per spostare gli armadi dal pallet.

WARNING

Non aprire o estendere gli elementi scorrevoli dagli armadi mentre l'apparecchiatura è sul pallet di trasporto. Prima di estendere o aprire un qualsiasi elemento scorrevole è necessario aver scaricato gli armadi dai pallet ed aver debitamente installato gli appositi piedini antiribaltamento anteriori e posteriori.

WARNING

Non smontare i piedini antiribaltamento dopo l'installazione perché stabilizzano gli armadi. Estendere o aprire soltanto un prodotto scorrevole per volta.



Säkerhetsföreskrifter för Kabinett

WARNING

Kabinetten är tunga även när de är tomma. Var försiktig när du flyttar ett kabinett, oavsett om det är tomt eller innehåller utrustning. Undvik att rulla kabinett på ett underlag som är ojämnt eller lutar mer än 10 grader. Det krävs minst två personer för att lasta av ett kabinett från transportpallen eller för att flytta det.

WARNING

Inskjutningsbara produkter får inte vara utdragna när utrustningen befinner sig på transportpallen. Kabinettet måste lastas av från pallan och tippskyddsfötter ska monteras både fram- och baktill innan en inskjutningsbar produkt dras ut.

WARNING

Efter montering ska tippskyddsfötterna sitta kvar både fram- och baktill så att stabiliteten upprätthålls. De inskjutningsbara produkterna får bara dras ut en i sänder.

Voorzorgsmaatregelen voor de veiligheid voor kasten

WARNING

Kasten zijn zwaar, ook als deze leeg zijn. Ga voorzichtig te werk als u een kast verplaatst, of er nu wel of niet apparatuur in de kast is geïnstalleerd. Rol kasten niet over ruwe of ongelijke oppervlakken of hellingen van meer dan 10 graden. Als u een kast van een pallet moet afhalen of moet verplaatsen, doet u dat dan altijd met twee personen.

WARNING

Zorg ervoor dat er geen uitschuifbare onderdelen uit de kast uitsteken als de apparatuur ter verzending op een pallet is geplaatst. Voordat u een uitschuifbaar onderdeel uitschuift, moet u de kast eerst van het pallet halen en de stabilisatiesteunen aan de voor- en achterkant op de juiste manier installeren.

WARNING

Zodra de kast is geïnstalleerd, mogen de stabilisatiesteunen niet meer worden verplaatst. U mag niet meer dan één uitschuifbaar onderdeel tegelijk uitschuiven.

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Sikkerhedsforanstaltninger for skabe

- | | |
|---------|--|
| WARNING | Skabene er tunge, selv når de er tomme. Vær forsigtig når De flytter skabe, hvad enten der er installeret udstyr i skabet eller ej. Undgå at rulle skabe på ru eller ujævne overflader eller skråninger der hælder mere end 10 grader. Der skal mindst to personer til at aflæsse skabe fra pallen og til at flytte skabe. |
| WARNING | Udtræksdele må ikke være trukket ud, når skabet står på forsendespallen. Skabet skal først læsses af pallen og anti-tip fødderne skal være installeret både forpå og bagpå, før udtræksdelene må trækkes ud. |
| WARNING | Efter installation skal både de forreste og bageste anti-tip fødder blive siddende for at opretholde stabiliteten. Der må kun trækkes en udtræksdel ud ad gangen. |

Sikkerhedsforanstaltninger for skapene

- | | |
|---------|---|
| WARNING | Skapene er tunge, selv når de er tomme. Vær forsigtig når du flytter skap, uansett om de er tomme eller inneholder utstyr. Ikke rull skap på ru eller ujævne overflater eller i skråninger som heller mer enn 10 grader. Det trengs minst to personer til lessing av skap fra pallen og til flytting av skap. |
| WARNING | Produkter som kan gli inn og ut av skapet bør ikke være trukket ut når skapet er på transportpallen. Skabet må lesses av pallen og anti-tippe-føtter må være påmontert både foran og bak før et produkt som kan gli inn og ut av skapet, trekkes ut. |
| WARNING | Etter montering skal anti-tippe-føttene både foran og bak fortsatt være på for å opprettholde stabilitet. Produkter som kan gli inn og ut av skapet, må kun trekkes ut ett og ett om gangen. |

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Laitekaappia koskeva turvavaroitus**WARNING**

Kaapit ovat tyhjinäkin painavia. Ole varovainen siirtäessäsi kaappia siitä riippumatta, onko siihen asennettu laitteistoa. Älä rullaa kaappeja karkeilla tai epätasaisilla pinnoilla tai jos pinnan kaltevuus ylittää 10 astetta. Kaappien ottamiseen alas lastausalustalta ja niiden siirtämiseen tarvitaan ainakin kaksi henkilöä.

WARNING

Liukuvia osia ei pidä vetää ulos kaapista laitteen ollessa lastausalustalla. Kaappi täytyy ottaa alas alustalta, ja sekä etummaisen että takimmaisen kallistustuen täytyy olla asennettu ennen liukuvien osien vetämistä ulos.

WARNING

Kun kallistustuet on asennettu, ne täytyy jättää paikoilleen sekä edessä että takana, jotta kaappi pysyisi vakaasti paikoillaan. Vain yksi liukuosa saa olla ulkona kerrallaan.



Меры предосторожности при работе со стойками

ОСТОРОЖНО Стойка очень тяжелая, даже если в ней не установлено оборудование, поэтому при ее перемещении соблюдайте меры предосторожности. Избегайте перемещения стойки по неровной поверхности или поверхности с углом наклона более 10 градусов. Снятие стойки с поддона и ее перемещение необходимо выполнять по крайней мере вдвоем.

ОСТОРОЖНО Оборудование, установленное на полозьях, нельзя выдвигать из стойки, пока она находится на транспортировочном поддоне. Прежде чем выдвинуть из стойки какое-либо оборудование, необходимо снять стойку с поддона и выдвинуть спереди и сзади стойки дополнительные опоры, предохраняющие от опрокидывания.

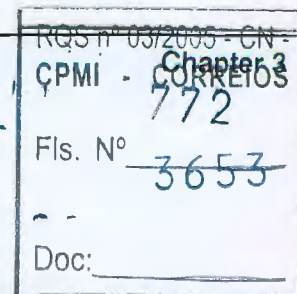
ОСТОРОЖНО Для обеспечения устойчивости стойки передние и задние опоры, предохраняющие стойку от опрокидывания, должны быть всегда выдвинуты. Никогда не выдвигайте одновременно более одного компонента оборудования, установленного на полозья.

Кабинетового опрокидывания

注意 Кабинетового является пустого состояния также соответствующий вес. Кабинетового к оборудованию установлено и даже если, перемещение должно быть осторожным. Поверхности неровности или не горизонтальными местами, кабинетового вращать или 10 градусов наклон делать не рекомендуется. Паллетой от кабинетового опустить или перемещать когда минимум 2 человек должны идти.

注意 Оборудование на паллете находится, слайд-типа изделия кабинетового наружу не вытаскивать. Слайд-типа изделия кабинетового от кабинетового вытаскивать, заранее кабинетового с паллеты опустить, наклон防止部品を前後両方とも適切に取り付けてください。

注意 Установка, передних наклон防止部品は安定を維持するため、取り付けたまの状態で置いてください。スライド型製品は、一度に2台以上引き出さないでください。





캐비닛 안전 주의사항

- 경고** 캐비닛은 비어 있는 경우에도 무게가 나갑니다. 캐비닛을 운반할 때에는 안에 장비가 설치되어 있지 않더라도 항상 주의하십시오. 캐비닛을 지면에 굴곡이 있거나 수평을 이루지 않는 곳에서 회전하거나, 10도 이상 경사로 기울이지 마십시오. 운반대서 캐비닛을 내려거나, 운반할 때에는 적어도 2 사람 이상이 수행해야 합니다.
- 경고** 장비가 운반대에 있는 경우, 슬라이드형 제품이 캐비닛 밖으로 빠져 나오지 않도록 주의하십시오. 슬라이드형 제품을 캐비닛에서 꺼내려면, 우선 캐비닛을 운반대서 내려고 수평을 유지하기 위한 고정용 다리를 앞뒤 양쪽에 설치해야 합니다.
- 경고** 설치를 마친 다음, 앞뒤 고정용 다리는 안정성을 위해 그대로 두십시오. 슬라이드형 제품은 한번에 두 개 이상 캐비닛에서 꺼내지 마십시오.

安全措施

- 注意** 空机柜也很沉重。无论机柜里是否装有设备，都要小心移动。不要在粗糙不平处滚动，也不要使机柜倾斜超过 10 度。无论是从货盘上搬下机柜，还是移动机柜，都应当由至少两个人来操作。
- 注意** 当设备放在运输货盘上时，请勿将可滑动的产品从机柜中移出。在移动可滑动的产品之前，一定要先把机柜从货盘上卸下来，并将前后防倾倒支脚装好。
- 注意** 装好前后防倾倒支脚后，机柜应保持稳定不动。每次只能从机柜中移出一件可滑动的产品。

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機箱安全措施

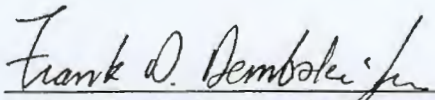
注意 機箱即使是空的，也很沉重。無論其中裝有設備與否，都要小心移動。不要在粗糙不平的地面滾動機箱，也不要讓機箱傾斜超過 10 度。無論是從運送底座上搬下機箱，還是移動機箱，都應當至少由兩個人來操作。

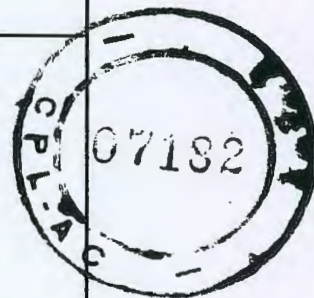
注意 當設備放在運送底座上時，可滑動的製品不可伸出機箱以外。讓可滑動的製品伸出機箱以前，一定要先把機箱從底座上卸下，並將前後防傾倒腳座裝好。

注意 當裝好後，前後兩個防傾倒腳座須保持這個狀態以維持穩定。一次只能讓一件可滑動的製品伸出機箱以外。

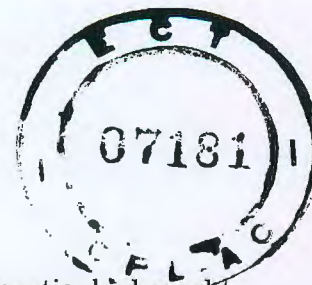
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Declaration of Conformity

DECLARATION OF CONFORMITY according to ISO/IEC Guide 22 and EN 45014	
Manufacturer's Name:	Hewlett-Packard Company Internet & Applications Systems Division
Manufacturer's Address:	8000 Foothills Blvd. Roseville, CA 95747 USA
declares, that the product	
Product Name:	PA-RISC/IA64 Computer System
Model Number(s):	Nxxxx (each x is any number 0-9)
Product Options:	All
conforms to the following Product Specifications:	
Safety:	IEC 950:1991 + A1, A2, A3, A4 / EN 60950:1992 + A1, A2, A3, A4 GB 4943-1995 IEC 825-1:1993 / EN 60825-1:1994 + A11, Class 1
EMC:	CISPR 22:1993 +A1, A2 / EN 55022:1994 +A1, A2 - Class A ¹ GB 9254-1988 EN 55024:1998 IEC 61000-4-2:1995, EN 61000-4-2 1995 IEC 61000-4-3 1995, EN 61000-4-3 1996 IEC 61000-4-4 1995, EN 61000-4-4 1995 IEC 61000-4-5 1995, EN 61000-4-5 1995 IEC 61000-4-6 1996, EN 61000-4-6 1996 IEC 61000-4-8 1993, EN 61000-4-8 1993 IEC 61000-4-11 1994, EN 61000-4-11 (1994) EN 61000-3-2:1995 +A1, A2 / IEC 1000-3-2:1995, Class A EN 61000-3-3:1995 / IEC 1000-3-3:1994
Supplementary Information:	
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly.	
1) The Product was tested in a typical configuration with Hewlett Packard computer peripherals.	
 Frank D. Dembski Jr., Quality Manager	
Roseville, 3/15/99	
European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE, Herrenberger Straße 130, D-71034 Böblingen (FAX: + 49-7031-14-3143)	



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FCC Statement (USA Only)

The United States Federal Communications Commission has specified that the following notice be brought to the attention of users of this product:

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Hewlett-Packard's system verification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment. Cables used with this device must be properly shielded to comply with the requirements of the FCC.

Canada RFI Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Notice relative aux interférences radioélectriques (Canada)

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union RFI Statement

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

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Korean RFI Statement

사용시 안내문 (A급 기기)

이 기기는 업무용으로 전자파장애경정을 받은
기기이오니, 만약 잘못 구입하셨을 때에는 구입
한 곳에서 비임무용으로 교환하시기 바랍니다.



Taiwan RFI Statement

警告使用者：這是甲類的資訊產品，在居住的
環境中使用時，可能會造成射頻干擾，在這種
情況下，使用者會被要求採取某些適當的對策。

Japan Safety and Regulatory Statements

高調波ガイドライン適合品

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準
に基づくクラスA 情報技術装置です。この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

省エネ法による区分：D

エネルギー消費効率：0.62

エネルギー消費効率とは、省エネ法で定める測定方法により
測定された消費電力を、省エネ法で定める複合理論性能で
除したものである。

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Acoustics (Germany)

Acoustic noise level per ISO 9296 (25° C):

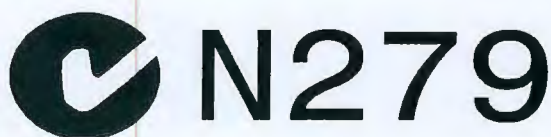
L_{pA_m} <60dB (operators position)

Geräuschemission (Deutschland)

Geräuschemission nach ISO 9296 (25° C):

L_{pA_m} <60dB (Arbeitsplatz)

Australian C-Tick Label

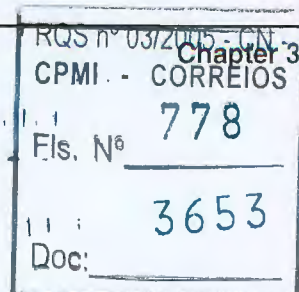


Laser Safety

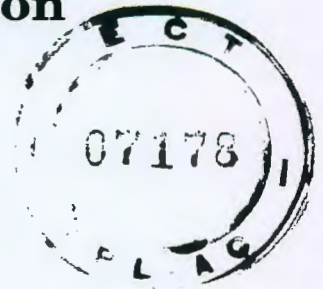
This product contains a laser internal to the Optical Link Module (OLM) for connection to the Fibre communications port.

In the USA, the OLM is certified as a Class 1 laser product conforming to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR, Subchapter J. The certification is indicated by a label on the plastic OLM housing.

Outside the USA, the OLM is certified as a Class 1 laser product conforming to the requirements contained in IEC 825-1:1993 and EN 60825-1:1994, including Amendment 11:1996.



N-Class Server Site Preparation



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Review the Sales Order

Customer sales order information is available through the Support Connect system and through the WWOMS (World-Wide Order Management System). Carefully review the sales order information to assess:

- the number of integrated systems ordered
- the number of peripheral cabinets ordered
- the number and type of PDUs
- special configuration requirements
- delivery dates

Plan the Site Visit

After a careful review of the sales order, a Hewlett-Packard Site Preparation Specialist will make arrangements for a preliminary on-site meeting. The purpose of this meeting will be to discuss the site planning and preparation needs including electrical, mechanical, and physical system requirements.

Ideally, this meeting should be scheduled at least 60 days prior to the solution delivery date for the equipment (see "*Develop the Schedule*"). If that is not feasible, it should be planned for the earliest possible date.

Key contact information for both the Hewlett-Packard Site Preparation Specialist and the customer should be recorded and kept for reference:

Customer information	
Name:	Phone No:
Street:	City or Town:
State or Province:	Country
Zip or postal code:	
Primary customer contact:	Phone No.:
Secondary customer contact:	Phone No.:
Traffic coordinator:	Phone No.:
Hewlett-Packard information	
Sales representative	Order No:
Representative making survey	Date:
Scheduled delivery date	

The Hewlett-Packard Site Preparation Specialist and the customer contact should discuss and agree as to any other participants included in the *Site Planning Team*.

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Visit the Site

During the preliminary site visit, it is important that the Hewlett-Packard Site Preparation Specialist and the customer representative accomplish the following major tasks:



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Review Customer Responsibilities

The customer is responsible for scheduling, planning, and preparing a suitable environment for the installation and operation of a complete computer system. The Hewlett-Packard Site Preparation Specialist will be available to assist you throughout the planning and preparation for and the installation of your system. Carefully read the Site Planning and Warranty Information provided with your system.

The HP N-Class Enterprise Servers are primarily designed to be installed and operated in computer room environments. **DO NOT INSTALL HP N-Class ENTERPRISE SERVERS IN AN OFFICE ENVIRONMENT.** The power, airflow, and acoustic characteristics of N-Class servers make it unsuitable for operation in office environments.

If computers are new to your site, you will need to pay particular attention to the following items:

- Airflow
- Local building codes
- Local electrical codes
- Local safety codes
- Space and weight limitations/system accessibility
- Environmental requirements (temperature, humidity, etc.)
- Electrical and grounding requirements
- Acoustics

If your computer is to be installed in an existing computer room, you should analyze the following items and integrate them into your site plan:

- Available space
- Environmental requirements
- Electrical requirements
- Airflow
- Acoustics

Local Codes

Special local codes exist in some locations regulating the installation of computer equipment. The customer is responsible for making sure their computer system installation is in compliance with all local laws, regulations, and codes for mechanical, building, and electrical distribution systems prior to system installation. The Hewlett-Packard Site Preparation Specialist can assist you in determining your local regulations.

Data Communications Equipment

The customer is responsible for ordering and installing all required data communications equipment such as:

- Any hardware or cables for connection or installation of data communications equipment
- Network Links

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- Telephone equipment
- Modems (Consult with the Site Preparation Specialist for Hewlett-Packard requirements.)
- Equipment supplied by companies other than HP

Communications equipment at the computer site is not part of the computer and must be considered separately for power, space, interface cables, and cooling requirements.

Selection of Site Personnel

Depending on the complexity of the computer system, the customer is responsible for selecting a Site Coordinator, Principal Operator, and a Site Planning Team. Depending on customer requirements, the Principal Operator may or may not perform all of these tasks. In some installations there may be two or three people assigned to the various "operator" responsibilities.

Site Coordinator

The Site Coordinator is responsible for the following tasks:

- Establishing and maintaining site preparation schedules
- Coordinating construction efforts
- Primary liaison with Hewlett-Packard representatives

Principal Operator

The Principal Operator is responsible for the following tasks:

- System operation
- Monitoring site preparation
- Ordering computer supplies
- Scheduling user training
- Maintaining maintenance schedules

Site Planning Team

The Site Planning Team is responsible for the following tasks:

- Determining site location and size
- Reviewing construction requirements
- Reviewing local codes
- Reviewing insurance requirements
- Scheduling all events related to site completion

Members of the Site Planning Team should include the Site Coordinator, Principal Operator, and the Hewlett-Packard Site Preparation Specialist. When possible, the electrical contractor, a site construction coordinator (familiar with local electrical codes), and an air conditioning specialist should be included.

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Review HP Responsibilities

The following paragraphs outline Hewlett-Packard's site planning and verification services.

Site Planning Visit

Upon receipt of a purchase order, a Hewlett-Packard Site Preparation Specialist will make arrangements for an on-site meeting with your principal operator and electrician. As a part of this on-site meeting, the Site Preparation Specialist will discuss site planning and preparation needs including electrical, mechanical, and physical system requirements. If required, a Hewlett-Packard Site Preparation Specialist will be available for consultation.

As a result of this visit, a site layout plan agreeable to you and Hewlett-Packard will be created.

Site Verification Visit

A Hewlett-Packard Site Preparation Specialist will verify that your site meets or exceeds your computer system's requirements and specifications prior to and during system installation. Sites failing to meet the system requirements and specifications may incur additional service charges.

Hewlett-Packard provides service under the conditions of the Computer Products Warranty & Installation Terms, Customer Support Services Agreement, Installation Support Plan, and on a time and materials basis.

Third Party Service

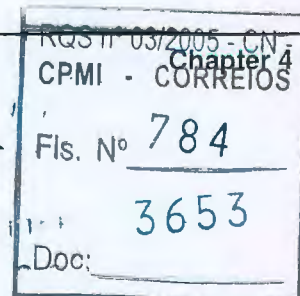
If an HP N-Class Enterprise Server and/or applications software is purchased from a "third party vendor", that third party is responsible for providing consultation services on the system operation and applications software.

In the situation of a third party purchase, a maintenance agreement for hardware and an Account Management Service (AMS) for software are available directly from Hewlett-Packard.

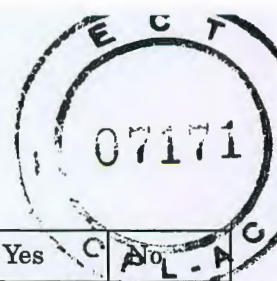
Verify system complicity with regulatory standards

The following checklist should be filled out during the preliminary site visit to ensure regulatory standards are met and that any site deficiencies are identified:

Computer room			
No.	Area or condition	Yes	No
1.	Is there a copy of the completed floor plan?		
2.	Is there adequate space for maintenance needs?		
3.	Is access to the site or computer room restricted?		



4.	Is the computer room structurally complete?		
5.	Is a raised floor installed?		
6.	Is the raised floor adequate for equipment loading?		
7.	Are there channels or cutouts for cable routing?		
8.	Is there a remote console telephone line available with an RJ11 jack?		
9.	Are telephone lines for remote support available?		
10.	Are customer supplied peripheral cables available?		
12.	Is a lift tool available if required?		
Power and lighting			
No.	Area or condition	Yes	No
13.	Are lighting levels adequate for maintenance?		
14.	Are there ac outlets available for servicing needs?		
15.	Does the input voltage correspond to equipment specifications?		
16.	Does the input frequency correspond to equipment specifications?		
17.	Are lightning arrestors installed?		
18.	Is power conditioning equipment installed?		
No.	Area or condition	Yes	No
19.	Is there a dedicated branch circuit for equipment?		
20.	Is the dedicated branch circuit less than 250 feet (72.5 meters)?		
21.	Are the input circuit breakers adequate for equipment loads?		
Safety			
No.	Area or condition	Yes	No
22.	Is there an emergency power shut-off switch?		
23.	Is there a telephone available for emergency purposes?		
24.	Is there a fire protection system in the computer room?		
25.	Is antistatic flooring installed?		
26.	Are there any equipment servicing hazards?		
27.	Are the proper tools and installation equipment available?		
Cooling			



No.	Area or condition	Yes	No
28.	Can cooling be maintained between 54° and 86° F (20° and 30° C)?		
29.	Can temperature changes be held to less than 10° C per hour?		
30.	Can humidity level be maintained between 40% and 60%?		
31.	Are air conditioning filters installed?		
Storage			
No.	Area or condition	Yes	No
32.	Are cabinets available for tape and disc media?		
33.	Is shelving available for documentation?		
Training			
No.	Area or condition	Yes	No
33.	Are personnel enrolled in the System Administrator's Course?		
34.	Is on-site training needed?		

Develop the Schedule

The following schedule lists the sequence of events for an ideal system installation.

- 60 days before installation
 - Floor plan design completed and mailed to Hewlett-Packard
- 30 days before installation
 - Primary power and air conditioning installation completed
 - Telephone and data cables installed
 - Fire protection equipment installed
 - Major facility changes completed
 - Special delivery requirements defined
 - Site inspection survey completed
 - Delivery survey completed
 - Signed copy of the site inspection and delivery survey mailed to Hewlett-Packard

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- Site inspection and predelivery coordination meeting arranged with a Hewlett-Packard Site Preparation Specialist to review the inspection checklist and arrange a solution delivery schedule.
- Solution delivery date
- Final check made with an Hewlett-Packard Site Preparation Specialist to resolve any last minute problems

Determine the Site Requirements



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Calculate space needs

Consideration must be given to the space requirements for both the delivery and unpacking of the HP N-Class systems and cabinets as well as the physical space requirements for the installed equipment.

Specify the Space for Unpacking

Specify Uncrating Space

N-Class Systems are shipped in integrated cabinets on a 40in. x 48in. pallet. The combined height of the packaged container and the pallets are as follows:

- 1.1 meter rack - 60in.
- 1.6 meter rack - 73in.
- 2.0 meter rack - 87in.

Allow a circular area approximately 12ft. in diameter room for uncrating the system and rolling the cabinet off the pallet on rails. Allow additional space for temporary storage of the shipping containers and packing materials.

Specify the Aisle Space

There should be enough clearance to move equipment safely from the receiving area to the computer room. Permanent obstructions, such as pillars or narrow doorways, can cause equipment damage. Allow a minimum of 2ft. clearance on either side of the cabinet or shipping container to allow for maneuvering the equipment.

Delivery plans should include the possible removal of walls or doors.

Calculate Physical Space Requirements

SPU

The A5537A, A5538A, or A5539A cabinets in which the SPU resides is 1.15 meter (45.5 in.) deep by 0.61 meter (24.0 in.) wide, with heights as follows:

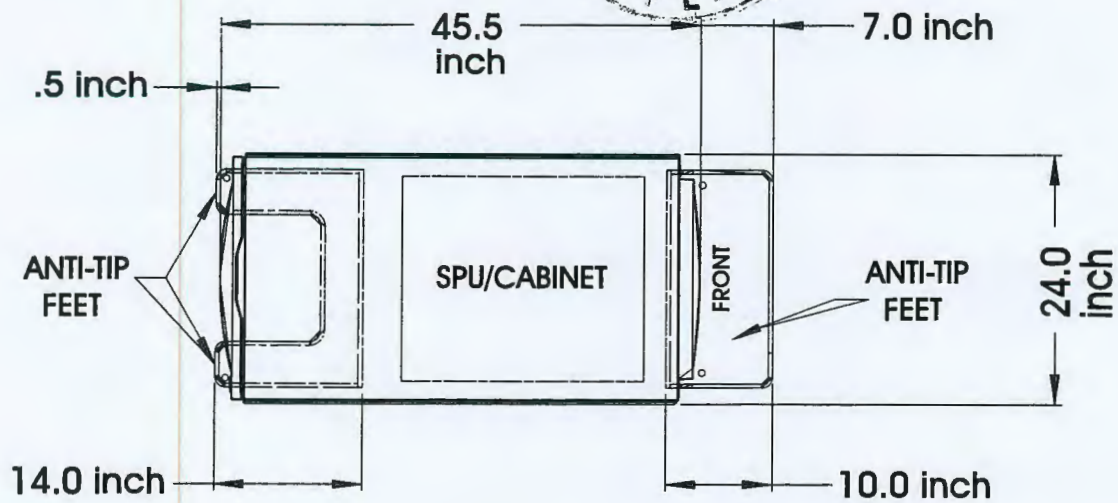
- A5537A 1.2 meter rack (49.5 inches)
- A5538A 1.6 meter rack (63.5 inches)
- A5539A 2.0 meter rack (77.5 inches)

The cabinet anti-tip feet (required for safety) extend the depth an additional 0.18 meter (7 in.) at the front of the cabinet. The minimum physical space for the N-Class SPU in a cabinet is shown in the following illustration:

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N-Class Server Site Preparation
Calculate space needs



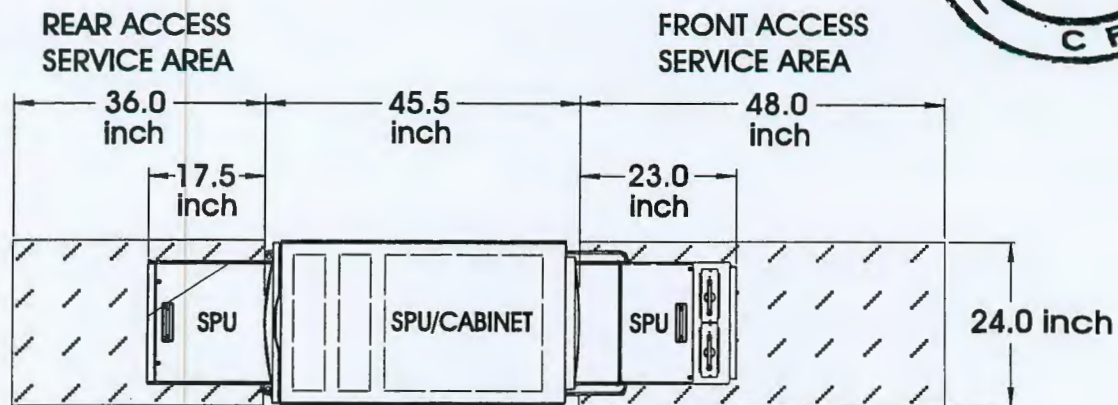
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For service access, the SPU extends (17.5in. from the rear, and 23.0in. from the front) beyond the edge of the chassis, as shown in the following illustration. The HP recommended service area for the front and rear of the N-Class SPU should not take precedence over local codes and regulations. However, HP does require a minimum of 0.91 meter (3 ft.) of clearance on the front or back along with 1.22 meter (4 ft.) on the opposite side (front preferred) to allow for future, add-on installations. HP suggests consulting your local authority having jurisdiction familiar with the current regulations for compliance in your area.

NOTE

Primary service access for the N-Class computer is from the top front and top rear. For the 2.0 meter cabinets with an N-Class in the top position of the cabinet, you will need a service access ladder. Please allow sufficient room in the aisle for the service access ladder to be positioned close to the extended N-Class computer mounted in the top of a 2.0 meter cabinet.

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Please refer to the paragraph before this diagram for more details on the *Service Area* dimensions.

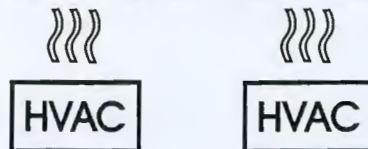
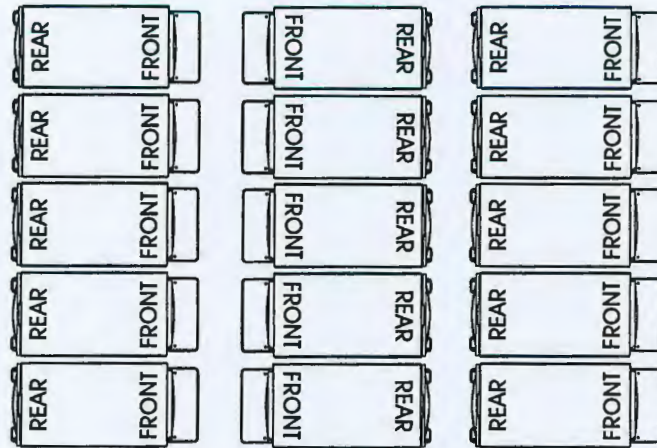
As I/O cards are replaced from the chassis sides, the SPU/cabinet sides cannot be placed within 0.61 meter (2 ft.) adjoining a wall. Because of the slide-rail service access, however, no specific side clearance between SPU cabinets is required, and cabinets can be sequenced alongside one another according to customer needs.

CAUTION

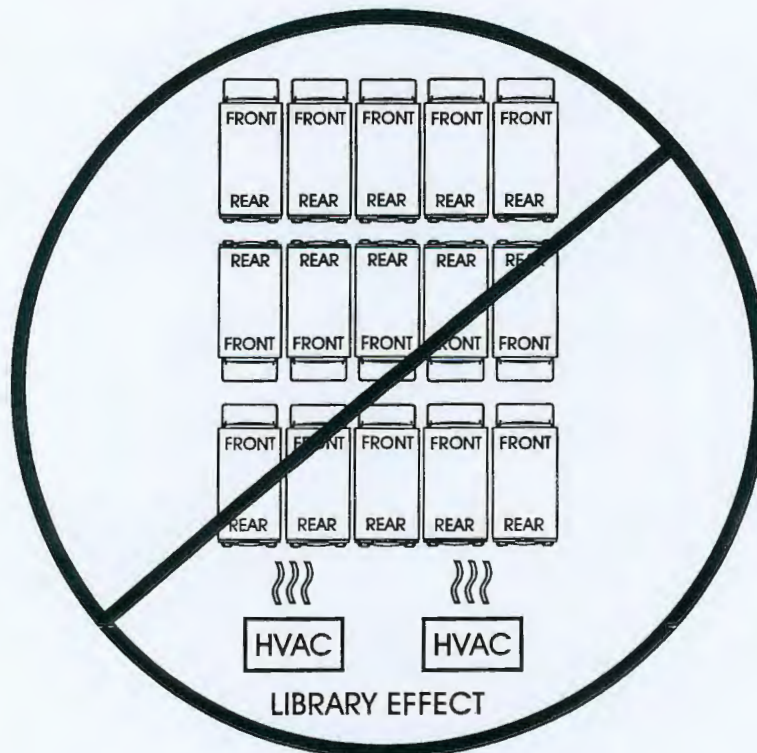
HP N-Class systems intake cool air from the front and exhaust heat to the rear. DO NOT position N-Class cabinets in a close, front-to-rear sequence, as this will force rearward SPUs to intake successively hotter air from the preceding SPUs, that could potentially generate over temperature conditions and possibly cause equipment failure.

Avoid configuring rows of SPUs in such a way that the air flow from the HVAC is obstructed, creating unacceptable temperature gradients in the vertical space between rows ('library effect').

SPU/CABINETS



CORRECT SET-UP



LIBRARY EFFECT

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I/O Cabinets

The A5537A, A5538A, and A5539A cabinets have the same 1.0 meter (39.5 in.) deep by 0.61 meter (24.0 in.) wide footprint described for the SPU cabinet. I/O cabinets can be positioned alongside the SPU cabinet.

Specify Aisle Space for Cooling and Service Access

The minimum aisle space between rows of installed HP N-Class SPU/cabinets is 0.91 meter (3 ft.), front or back, along with 1.22meter (4 ft.) on the opposite side (front preferred), for airflow cooling and for serviceability. Refer to "Calculate Cooling Needs" for additional space considerations.

NOTE

Refer to the Service Area diagram and Note for detailed service access dimensions.

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Calculate flooring requirements

The computer room floor must be able to support the total weight of the installed computer system as well as the weight of the individual cabinets as they are moved into position.

Specify Raised Floor Requirements

If a raised floor system is used, a complete grounding grid for maintaining equal potential over a broad band of frequencies should be installed. The grounding grid should be connected to the equipment cabinet and electrical service entrance ground at multiple connection points via minimum #6 AWG (16mm²) wire ground connector.

There are three types of raised floor systems:

- Free standing - consists solely of the tiles and pedestals supporting the tiles. Metal backing on the tiles supports the weight from one pedestal to the next, and provides electrical continuity from one pedestal to the next.
- Drop-in stringers - a simple metal bar extends from one pedestal to another, providing additional support for the tile. Weight distribution and electrical continuity are improved over the free standing system.
- Bolt-in stringer - a metal bar extends from one pedestal to the next, but the bar is bolted into place, providing additional electrical and mechanical security. The system provides the best electrical continuity and weight distribution.

Bolt-in String System grounding: One approach to grounding for bolt-in stringer systems go around the entire perimeter of the room, connecting every third pedestal with #4 AWG or #6 AWG wire. Then make an 'X' through the center part of the room with the wire. If the room is very large or irregularly shaped, several 'X's may be required, all connected to the same perimeter ground.

Drop-in Stringer system grounding. Use the 'X' system described for drop-in stringer systems.

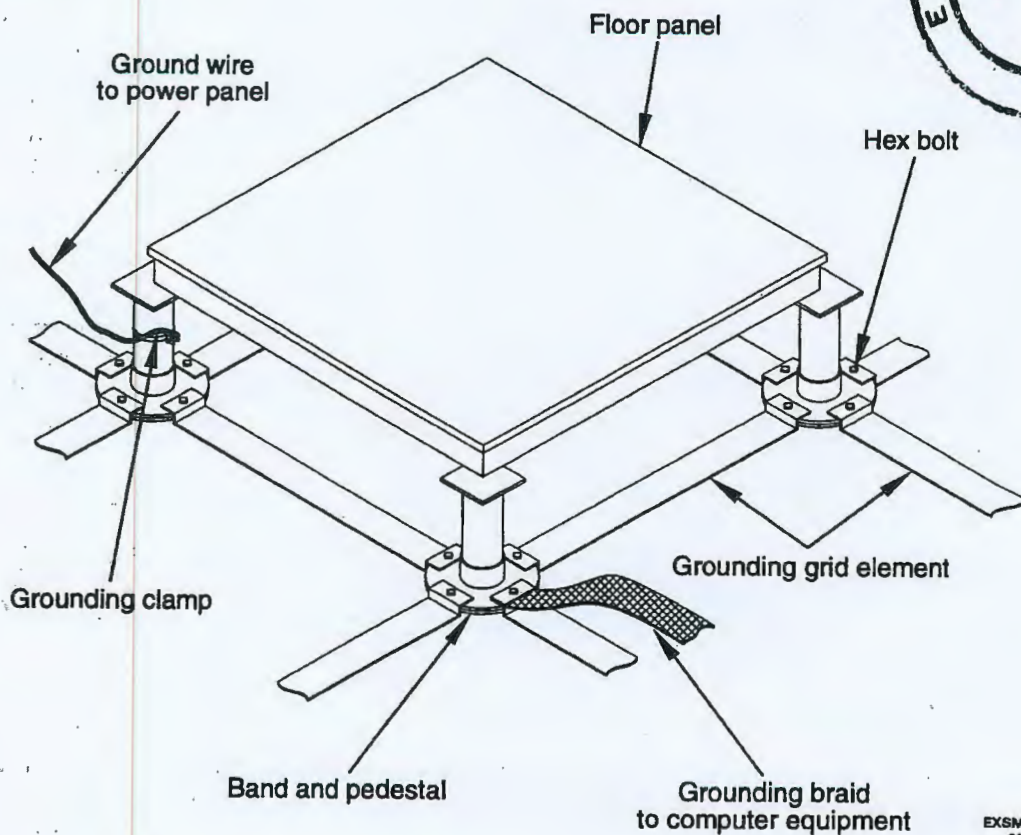
Free-standing system grounding:

- Excellent — Add a grounding strip to the subfloor. The grounding grid should be made of aluminum strips mounted to the subfloor. The strips should be 0.032 in. (0.08 cm) thick and a minimum of 3.0 in. (8.0 cm) wide.

Connect each pedestal to four strips using 1/4 in. (6.0 mm) bolts tightened to the manufacturer's torque

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recommendation.



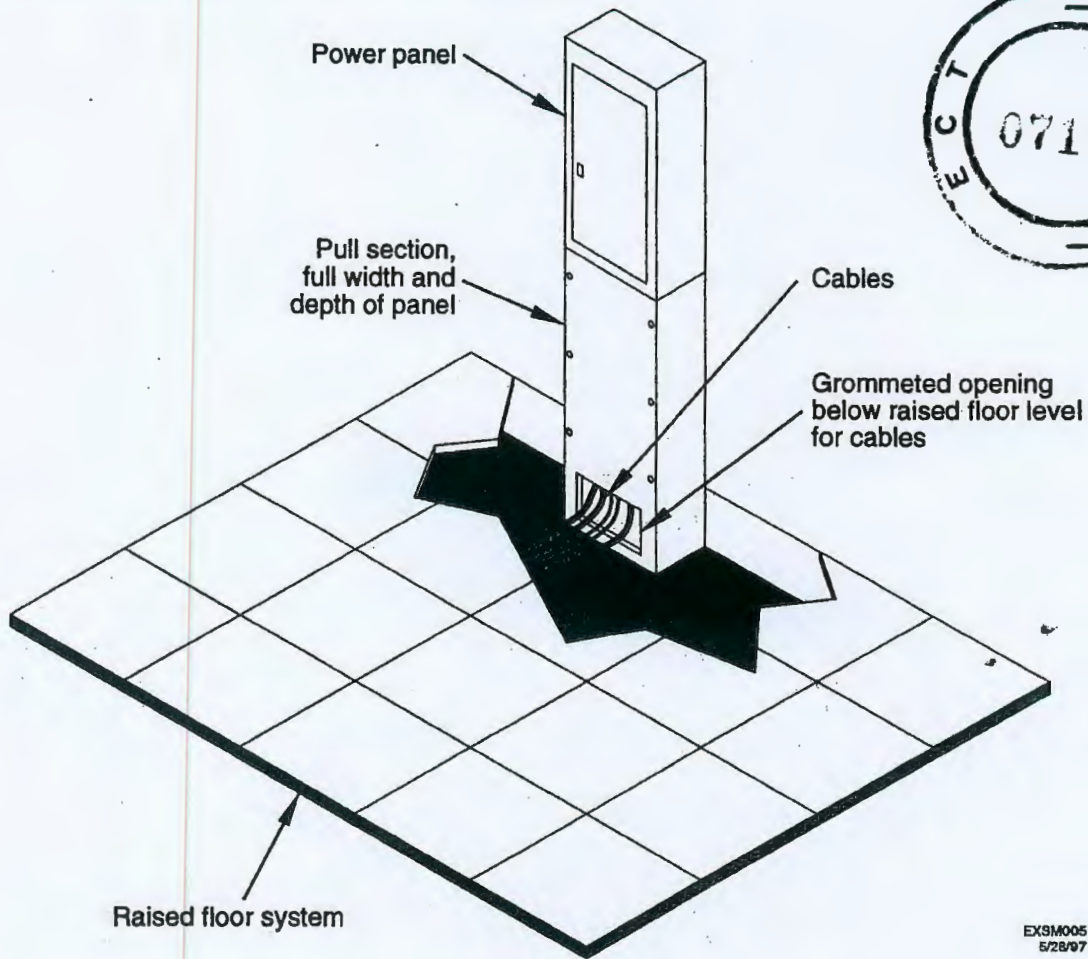
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- Good — Use the raised floor structure as a ground grid. In this case, the floor must be designed as a ground grid with bolted down stringers and tin-lead or zinc plating (to provide low resistance), and attachment points for connection to service entrance ground and HP N4000 server equipment. The use of conductive floor tiles with this style of grid further enhances ground performance.
- Adequate — If the preceding systems are impossible to implement, contact a local Hewlett-Packard site preparation specialist. Arrangements can be made to provide custom lengths of ground braid to interconnect system cabinets. However, connecting system cabinets with custom lengths of braided ground straps causes higher ground impedance than the techniques used in the excellent and good ground grid systems, and the resulting ground system will not perform as well.

In a raised floor environment, the power drops and interface cables from the equipment are routed down through the panel pull section, through a grommet-protected opening (beneath the floor level), and under

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the floor panels, as shown in the following illustration:



Air Plenum

In some data processing environments, the underflow area is used as an air plenum, with cool, controlled air flowing under the raised floor and distributed to the heat loads out in the data processing area. Return air is routed back to the tops of the process control HVAC units.

This can create some potential problems:

- Concrete sub-flooring should be sealed, but often is not. Concrete continues to 'shed' over its lifetime and will add to humidity control problems.
- Improper cable routing can and does cause air flow distribution problems.

Cable routing

Most data processing environments use the space under the raised flooring to route data and power cables. Since this is often not closely controlled, potential problems may arise such as:

- Air flow impedance and misrouting
- Electromagnetic interference from parallel runs in close proximity to one another



- Liquid spills beneath the floor may go unnoticed for long periods.
- Where cable breaches raised floor, abrasion may cause severe shock hazards.

In general, cables should be routed parallel to the air flow, and not horizontal to it. Additionally, extreme care should be given to ensure that data and power cables are not routed close together in a parallel fashion. In fact, these cables should be separated by a minimum of 6 inches wherever physically possible.

Safety Hazards

Most electrical codes dictate that if an electrical shock hazard exists, some method to curb this must be used. For instance, "any non-current carrying metallic part of a structure that could be energized and touched by personnel has to be grounded." With all of the power and data cables routed beneath the flooring and pulled up into the data are, the chances for short exist. As the tiles are metallic clad, it is conceivable that the shock hazard may exist. For this reason, it is critical that a raised floor be properly grounded.

Performance Drain

A raised floor acts as a voltage divider -- a capacitive plate -- and it may create a performance issue for computer systems if improperly grounded. Computer systems create both electrostatic discharge and electromagnetic interference, and as processor speeds increase, these effects increase as well. If the flooring system is properly grounded, the metallic grids will act to dissipate the buildup of ESD and EMI.

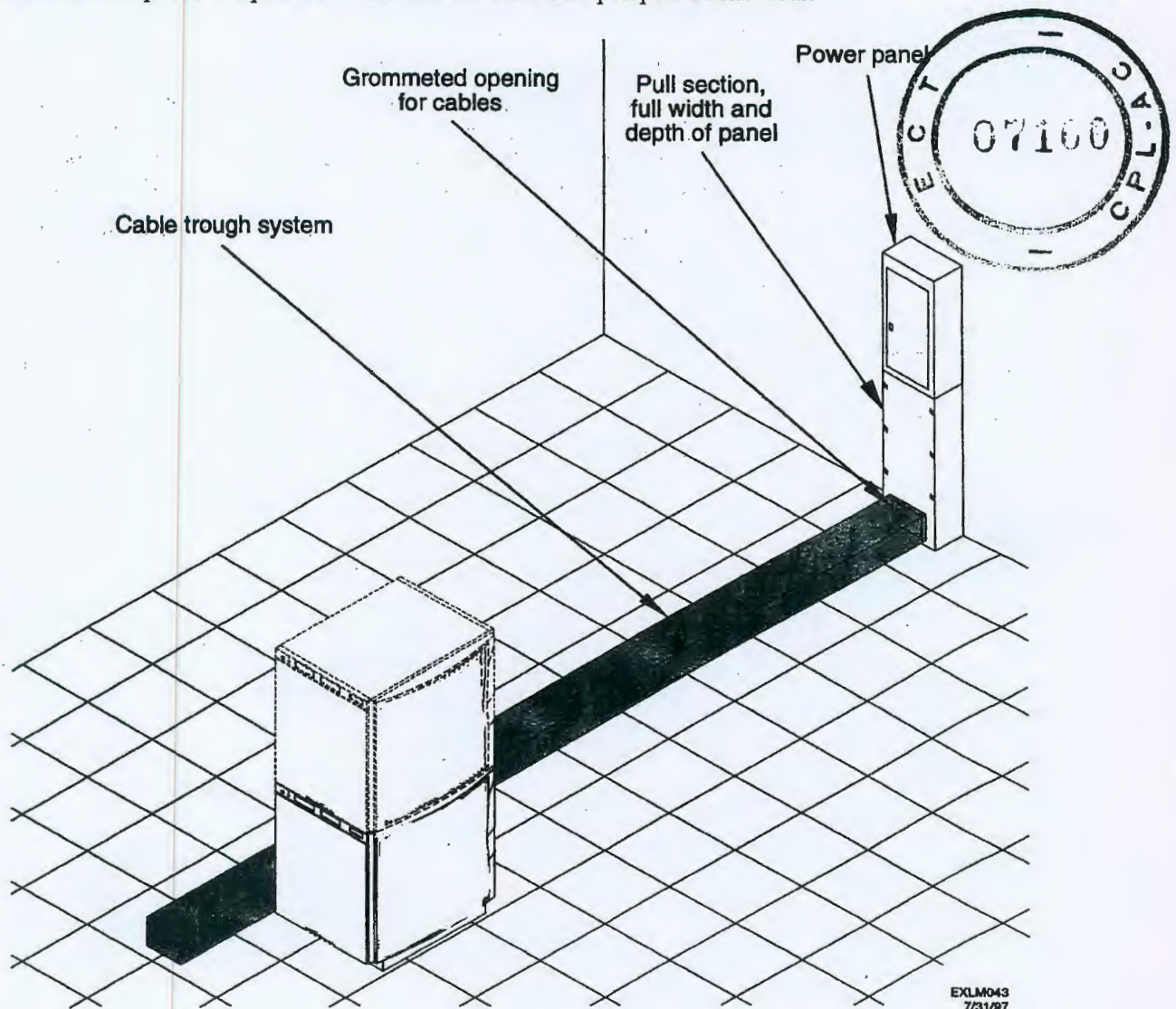
Specify Hard Floor Requirements

A cable trough may be required when an N-Class system is installed in a computer room that does not have a raised floor. The power drops and interface cables from the SPU are routed down through the cable guides and into the cable trough.

The cable trough connects to the bottom of a power panel. It should be sized to hold all cables and

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receptacles for the power drops that come from the SPU and peripheral cabinets.



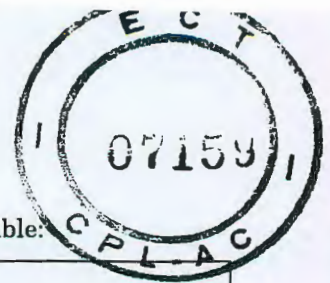
Specify Loading Requirements

Floor loading is not usually an issue in nonraised floor installations. The information presented here is directed toward raised floor installations.

Raised Floor Loading

Raised floor loading is a function of the manufacturer's load specification and the positioning of the equipment relative to the raised floor grid. While Hewlett-Packard cannot assume responsibility for determining the suitability of a particular raised floor system, it does provide information and illustrations for the customer or local agencies to determine installation requirements.

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Floor loading terms used to describe floor loading issues are described in the following table:

Term	Definition
Dead load	The weight of the raised panel floor system, including the understructure. Expressed in lb/ft ² (kg/m ²).
Live load	The load that the floor system can safely support. Expressed in lb/ft ² (kg/m ²).
Concentrated load	The load that a floor panel can support on a 1-in ² (6.45cm ²) area at the panel's weakest point (typically the center of the panel), without the surface of the panel deflecting more than a predetermined amount.
Ultimate load	The maximum load (per floor panel) that the floor system can support without failure (expressed by floor panel(s) breaking or bending). Ultimate load is usually stated as load per floor panel.
Rolling load	The load a floor panel can support (without failure) when a wheel of a specified diameter and width is rolled across the panel.
Average floor load	Computed by dividing the total equipment weight by the area of its footprint. This value is expressed in lb/ft ² (kg/m ²). The average floor load for a maximally-configured HP N-Class cabinet is approximately 215.5 lb/ft ² .

Typical raised floor site

Following is an example of a computer room raised floor system that is satisfactory for the installation of an HP N-Class system. These specifications are for the Tate Access Floors Series 800 all-steel access floor with bolt-together stringers and 24-in. (61.0-cm) by 24-in. (61.0-cm) floor panels.

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Item	Rating
Dead load	7 lb/ft ² (34.2 kg/m ²)
Live load	313 lb/ft ² (1528.3 kg/m ²)
Concentrated load ^a	1250 lb (567 kg)
Ultimate load	4000 lb (1814 kg) per panel
Rolling load ^b	400 lb (181 kg)

a. With 0.08 in. (0.2 cm) span maximum deflection.

b. With 3 in. (7.6 cm) diameter by 1.8 in (4.6 cm) width wheels (and 10 computer simulated passes over the floor).





Calculate power needs

Specify Power Connections

The HP N-Class power system is a 200/208/230/240 VAC product requiring a dedicated 20A branch circuit. The power system is comprised of two or three 10A, 1163W n+1 hot-swappable system power supplies, depending on how the system is configured. The total continuously available power to the SPU is 2 x 1163W or 2325W.

HP does not support plugging HP N-Class power supplies into wall or floor sockets. The power cords provided for the power supply is plugged directly into a UPS or a power distribution unit (PDU) using a jumper cord (HP part number 8120-1860). Customers wishing to connect directly to wall or floor sockets must provide their own power cord solution.

NOTE

The acronym PDU (power distribution unit) in this document refers to the power strips attached to the HP N-Class cabinet.

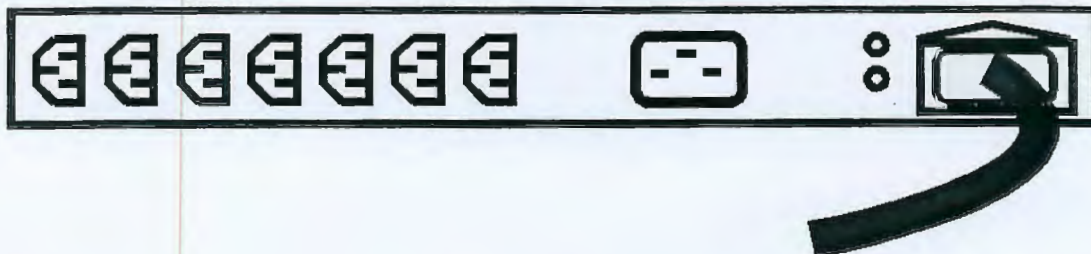
CAUTION

HP does not recommend and does not support the use of "ferro-active" or "ferro-resonant" power correction in conjunction with the N-Class server. These type of line conditioners represent an older technology that is not compatible with the most recent designs in active PFC power supplies such as those in the HP N-Class servers. "Ferro-active" or "ferro-resonant" line conditioners may cause an increase in total harmonic distortion and may produce significant and unpredictable voltage regulation anomalies.

Modular PDUs

Two modular PDUs are available for use with the N-Class product:

- 20A modular PDU, HP product number E7674A. This PDU has seven C13 outlets and one C19 outlet. Note that if this PDU is used to power the N-Class SPU, any other peripherals must have their power supplied by additional PDUs in the cabinet. The PDU power cord (HP part number 8120-6903) has an L6-20P plug which must be plugged into an L6-20R wall or floor receptacle.



- 30A modular PDU, HP product number E7681A (North America) or E7682A (International). This PDU has eight C13 outlets and two C19 outlets, split across two 20A branch circuits (max. 30A available).

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The PDU power cord has an L6-30 plug.



Specify Power Protection

The only supported HP PowerTrust UPSs are the 3.0kVA and 5.5kVA models. These UPSs can provide power protection to a single N-Class SPU. Recommendations for other manufacturers and models are not yet determined.

HP N-Class server power supplies may be plugged directly into the customer's site UPS. However, customers are advised against plugging the power supply into an HP PowerTrust UPS and then connecting that UPS to the site UPS.

Specify Grounding Requirements

Grounding systems

HP N-Class servers require two methods of grounding:

- Power distribution safety grounding
- High frequency intercabinet grounding

NOTE

Some of the grounding requirements described here may differ outside of North America.

Power distribution safety grounding The power distribution safety grounding system consists of connecting various points in the power distribution system to earth ground using green (green/yellow) wire ground conductors. Having these ground connections tied to metal chassis parts that may be touched by computer room personnel protects them against shock hazard from current leakage and fault conditions.

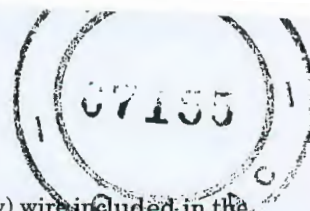
Power distribution systems consist of several parts. Hewlett-Packard recommends that these parts be solidly interconnected to provide an equal-potential ground to all points.

Main building electrical ground The main electrical service entrance equipment should have an earth ground connection, as required by applicable codes. Connections such as a grounding rod, building steel, or a conductive type cold water service pipe provide an earth ground.

Electrical conduit ground All electrical conduits should be made of rigid metallic conduit, Flex-T conduit, or liquid-tight conduit that is securely connected together or bonded to panels and electrical boxes, so as to provide a continuous grounding system.

Power panel ground Each power panel should be grounded to the electrical service entrance with green (green/yellow) wire ground conductors. The green (green/yellow) wire ground conductors should be sized per applicable codes (based on circuit over current device ratings).

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Computer equipment ground Ground all computer equipment with the green (green/yellow) wire included in the branch circuitry. The green (green/yellow) wire ground conductors should be connected to the appropriate power panel and should be parity-sized (based on circuit over current device ratings).

Cabinet interconnect grounding Signal interconnect between system cabinets requires high frequency ground return paths. Connect all cabinets to site ground.

NOTE

In some cases power distribution system green (green/yellow) wire ground conductors are too long and inductive to provide adequate high frequency ground return paths. Therefore, the customer may choose to provide a ground strap for connecting the system cabinet to the site grounding grid (customer-supplied). Installation of this ground strap is optional and there is a chance that it may cause ground loops.

Power panels located in close proximity to the computer equipment should also be connected to site grounding grid. Methods of providing a sufficiently high frequency ground grid are described in the next sections.

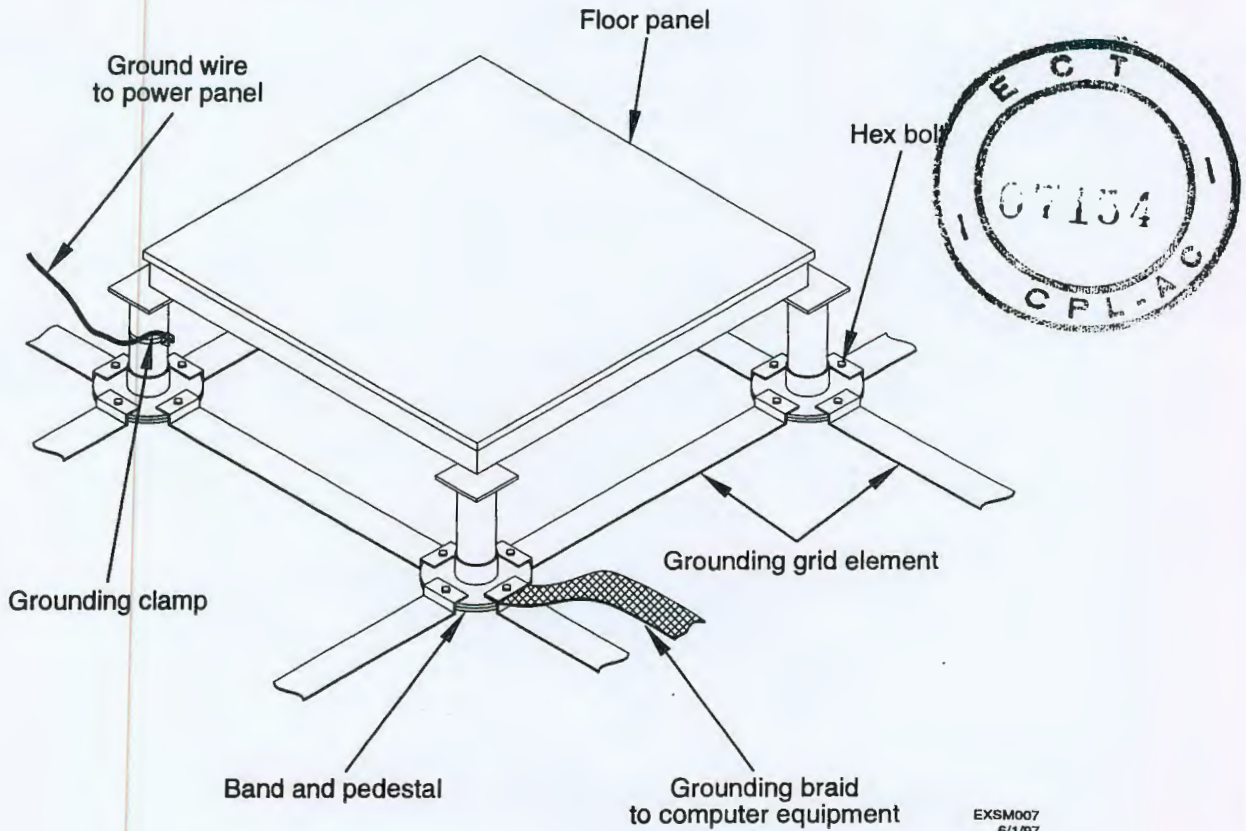
Raised floor grounding If a raised floor system is used, install a complete signal grounding grid for maintaining equal potential over a broad band of frequencies. The grounding grid should be connected to the equipment cabinet and electrical service entrance ground at multiple connection points via minimum #6 AWG (16mm²) wire ground conductor. See the raised floor grounding illustration for details.

Hewlett-Packard recommends the following three approaches:

- **Excellent**—Add a grounding grid to the subfloor. The grounding grid should be made of aluminum strips mounted to the subfloor. The strips should be 0.032 in. (0.08 cm) thick and a minimum of 3.0 in. (8.0 cm) wide.
Connect each pedestal to four strips using 1/4 in. (6.0 mm) bolts tightened to the manufacturer's torque recommendation.
- **Good**—Use the raised floor structure as a ground grid. In this case, the floor must be designed as a ground grid with bolted down stringers and tin-lead or zinc plating (to provide low resistance and attachment points for connection to service entrance ground and HP N-Class server equipment). The use of conductive floor tiles with this style of grid further enhances ground performance.
- **Adequate**—If the excellent or good ground grid systems are impossible to implement, contact your Hewlett-Packard site preparation specialist. Arrangements can be made to provide custom lengths of ground braid to interconnect system cabinets. However, connecting system cabinets with custom lengths of braided ground straps causes higher ground impedance than the techniques used in the excellent and good ground grid systems, and the resulting

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ground system will not perform as well.



Nonraised floor installations If the computer room does not have a raised floor, use a cable trough assembly to route equipment power cables.

This cable trough assembly may be used as the conduit for high frequency ground. In addition to possible ground connections to Hewlett-Packard cabinets, the cable trough should be connected to the electrical service ground at multiple connection points via a minimum #6 AWG (16mm²) wire ground conductor. See the figure following for details.

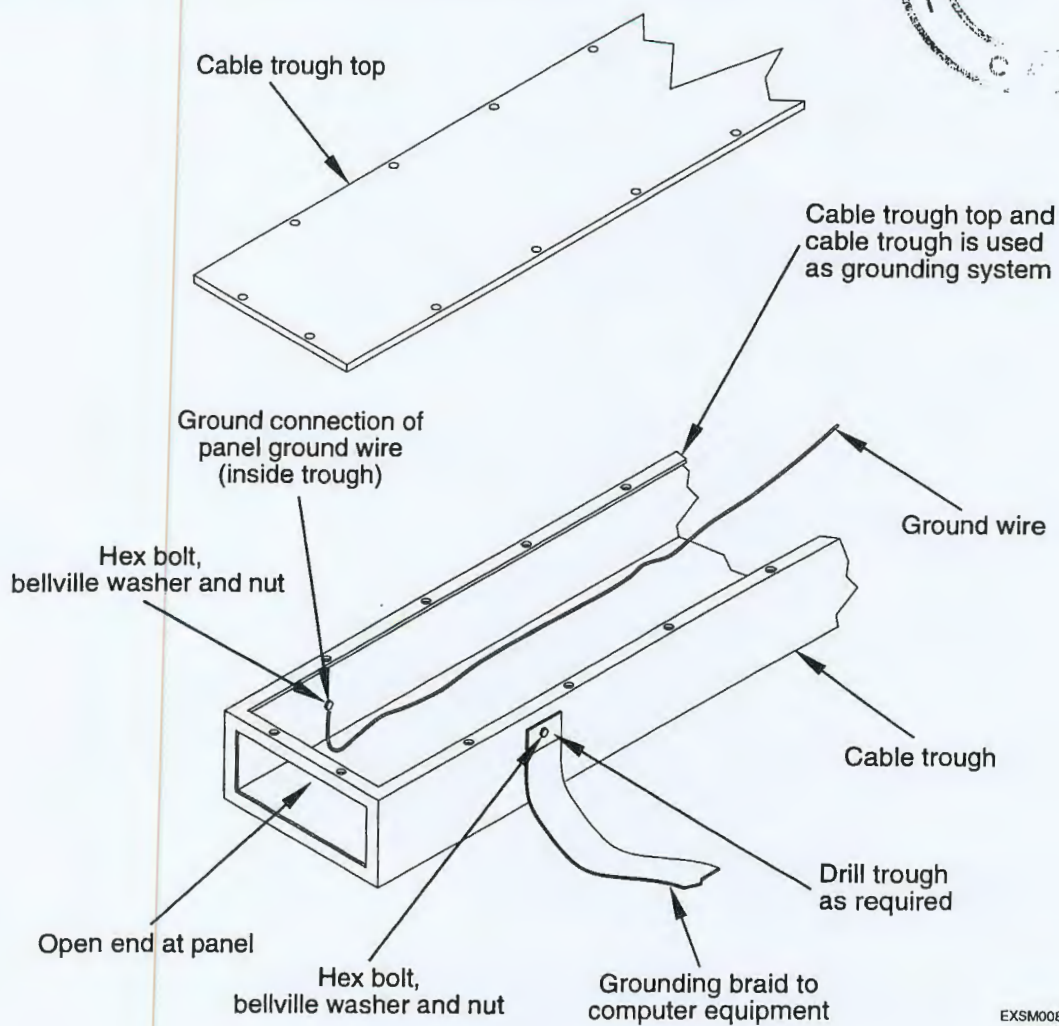
Equipment grounding implementation details If it has been determined to be necessary, connect all Hewlett-Packard equipment cabinets to the site ground grid as follows:

- Attach one end of each ground strap to the applicable cabinet ground lug.
- Attach the other end to the nearest pedestal base (raised floor) or cable trough ground point (nonraised floor).
- Check that the braid contact on each end of the ground strap consists of a terminal and connection hardware (a 1/4-in. (6.0-mm) bolt, nuts, and washers).
- Check that the braid contact connection points are free of paint or other insulating material and treated

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with a contact enhancement compound (similar to Burndy Penetrox).



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N-Class Server Site Preparation
Calculate power needs

Specify the System Requirements

System Electrical Specifications

Description	Specification
AC Input Voltage Range ^a	200 to 240 VAC
AC Input Line frequency	50 to 60 Hz
AC Input Current	18 A (max load at 200 VAC) 12 A (max load at 240 VAC)
AC Inrush Current	TBD
AC Input Power	1250 VA maximum
Power Supply Output Rating	1163 watts DC continuous
Holdup without system reset	25ms at 50/60Hz (1 cycle, or 500ms)
Battery Backup Time	15 minutes <i>With optional external PowerTrust UPS. Without the optional UPS there is no battery backup.</i>

- a. The power supply auto-ranges to the AC voltage and frequency. It does not have to be reconfigured to operate over its rated operating ranges.

Identify the High Availability Requirements

SPU-level Enhanced Power Availability

At the SPU level, enhanced power availability is achieved through the n+1 hot-swappable power supplies.

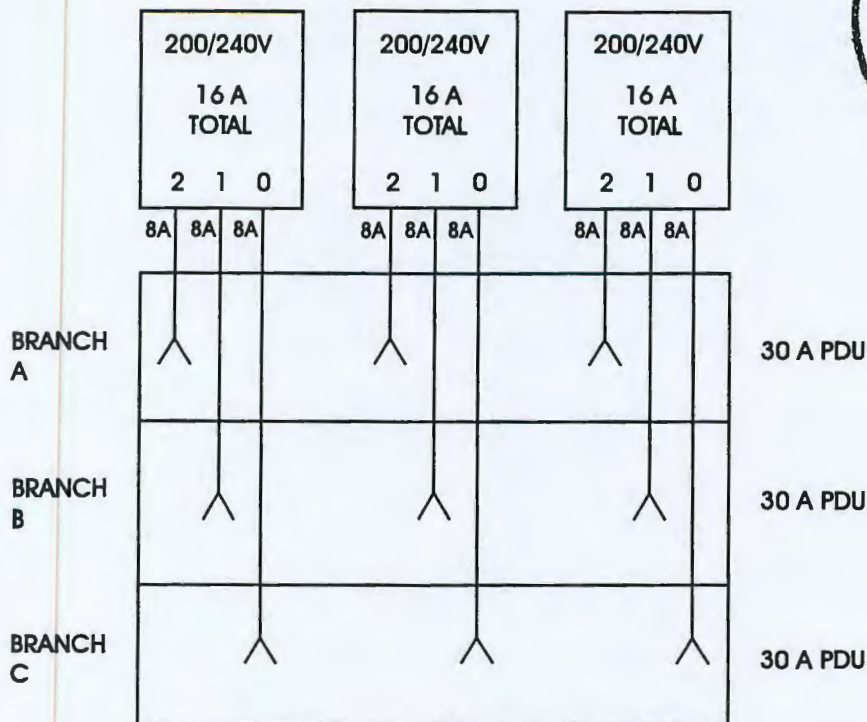
Two power supplies are required for normal N-Class system operation and in order to allow the system to boot. The third power supply is a redundant power supply that provides the n+1 capability.

Any one of the power supplies can fail without affecting system performance, and can be replaced while the system is on-line. Single point of failure is reduced to the PDU or PowerTrust UPS to which the power supply power cords are connected.

Cabinet-level Enhanced Power Availability

At the equipment cabinet level, enhanced power availability is achieved by interweaving the three power supply power cords across different branch circuits in the PDUs. The following illustration shows how three SPUs can be connected to three 30A PDUs for high availability:

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In this arrangement, any one branch circuit or any one 30A PDU can fail without shutting the system down. This reduces single point of failure to the facility power circuit providing power to the PDU or PowerTrust UPS.

Site-level Power High Availability

Some customer sites with critical applications may require high availability power beyond the scope of the equipment provided by Hewlett-Packard. Computer room high-availability can be achieved by:

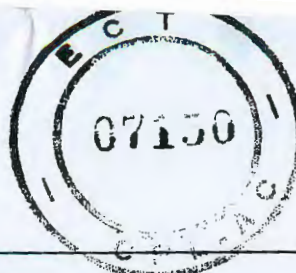
- multiple substation power feeds off a single power substation
- feeds from multiple power substations

Such implementations are costly and complex, but have the advantage of eliminating single point of failure to the equipment.

Calculate Cooling Needs

Temperature and humidity specifications

Ambient intake air temperature is often different from ambient room temperature; you should measure the operating temperature and humidity directly in front of the cabinet cooling air intakes rather than check only ambient room conditions. The following table lists the computer room temperature and humidity



specifications for N-Class servers.

Temperature and humidity specifications				
Parameter	Operational Limits	Recommended Operating Range	Maximum rate of change	Non-Operating Ranges
Temperature ^a	5° to 35° C ^b (41° to 95° F)	20° to 25° C (68° to 77° F) ^b .	20° C/hr	-40° C to +70° C
Operating Humidity ^a	15% to 80% RH non-condensing at 35° C (95° F)	40% - 60% RH non-condensing	30% RH/hr non-condensing	90% RH non-condensing @ 65° C (149° F)

- The N Class has been designed to operate within the above specific temperature and relative humidity operational limits. In general, operating any electronic equipment within the recommended operating range will produce optimal reliability.
- Temperature ranges stated above are at sea level. Maximum operating temperature must be de-rated (reduced) by 2° C/1000 meters above sea level up to a maximum of 3000 meters.

NOTE

Operating ranges refer to the ambient air temperature and humidity measured at the cabinet cooling air intake vents.

SPU Power Dissipation

A maximally-configured N-Class server can currently dissipate as much as 2150 watts, or 7332 BTU per hour. This translates to about one-half ton of cooling capacity per SPU. If four N-Class servers are installed in one cabinet, that cabinet will require as much as two tons of refrigeration for safe operation.

Future releases of the N-Class server with higher-speed processors may require as much as one ton of cooling capacity per SPU.

NOTE

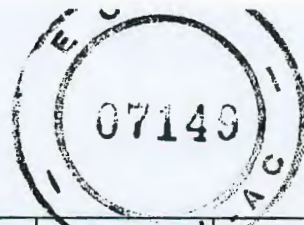
Heat dissipated from the rear of the N-Class SPU cabinet may significantly affect the ambient air temperature surrounding other equipment nearby. The customer is responsible for ensuring the computer room air flow and cooling are sufficient to handle the heat generated.

Peripheral Cabinets and Other Equipment

Heat dissipation from peripheral cabinets and other equipment must be included in calculating the cooling requirements. The following worksheet will aid in developing the necessary calculations:

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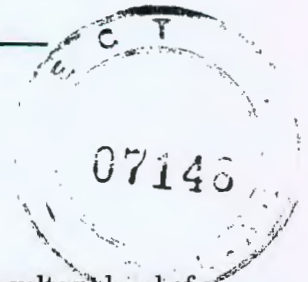
N-Class Server Site Preparation
Calculate Cooling Needs



Equipment Type	Product Number	Voltage (V)	Amperage (A)	Number of Machines (B)	Total Amperage (A x B)
Computer					
Expansion Cabinet					
Disk Drive					
Mag Tapes					
Printers					
Terminals					
Other					
Total:					

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Specify environmental requirements



Determine the ESD Requirements

Static charges (voltage levels) occur when objects are separated or rubbed together. The voltage level of a static charge is determined by the following factors:

- Types of materials
- Relative humidity
- Rate of change or separation

Effect of humidity on ESD charge levels

The table following lists charge levels based on personnel activities and humidity levels.

Personnel activity ^a	Humidity ^b and charge levels (voltages) ^c			
	26%	32%	40%	50%
Person walking across a linoleum floor	6,150 V	5,750 V	4,625 V	3,700 V
Person walking across a carpeted floor	18,450 V	17,250 V	13,875 V	11,100 V
Person getting up from a plastic chair	24,600 V	23,000 V	18,500 V	14,800 V

a. Source: B.A. Unger, *Electrostatic Discharge Failures of Semiconductor Devices* (Bell Laboratories, 1981)

b. For the same relative humidity level, a high rate of airflow produces higher static charges than a low airflow rate.

c. Some data in this table has been extrapolated.

Static protection measures

Follow these precautions to minimize possible ESD-induced failures in the computer room:

- **Maintain recommended humidity level and airflow rates in the computer room.**
- Install conductive flooring (conductive adhesive must be used when laying tiles).
- Use conductive wax if waxed floors are necessary.
- Ensure that all equipment and flooring are properly grounded and are at the same ground potential.
- Use conductive tables and chairs.
- Use a grounded wrist strap (or other grounding method) when handling circuit boards.
- Store spare electronic modules in antistatic containers.

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Determine the Acoustic Requirements

The acoustic specifications for N-Class servers are as follows:

Sound power	7.5 Bels LwA maximum at >31° C
Sound pressure	61 dB maximum at > 31° C in operator position. 58 dB maximum at >31° C in standby position.
	No prominent tones

Reducing Acoustic Noise Levels

Ambient noise level in a computer room can be reduced by the following means:

- Dropped ceiling—Cover with a commercial grade of fire-resistant, acoustic rated, fiberglass ceiling tile.
- Sound deadening—Cover the walls with curtains or other sound deadening material.
- Removable partitions—Use foam rubber models for most effectiveness.

Determine RFI Requirements

Description	Specification
Radiated Field Immunity	10 Volts/Meter (14KHz to 1 GHz)
Magnetic Field Immunity	1 Gauss (47.5 Hz to 198 Hz)
Electrostatic Discharge Immunity	15 kV (Maximum, with no loss of function) 25 kV (Maximum, with no component damage)
Electrostatic Contact Discharge	4 kV CD, 8kV AD (No Effect)

Review Local Codes

Special local codes exist in some locations regulating the installation of computer equipment. The customer is responsible for making sure their computer system installation is in compliance with all local laws, regulations, and codes for mechanical, building, and electrical distribution systems prior to system installation. The Hewlett-Packard Site Preparation Specialist can assist in determining your local regulations.

Determine Altitude Requirements

Maximum Altitude	
Operational	3000 meters above sea level
Non-operational	4500 meters above sea level

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Effects of Altitude

Some old models of tape drives, including those supplied by Hewlett-Packard, have vacuum column transport mechanisms that are affected by atmospheric pressure. Adjustments to these mechanisms may be required to compensate for the lower atmospheric pressure at higher altitudes.

Determine Temperature/Humidity Requirements

The following table lists the computer room temperature and humidity specifications for N-Class servers.

Temperature and humidity specifications ^a		
Parameter	Recommended Operating Range	Recommended Maximum rate of change (per hour)
Temperature ^b	41° to 104° F (0° to 40° C)	TBD° F repetitive, TBD° F nonrepetitive TBD° C repetitive, TBD° C nonrepetitive
Operating Humidity	15% - 80%, non-condensing at 65° C	30% RH/hour

a. These are recommended values. For operation outside these ranges, contact your Hewlett-Packard site preparation specialist.

b. At altitudes up to 3,000 meters.

NOTE

Operating ranges refer to the ambient air temperature and humidity measured at the cabinet cooling air intake vents.

Identify Sources of Electrical Interference

The following are some of the sources of electrical interference that may affect N-Class servers.

Convenience Wall Outlets

Power outlets for building maintenance equipment (i.e., vacuum cleaners, floor buffers, etc.) must be wired from circuit breakers on a power panel separate from the computer system panel. The ground wires from these outlets must be connected to the normal building distribution panel; not the computer system ground.

If a separate power source and separate ground are not provided, operation of janitorial equipment can induce electrical noise and cause abnormal operation of the computer system. Your electrician can verify whether or not maintenance outlets are on separate panels.

Lightning

In some geographical areas it may be advisable to install lightning protection for both personnel and computer systems. In the United States (USA), the installation of lightning or surge arrestors on power and communication lines is described in the National Electrical Code, Article 280. All lightning arrestors must have the UL 1449 rating and should be tested to survive the suite of IEEE587 tests.

The principles of lightning protection and personnel safety are outlined in detail in the lightning protection code contained in the National Fire Protection Association (NFPA) Handbook.

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Identify Other Environmental Influences

The following are some of the other environmental influences that may affect N-Class servers.

Vibration

Continuous vibration can cause a slow degradation of mechanical parts and, when severe, can cause data errors in disc drives. Mechanical connections such as printed circuit assembly (PCA) connectors, cable connectors, and processor backplane wiring can also be affected by vibration.

Flammable Materials

Fundamental safeguards for computer systems should include a site well away from any sources of potential damage. The system should not be installed or operated in an environment where there is a risk of fire or explosion due to the existence of highly flammable gases, volatile liquids, or combustible dust.

Airborne Contaminants

Airborne contaminants and particles of a certain size and hardness can damage your computer system, particularly disc drives. Corrosive gases and/or solvent vapors such as those from liquid spirit duplicating equipment and wet-process photo copiers can also cause damage. Some of the most common contaminants are dust, smoke, ash, eraser debris, food crumbs, and salty air.

Electrostatic Discharge

If there is an abnormally high level of static electricity at your computer system's location (15 KV or higher), personnel will probably be "sparking" upon contact with the equipment. Carpeting and/or low humidity will probably be the source of static electricity, especially in dry and cold climates. Static electricity can often be significantly reduced by using a humidifier. (Hewlett-Packard recommends a heat evaporating type humidifier and strongly recommends against using a cold water atomizer type humidifier.

Other ways to minimize electrostatic discharge are by using specially grounded mats in front of the computer system or by treating carpeting with anti-static spray. Anti-static spray is not recommended because it finds its way into the system intake filter and tends to coat the circuitry. If spray is used, it should be applied while the system is turned off. Note that sprays are very temporary and must be reapplied frequently.

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Determine data access

Identify Telephone Requirements and Define Remote Access

At least two communication lines are required for N-Class servers: one for the remote console facility, and another for UUCP. N-Class servers provide remote console access via a modem for the secure console LAN, which is separate from the site or computer room's campus LAN.

NOTE

If modem access is an element of the customer's High Availability plan, telephone lines for multiple modems may be required

The system internal modem is equipped with an RJ11 telephone connector. For North American installations, the customer's telephone jack must comply with RJ11 specifications. (The RJ11 connectors are the small, quick-disconnect type, not the large 4-pin type.) Otherwise, the modem cannot be connected.

Identify Special Network Requirements

N-Class servers may require as many as three unique IP addresses.

- The N-Class server requires its own IP address.
- The Guardian Service Processor, as a separate network device, has to have its own IP address, gateway, and subnet mask configured at the site in order to be separately addressed. The service processor does not support DHCP, so the IP address must be assigned out of a separate pool from any that are assigned dynamically.
- The remote web console, if used, requires its own IP address.

Determine Service Access Needs

Hewlett-Packard CEs must have clear and unobstructed access to perform service on the equipment. The N-Class system also needs a sufficient aisle space for air flow and cooling.

- Aisle space for cooling — A minimum of 0.91 meter (3 ft.) aisle space is recommended in the front and back of the N-Class SPU cabinet.
- Service area — The HP recommended service area for the front and rear of the N-Class SPU should not take precedence over local codes and regulations. However, HP does require a minimum of 0.91 meter (3 ft.) of clearance on the front or back along with 1.22 meter (4 ft.) on the opposite side (front preferred) to allow for future, add-on installations. HP suggests consulting your local authority having jurisdiction familiar with the current regulations for compliance in your area.

Determine Security Access

Most computer rooms are secure access environments. The Hewlett-Packard CE should consult with the customer to arrange for computer room access in the event of an after-hours service call.

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Identify safety needs

Determine Fire Protection Requirements

When considering fire safety, the customers insurance carrier should be consulted for suggestions and recommendations as to the adequacy of existing or proposed fire control systems. If a new site is to be built or an existing structure modified, consult local building codes for fire prevention and protection. Also, consult with the Hewlett-Packard Site Preparation Specialist and local fire inspector for additional information.

Define E-Stop Requirements

The computer system power panel should include a shunt-trip wired to an emergency shut-off switch and a thermostat device. Electrical codes commonly stipulate that this button will remove both power AND airflow from the computer room. This is for deactivating all equipment power in case of an emergency or in case room temperature exceeds safe operating conditions.

Check the local electrical codes to see whether the E-stop switch is optional or required.

Specify Grounding Requirements

Grounding systems

HP N-Class servers require two methods of grounding:

- Power distribution safety grounding
- High frequency intercabinet grounding

NOTE

Some of the grounding requirements described here may differ outside of North America.

Power distribution safety grounding The power distribution safety grounding system consists of connecting various points in the power distribution system to earth ground using green (green/yellow) wire ground conductors. Having these ground connections tied to metal chassis parts that may be touched by computer room personnel protects them against shock hazard from current leakage and fault conditions.

Power distribution systems consist of several parts. Hewlett-Packard recommends that these parts be solidly interconnected to provide an equal-potential ground to all points.

Main building electrical ground The main electrical service entrance equipment should have an earth ground connection, as required by applicable codes. Connections such as a grounding rod, building steel, or a conductive type cold water service pipe provide an earth ground.

Electrical conduit ground All electrical conduits should be made of rigid metallic conduit, Flex-T conduit, or liquid-tight conduit that is securely connected together or bonded to panels and electrical boxes, so as to provide a continuous grounding system.

Power panel ground Each power panel should be grounded to the electrical service entrance with green

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(green/yellow) wire ground conductors. The green (green/yellow) wire ground conductors should be sized per applicable codes (based on circuit over current device ratings).

Computer equipment ground Ground all computer equipment with the green (green/yellow) wire included in the branch circuitry. The green (green/yellow) wire ground conductors should be connected to the appropriate power panel and should be parity-sized (based on circuit over current device ratings).

Cabinet interconnect grounding Signal interconnect between system cabinets requires high frequency ground return paths. Connect all cabinets to site ground.

NOTE

In some cases power distribution system green (green/yellow) wire ground conductors are too long and inductive to provide adequate high frequency ground return paths. Therefore, the customer may choose to provide a ground strap for connecting the system cabinet to the site grounding grid (customer-supplied). Installation of this ground strap is optional and there is a chance that it may cause ground loops.

Power panels located in close proximity to the computer equipment should also be connected to site grounding grid. Methods of providing a sufficiently high frequency ground grid are described in the next sections.

Raised floor grounding If a raised floor system is used, install a complete signal grounding grid for maintaining equal potential over a broad band of frequencies. The grounding grid should be connected to the equipment cabinet and electrical service entrance ground at multiple connection points via minimum #6 AWG (16mm²) wire ground conductor. See the raised floor grounding illustration for details.

Hewlett-Packard recommends the following three approaches:

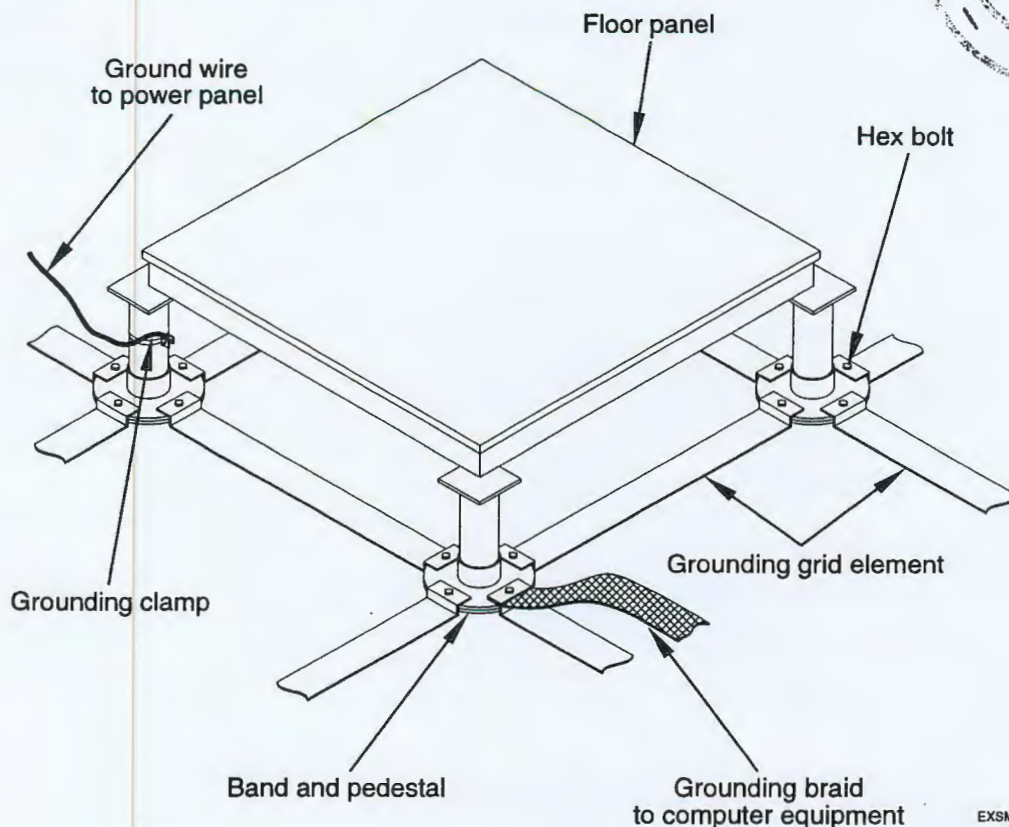
- **Excellent**—Add a grounding grid to the subfloor. The grounding grid should be made of aluminum strips mounted to the subfloor. The strips should be 0.032 in. (0.08 cm) thick and a minimum of 3.0 in. (8.0 cm) wide.
Connect each pedestal to four strips using 1/4 in. (6.0 mm) bolts tightened to the manufacturer's torque recommendation.
- **Good**—Use the raised floor structure as a ground grid. In this case, the floor must be designed as a ground grid with bolted down stringers and tin-lead or zinc plating (to provide low resistance and attachment points for connection to service entrance ground and HP N-Class server equipment). The use of conductive floor tiles with this style of grid further enhances ground performance.
- **Adequate**—If the excellent or good ground grid systems are impossible to implement, contact your Hewlett-Packard site preparation specialist. Arrangements can be made to provide custom lengths of ground braid to interconnect system cabinets. However, connecting system cabinets with custom lengths of braided ground straps causes higher ground impedance than the techniques used in the excellent and good ground grid systems, and the resulting



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ground system will not perform as well.



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Nonraised floor installations If the computer room does not have a raised floor, use a cable trough assembly to route equipment power cables.

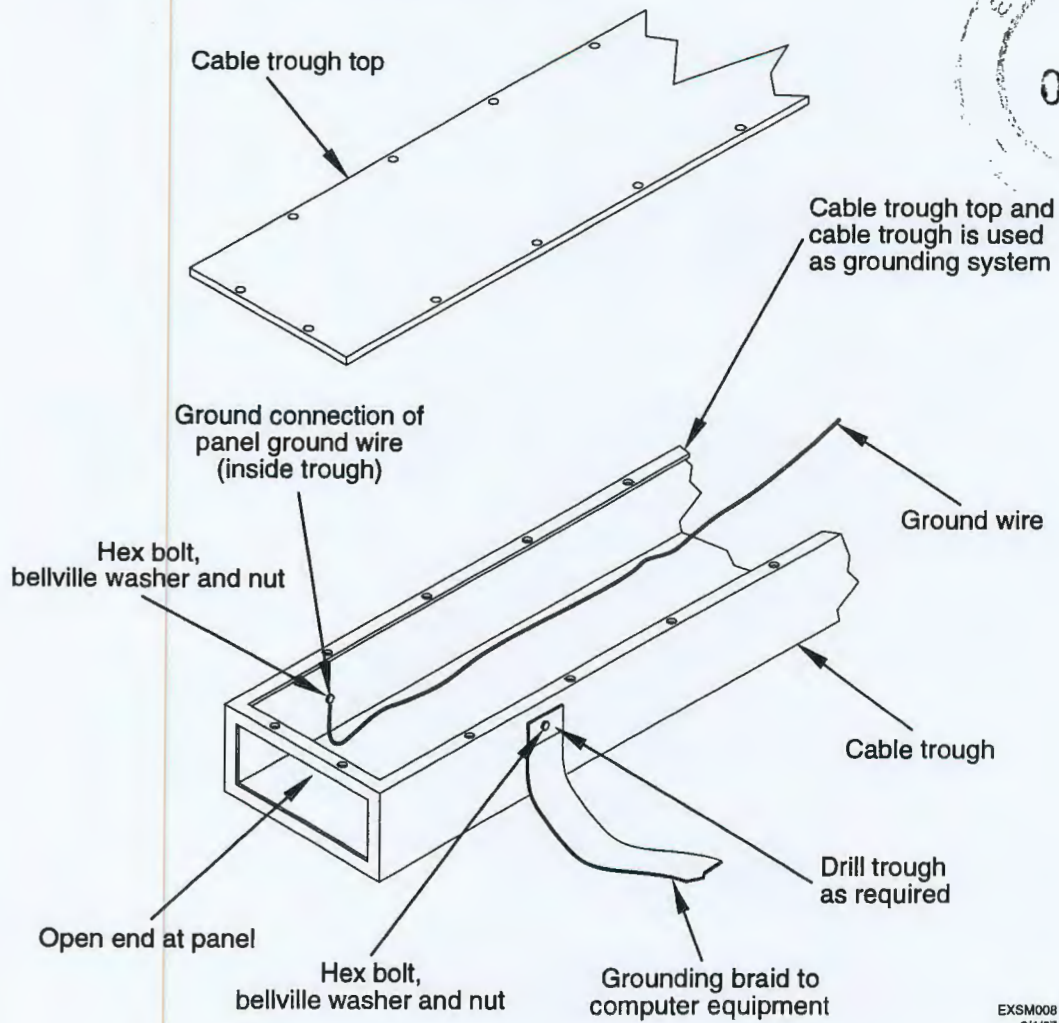
This cable trough assembly may be used as the conduit for high frequency ground. In addition to possible ground connections to Hewlett-Packard cabinets, the cable trough should be connected to the electrical service ground at multiple connection points via a minimum #6 AWG (16mm²) wire ground conductor. See the figure following for details.

Equipment grounding implementation details If it has been determined to be necessary, connect all Hewlett-Packard equipment cabinets to the site ground grid as follows:

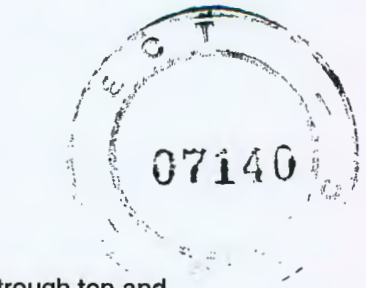
- Attach one end of each ground strap to the applicable cabinet ground lug.
- Attach the other end to the nearest pedestal base (raised floor) or cable trough ground point (nonraised floor).
- Check that the braid contact on each end of the ground strap consists of a terminal and connection hardware (a 1/4-in. (6.0-mm) bolt, nuts, and washers).
- Check that the braid contact connection points are free of paint or other insulating material and treated with a contact enhancement compound (similar to Burndy Penetrox).

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Figure 4-1 Cable trough ground system



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Determine Other Needs

Special Tools

If an N-Class server is being added or installed in the top of a cabinet, a step ladder and a Genie® Load Lifter will be required.

Telephone

You should plan to install a telephone with a long cord near your computer system to expedite consultations with Hewlett-Packard Sales Representatives, CEs, AEs, and Response Center personnel. Additional phone lines, appropriately placed, should be planned if a remote support modem is to be installed with your computer system. Remote support allows system problems to be diagnosed from a remote location via the telephone lines.

NOTE

Check with your local telephone company to be sure the telephone service at the site can accommodate modem/data quality transmission.

Record Protection

Safeguards should be taken to protect business records and any other information that is either very expensive or impossible to duplicate. Duplicate or master records should be maintained so that vital information can be retrieved quickly in case of an accident. Copies of vital data should be stored well away from the computer area; normally in some type of fireproof storage device.

A regular updating process should be put into place to ensure that the value of the stored information is maintained. Electronic data processing insurance is also available to cover both hardware and software. Contact your local Hewlett-Packard Sales and Service office for details.

Lighting

Adequate lighting and utility outlets in a computer room reduce the possibility of accidents during equipment servicing. Safer servicing is also more efficient and, therefore, less costly.

For example, it is difficult to see cable connection points on the hardware if there is not enough light. Adequate lighting reduces the chances of connector damage when cables are installed or removed.

The minimum recommended illumination level is 70 foot-candles (756 lumens per square meter) when the light level is measured at 30 inches (76.2 cm) above the floor.

Windows

Avoid housing computers in a room with windows. Sunlight entering a computer room may cause problems. Magnetic tape storage media is damaged if exposed to direct sunlight. Also, the heat generated by sunlight places an additional load on the cooling system.

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Communicate Requirements to the Customer

At the end of the site planning visit, the Hewlett-Packard Site Preparation Specialist and the customer should jointly review the site planning checklist (see "*Verify System Complicity With Regulatory Standards*") and determine any work to be done prior to installation. Within three days following the planning visit, the Hewlett-Packard Site Preparation Specialist should contact the customer by letter to formally review the results. A sample contact letter is shown following:

December xx, 1999

Dear:

Thank you for taking the time to discuss the site preparations needed for the successful installation and operation of your new Hewlett-Packard system.

At our meeting on _____ you received the following documents (mark as appropriate):

- ☐ Site Planning and Preparation Guide (HP equipment specific)
- ☐ Customer Configuration Listing
- ☐ Site Planning Workbook
- ☐ Electrician's Verification Checklist
- ☐ Power Panel Graphic
- ☐ ISP or System Quote
- ☐ Terminal Cabling Guide
- ☐ Warranty and Maintenance Contract Information
- ☐ Floor Plan Layout
- ☐ Site Implementation and Support Planning Guide
- ☐ Current System Configuration Guide
- ☐ Resource Guide (Purple Binder)

These documents are important because they explain the specifications for HP system implementations and provide the reference information needed for proper installation.

During our meeting the following topics were of concern (place an "x" in each box to include concern):

- ☐ The need for special arrangements for the delivery of the computer system.
- ☐ The need for special arrangements for the storage of the equipment.
- ☐ Determine an acceptable route to move the equipment to the final location.
- ☐ The unpacking and inspection of the equipment as it arrives.
- ☐ Finalizing the location and placement of the system.
- ☐ The providing of an approved ground for the computer system components.



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- ☐ Providing the ISOLATED ground system HP requested.
- ☐ The installation of the dedicated power panel HP requested.
- ☐ Deciding on the type of power treatment device to be installed.
- ☐ Ensuring bypass circuitry on the power treatment device.
- ☐ Choosing the proper air conditioner for your computer room.
- ☐ Maintaining the proper temperature control.
- ☐ Maintaining the proper humidity control.
- ☐ Minimizing the effects of ESD (Electrostatic Discharge).
- ☐ Providing the conditions in order to maintain 24 hour per day operation.
- ☐ Indication that special air filtering may be required.
- ☐ Understanding the need for an EPO (Emergency Power Off) switch.
- ☐ Recognizing the benefits of installing Thermal Cutoff switch.
- ☐ The negative effects of carpeting installed in a computer room.
- ☐ Establishing the proper datacommunications network.
- ☐ The control of RFI (Radio Frequency Interference).
- ☐ The proper installation of a raised floor.
- ☐ The need for a voice line into the computer room.
- ☐ Providing an available telephone line for the diagnostic modem.
- ☐ Awareness of fire safety regulations.
- ☐ Providing adequate security for the computer room.
- ☐ Addressing cleaning precautions with maintenance personnel.
- ☐ Benefits of installing acoustic insulation.
- ☐ Considering the need for lightning protection, or acts of God.
- ☐ Ensuring adequate light within the computer room.
- ☐ The need for adequate vibration control.
- ☐ Insufficient floor space for system operation and maintenance.
- ☐ Hardwired terminals located in separated building.
- ☐ Temporary operation of existing and new system on new utilities

Should you need additional information to resolve these concerns please refer to the above mentioned documentation.

Hewlett-Packard, through their Site Services group, can offer you a Full line of services that you may require to prepare your facilities for your new computer system. These services include computer room design and construction, network design and installation, and any consulting necessary for computer operation. Contact your Sales Representative for further information about these services.

If I can be of any further assistance to you or your staff during the preparation of your site, please do not hesitate to call me at extension:

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Generate the Plan

Design computer room layout

Software is now commercially available to aid in planning and laying out space and location requirements for computer room equipment. Large computer installations will find such software particularly useful in managing the equipment relocation and new equipment installations over time. Computer room space planning can also be performed using scaled templates and cutouts.

In order to complete the computer room layout, the Hewlett-Packard site preparation specialist will need to do the following:

- Get the computer room dimensions from the customer
- Identify the locations for the system cabinet, peripherals, and other equipment
- Identify the locations of the various utilities and datacomm equipment:
 - telephone
 - power
 - networks
 - A/C
 - air ducts
 - fire protection
 - lighting
 - personnel equipment (console, desks, tables, cabinets, etc.)
- Identify any external resources required

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Review the Plan With the Customer

30 days prior to solution delivery date, the Hewlett-Packard Site Preparation Specialist will verify that the site meets or exceeds the system requirements and specifications. At this time, the Site Preparation Specialist and the customer should again review the site survey checklist with particular attention to the following items:

- **Power needs.** Verify that the required dedicated circuits are available. Verify that the required cables, plugs, and receptacles have been ordered. Verify that grounding requirements have been met.
- **Space needs.** Verify that sufficient space exists for uncrating and installing the equipment. Verify that serviceability space has been included in the floor layouts.
- **Cooling needs.** Verify that the customer site air conditioning meets the requirements for N-Class systems. Verify that the configuration of the system cabinets does not create air temperature problems for surrounding equipment.
- **Utility needs.** Verify that requirements for phone lines, lighting, etc., have been incorporated in the layout plans.

Sites failing to meet the system requirements and specifications by the scheduled solution delivery date may have their installation date postponed.

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Execute the Site Plan

To ensure site preparation is complete by the scheduled equipment delivery date, the customer should arrange for contractors as soon as the plan has been laid out and computer room requirements are determined. All major facility changes and primary power and air conditioning installation should be completed 30 days prior to the scheduled installation date.

The Hewlett-Packard site preparation specialist may assist in arranging for the necessary contractors if requested by the customer.

It is the customer's responsibility to ensure their computer system site is in compliance with all local laws, regulations, and codes for mechanical, building, and electrical distribution systems prior to system installation. The Hewlett-Packard site preparation specialist can assist the customer in determining the local regulations.

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5

N-Class Server Unpack and Install Instructions



Installing a Factory Integrated N-Class System

A factory integrated system is one in which the SPU and other components have been shipped from the factory pre-installed in a cabinet. This reduces the amount of on-site time required to place a system into service.

Tools Required or Recommended For Installation:

- Torx drivers (T-15 and T-25)
- Thin Combination or Adjustable wrench (1/2 inch)
- Nut driver (1/2 inch) or Socket (1/2 inch), extension, and ratchet handle or breaker bar
- #2 Phillips type screwdriver
- Medium flat blade screw driver (with 6 - 8 inch shaft)

Factory Integrated Cabinet Installation procedure

To install an N-Class server, which has been received from the factory integrated in a deep cabinet, perform each of the following procedures.

1. *Unpack Racked System*
2. Position rack in final mounting location

WARNING

Do not move the cabinet without the anti-tip feet installed. The cabinet may tip if moved without the anti-tip feet installed. The cabinet should only be moved with the anti-tip feet installed, but in the fully raised position, to allow ground clearance. Because of their low ground clearance, the anti-tip feet may need to be removed *temporarily* to clear some obstacles such as door jambs and ramps and large irregularities or obstructions on the floor. Use extreme caution when moving the cabinet without the anti-tip feet installed. Always reinstall the anti-tip feet as soon as the obstacle has been cleared. The anti-tip feet as well as the cabinet leveling/stabilizer feet should be fully lowered and secured once the cabinet is in place. Failure to follow these precautions can result in equipment damage or personal injury.

3. *Connect Core I/O Cables*
4. Connect system terminal
 - a. *Connect an HP 700 series terminal via an RS-232 connection between the serial port on the terminal and the Local Console Serial Port on the Core I/O connector panel at the rear of the N-Class.*

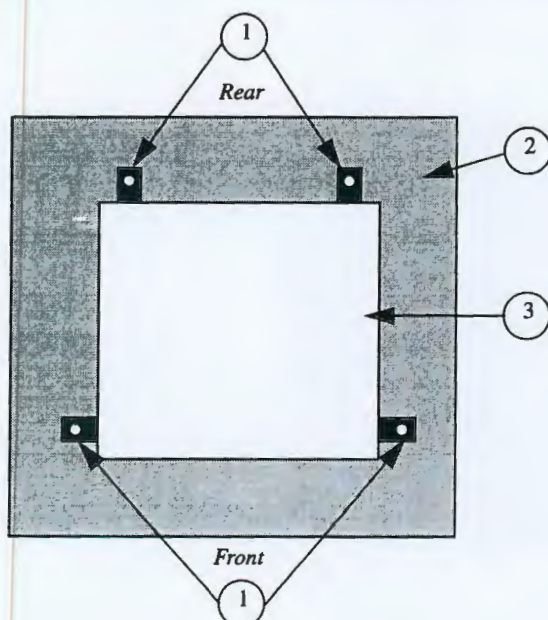
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- b. Connect a system console using the *LAN console connection*
- c. Connect a system console using the *Secure Web Console*.
- d. Connect a system console using direct serial connection with a *laptop PC*.
5. Configure Guardian Service Processor (GSP) and *Boot-up the system* to a UNIX prompt
6. Apply system power.

N-Class Server Unpacking

1. Carefully remove the carton and anti-static bag from the pallet.
2. Remove the front two (2) L-brackets. Retain the 1/2-inch bolts for later use.



- 1. Shipping L-Bracket
- 2. Shipping Pallet
- 3. Cabinet (Top View)

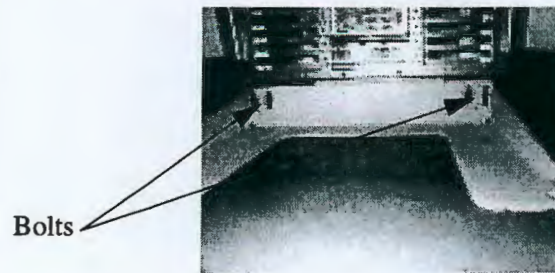
NOTE

As viewed from the front, one bracket is located on each side at the base of the cabinet near the front.

3. At the rear of the cabinet:
 - a. Open the door.

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- b. Remove the anti-tip foot by removing and retaining the two (2) 1/2-inch bolts.



For Shipping:
L-brackets are
mounted behind
anti-tip foot.
Same bolts
secure both.



- c. Remove the two (2) L-brackets (revealed by removing the anti-tip foot).

4. Remove the two ramps from the pallet and carefully place them into the slots at the front of the pallet.

WARNING

Use extreme care when rolling the racked system down the ramps. A rack containing one N-Class can weight up to 418 lbs. Do not stand in front of the ramps when rolling the cabinet off the pallet or injury may occur. All but the smallest configurations require two persons to safely remove the rack from the pallet.

5. Straighten the rollers on the cabinet base, if needed, and carefully roll it down the ramps.

WARNING

After removing the server from the pallet, Do not move the cabinet unless the anti-tip feet are installed! The cabinet can tip if care is not used. Due to their low ground clearance the feet may catch on irregularities on the floor, thresholds, or ramps.

6. Install the front and rear anti-tip feet using the 1/2 inch bolts provided. Ensure that the anti-tip feet are installed in the fully up position in the mounting slots. This will provide maximum ground clearance while moving the cabinet to its final position.
7. Carefully move the cabinet to its installation location.
8. Lower the anti-tip feet to the fully down position and adjust the cabinet leveling feet for best cabinet

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stability.



Installing a Non-Factory Integrated N-Class SPU

A non-factory integrated system is one in which the SPU and other components have been shipped from the factory and need to be installed in a cabinet.

NOTE

The procedures provided in this document describe installation in HP racks and cabinets. HP support for third-party racks and cabinets is described at the end of this document. Installation instructions for qualified third-party vendor products will be provided by the vendors and will ship with their rail kits.

Tools Required or Recommended For Installation:

- Torx drivers (T-15 and T-25)
- Thin Combination or Adjustable wrench (1/2 inch)
- Nut driver (1/2 inch) or Socket (1/2 inch), extension, and ratchet handle or breaker bar
- #2 Phillips type screwdriver
- Medium flat blade screw driver (with 6 - 8 inch shaft)
- Genie Lift™

Cabinet Mounting of an SPU in the field

To install an N-Class server SPU received separately, not integrated in a cabinet, perform each of the

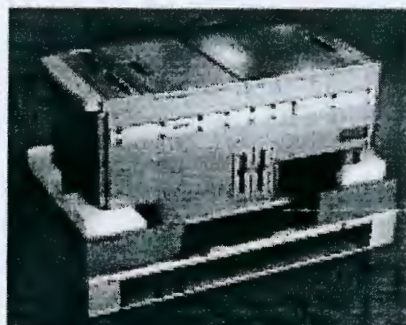
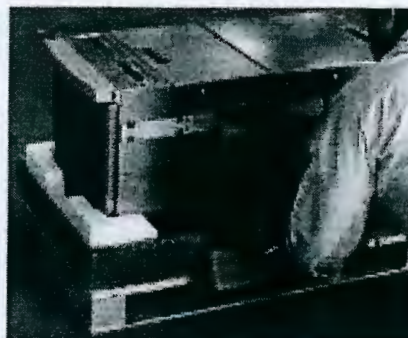
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following procedures.

1. Remove the shipping carton and anti-static bag from the SPU.

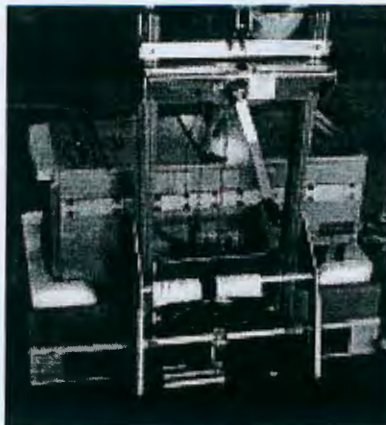


2. Remove tear flap from front lip of carton bottom to allow access to SPU by Genie Lift™



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3. Carefully, raise the Genie Lift™ platform so it fits under the SPU but over the pallet.



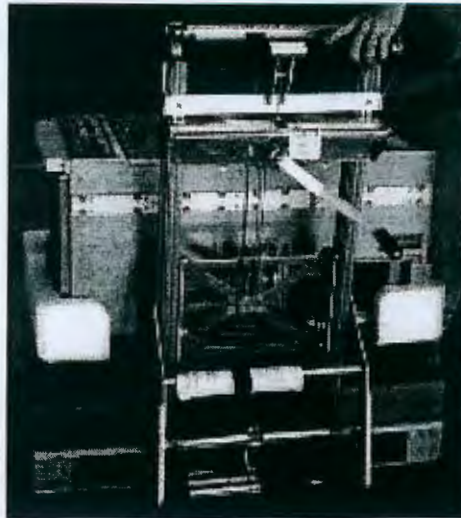
4. Position the lift under the center of the SPU

NOTE

The center-of-gravity for the SPU will vary with the hardware configuration, Generally, it fall a bit to the rear of where the two top covers meet.

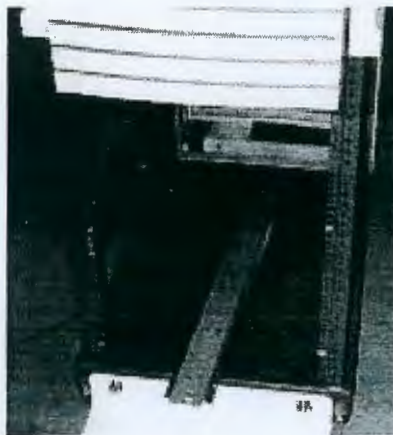
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5. Raise the Genie Lift™ platform enough for the lift to clear the pallet and packing.



6. Mount the outer slide rails on the cabinet.

- a. Locate the mounting position and install sheet metal nuts (Tinermans™) to mount the outer slide rails.



- **If mounted in bottom rack position**, count up 20 rack holes from the bottom of the cabinet and place sheet metal nuts (Tinermans™) on each cabinet post. This provides mounting for the bottom of each rail.

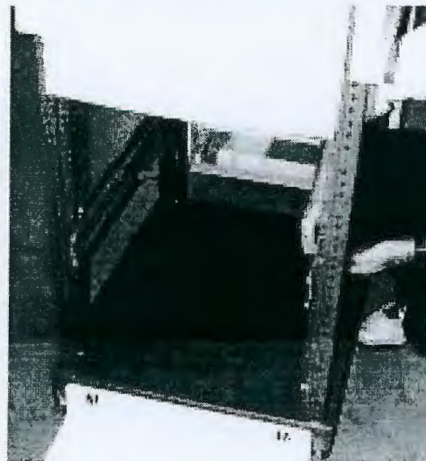
Count up six (6) holes from the first set of nuts and place a second set, one on each post. This provides the mounting for the rail tops.

- **If mounted as the second or higher position**, count up 24 holes from the top of the last rail and install sheet metal nuts (Tinermans™) on each post. This provides mounting for the bottom of each rail.

Count up six (6) holes from the first set of nuts and place a second set, one on each post. This provides the mounting for the rail tops.

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- b. Install the rails on the posts using the nuts and the Torx™ screws provided.



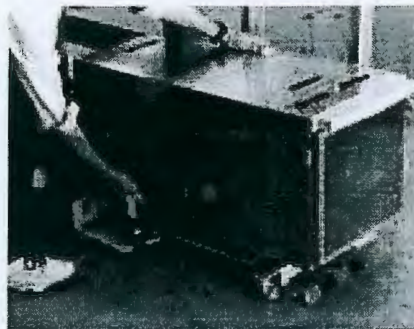
7. Install sheet metal nuts on the cabinet posts to secure the chassis in later steps.

- Install sheet metal nuts (Tinermans™) on the front face of the two front cabinet posts at a level one hole above those of the top screws of the side rails.
- Count down 23 holes from the last nuts and place two more sheet metal nuts (Tinermans™) on the front face of the two front cabinet posts.

NOTE

These sheet metal nuts may be moved later by sliding, if needed, but it's easier to install them now.

8. Using the lift, position SPU for mounting.



9. Raise the lift to position the SPU to align the rails.

10. Carefully slide SPU onto the rails and into cabinet.

NOTE

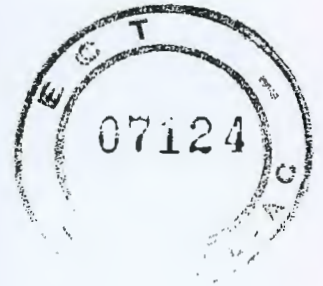
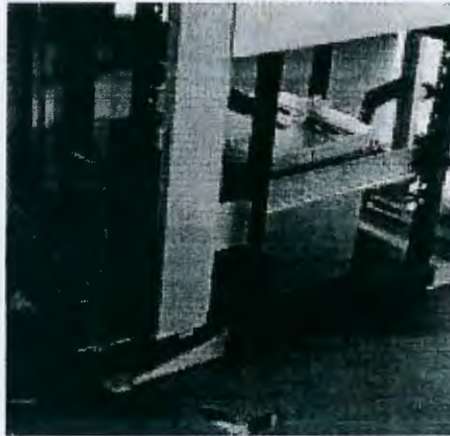
The lift may have to be raised or lowered slightly to align the rails.

11. Remove and lower the lift.

CAUTION

Use care when sliding the SPU into the cabinet. When stops are not installed on the rails and SPU can slide in the front of the cabinet and continue on out the back. Failure to follow this precaution can result in injury to personnel or damage the equipment.

12. Slide the SPU through the cabinet so it protrudes out the back about eight inches to allow for mounting of the cable management brackets.



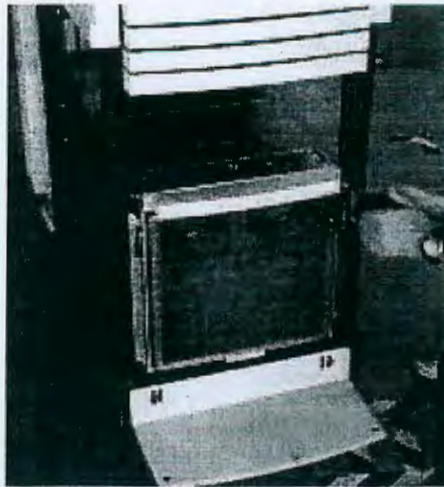
13. Install the cable mounting brackets, one on each side and secure them with two screws each.
14. Slide the SPU through the cabinet so it protrudes out the front slightly and install the two front slide stops. Install one stop on each side, by placing the keyhole cutouts over the three screws and tightening them to secure the stop.



15. Slide the SPU in on the rails until the stops meet the cabinet posts.

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16. Install and tighten the four screws securing the stops to the cabinet posts. Their in one screw at the top and bottom of each stop.



17. Install the front bezel, side panels, and filler panels.

18. *Connect Core I/O Cables*

19. Connect system terminal and configure the system.

- a. *Connect an HP 700 series terminal via an RS-232 connection between the serial port on the terminal and the Local Console Serial Port on the Core I/O connector panel at the rear of the N-Class.*
- b. *Connect a system console using the LAN Console connection*
- c. *Connect a system console using the Secure Web Console.*
- d. *Connect a system console using direct serial connection with a laptop PC.*

20. Configure Guardian Service Processor (GSP) and *Boot-up the system to a UNIX prompt*

21. Apply system power.

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Record System Serial Number

Before proceeding further with this installation, locate and record the system serial number record and store in a safe place. The serial number will be required for warranty and service work.

The serial number is located in two places.

- On the left side of the N-Class chassis on a paper label.



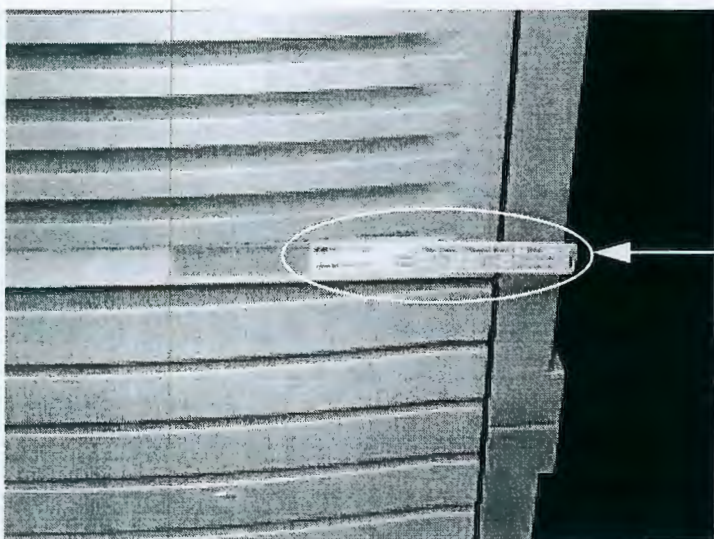
Serial Number

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Installing a Non-Factory Integrated N-Class SPU

- On the back of the small pullout tag located in the bottom right of the front bezel.



Serial Number Tag
(Serial number on reverse)



Back side shown

NOTE This small tag also provides as a convenient place to put the system name.

Third-Party Rack Support

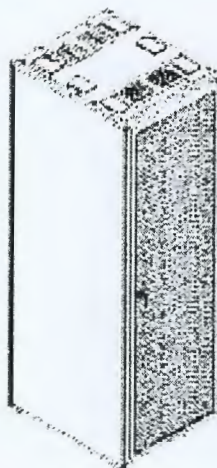
Overview

HP servers have been designed, qualified, supported and sold in the Rosebowl 2 cabinets made by HP. Recently our sales force has found this to be a sales inhibitor. We have now entered new markets (ISPs, ASPs, Hosting Farms, Co-Location Facilities, etc.) in which a customer will completely fill their data center

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with a given style of rack. The typical rack vendors are Chatsworth Products Inc. (CPI), Wrightline, or Rittal.

To clearly define this project and do justice to qualifying each configuration we have defined a set of rack vendors and rack products. Along with the three vendors mentioned above we will qualify Vero, Zero, Bud Industries and SMC. Each vendor has several rack product lines. N-Class systems are supported only on cabinet or 4-column racks, as shown following:



Examples of Cabinets are Chatsworth (CPI) Megaframe, Whrightline Paramount, Rittal Vario, Vero IMRAK, SMC, Zero Express Rack and Bud Industries S2000.

3rd Party Rack Checklist for N-Class Installations

This document is a guide to HP's field people and customers to insure safe and reliable installation and operation of N-Class systems in 3rd Party EIA style racks.

NOTE

This document applies to installations at the end customer site only.

NOTE

This document covers areas above and beyond the N-Class site prep document. Site Prep covers power and ambient air considerations. Please analyze the site prep issues in advance of this checklist. Site Prep information is available at docs.hp.com.

Footprint The N-Class is 38" deep. Additionally we need approximately 6" for cable management in the rear. This yields a depth requirement inside the rack of 44". HP recommends 48" in front and 36" in the rear for service access and proper safety in proximity to energized electronic equipment.

Safety Checklist To insure the installation is safe, the following items must be addressed:

Anti-tip feet The N-Class slides out of the rack about 24" both forward and backward for service and hot-swap. When extended in this manner there is a major tip hazard for the rack. The rack is to be solidly bolted to the floor both front and rear. In this case insure that the thick sheet metal of the rack base provides the mounting for some type of bolt down bracket. This is the only case we can guarantee for safety.

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Proper rack slides

When servicing the HP N-Class computer it slides 24" both forward and backwards. It is critical to use the rack slides, which allow the detents to stop the unit. This avoids injury from the unit falling out or an operator trying to hold the unit up.

Warranty Checklist These items must be considered to insure HP's warranty is valid in these 3rd party rack configurations.

Air flow

N-Class servers have front to back airflow. Thus a solid front or rear door will not work. The doors must be removed or changed to a 63% open perforation pattern over at least 17" of width and top to bottom minus a 2" border. Also insure that the hot air exhaust from other equipment is not being presented to the intake (front) of the N-Class system.

Service Access

To insure that the N-Class can be serviced properly for both scheduled repairs and hot swap of fans, power supplies and PCI cards the installation must allow for free sliding both forward and backward of 24". This will also allow HP to use the standard service contract for any N-Class in the field regardless of the racking situation. Alternate service contracts are addressed further in this document.

Cable strain relief

The cable management solution for the N-class is in two parts. Firstly, there are wire-form parts that attach to the lower rear areas that provide a strain relief attachment point. Secondly, the cable bundle from each side is to be Velcro tie-wrapped and fed into the floor where a 24" service loop must reside. This service loop allows the system to slide forward and backwards during service. For warranty purposes a proper method of strain relief must be used, especially for the ULTRA-2 SCSI connector on the CORE I/O or any SCSI type of cables on the PCI cards. This may force the elimination of the rear door in some cases. Judgement is required based on the following examples:

- **MINIMAL CABLING**- The customer may have 3 power cables and 2 LAN cables to the N-Class. In this case there are numerous options which include alternate strain relief in the rack and may allow the rear door (if perforated) to be used for security.
- **FIBER OPTICS CABLING** - Fiber optics cables allow a 1.5" bend radius plus have a very low profile connector. In this scenario there would be 3 power cables, 2 LAN cables and several fiber optics cables. The resulting cable bundle would be relatively small and could actually be held to the inside of the wire-form strain relief.
- **MAXIMUM SCSI CABLING** - If the ultra-flex SCSI cables are used the bend radius allowable is 1.5" with a low profile connector. If the configuration has 12 SCSI cables plus 3 power cables and 2 LAN cables the customer must use the provided wire form strain relief parts and is strongly recommended to use the N-Class rack which provides the extra space to house all this cabling.

N-Class PDU Support

PDU's for N-Class servers must be ordered as separate products when configuring a 3rd Party Rack order. The PDU's are usually an option to the HP cabinet, which is not present in this case.

The PDU's are:

E7674A 19"	16A	100-240V
E7681a 19"	30A	100-240V
E7682A 19"	60A	100-240V

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Supportability Matrix

The following table illustrates another degree of freedom available with regard to support and features.

Major Features	N-Class w/ Full HA
Anti-Tip	MUST
Proper slides	MUST
Airflow	MUST
Service Access	MUST
Cable Strain Relief	MUST
Front Access	48"
Rear Access	36"



Support Options

To insure that HP has adequately inspected and advised the customer regarding the safety and warranty items in this checklist the field CEs must perform a Site Prep for each order. The N-Class has site prep included in the purchase price.

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3rd Party Rack Ordering Guide for Vendor Products

Rack	Mounting Hardware	Doors	Qualified Tip Stability Device	Contact
Chatsworth Megaframe Rack (cabinet)	12468 Series Full Rack Mounting Rail, pair ^a 12464 Series Half Rack Mounting Rail, pair ^b	14032 Series Perforated Metal Door	712441-001 Floor Clamp Kit	www.chatsworth.com
Wrightline Paramount Frame 40" Deep JF842440	JRK44190 Rail Kit and JHP0N001 N-Class Adaptor Bracket	JDF8242L Paramount 84" x 24" left-hinged JDF8424R Paramount 84" x 24" right-hinged JDP84242 Paramount Frame perforated door insert for 84" x 24" door frame JTPP2440 perforated top panel - 24"W x 40"D	Floor anchoring	www.wrightline.com
SMC 36" Deep LAN Storage Module	N-Class Adaptor	Ventilated Front and Rear	Floor anchoring	Sales & Customer Support 1-800-SMC-PLUS (1-800-762-7587)

a. Requires purchase of two.

b. Requires purchase of two.

NOTE

Additional/other 3rd party rack vendor products may be qualified at a later date.

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Install the Cables

The links below shows how to install cable connections on the N-class system.

Console Connections

HP 700 series system console connections.

Secure Web Console connections

LAN Console connections.

Direct Connect PC as a Console

Network Connections

LAN/WAN Console connections

SCSI Device Connection

SCSI Device cable connections

Console Cable Connections

The links below direct you to instructions covering how to install console connections on the N-Class system.

Console Connections

HP 700 series system console connections.

Secure Web Console connections

LAN Console connections.

Direct Connect PC as a Console

HP 700 Series System Console Configuration

The following describes the steps required to configure the HP 700 series terminal for VT-100 mode for operation with the N-Class server.

Although any terminal capable of operating in VT-100 mode can be used, the HP700 series terminal is used here as an example because it is fairly common and it's configuration is typical of many terminals currently in use.

HP700 VT-100 Mode Configuration

The following procedure outlines the steps to configure the HP700 series terminal for VT-100 operation.

NOTE

You may use either the arrow keys or the tab key to move between the setting options on



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the screen.

1. Press **[config keys]** function key. **[f8]**
2. Press **[terminal config]** function key. **[f5]**
3. Move to *Terminal ID* and enter "vt100".
4. Move to *Set TermMode* and, using the **[Prev]** and **[Next]** keys, select "EM100".
5. Press the **[config keys]** function key. **[f8]**
6. Press the **[ansi config]** function key. **[f6]**
7. Move to "multipage" and, using the **[Prev]** and **[Next]** keys, select "yes". (Enables screen scrolling).
8. Move to *Backspace Del* and, using the **[Prev]** and **[Next]** keys, select "Backspace/Del".
9. Move to *EM100 ID* and, using the **[Prev]** and **[Next]** keys, select "EM100".

Secure Web Console Installation

The following section describes installation of the HP Secure Web Console on an N-Class server.

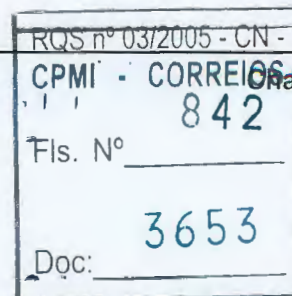
For technical data, installation and configuration instructions for the Secure Web Console refer to one of the following URLs on the Internet.

<http://www.hp.com/go/webconsole>

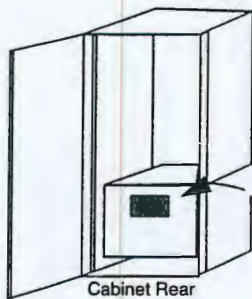
http://eproducts.hp.com/webconsole/frame_service.html

NOTE

Either one system console (HP series 700 terminal) or the HP Secure Web Console may



be installed on an N-Class server at the same time.

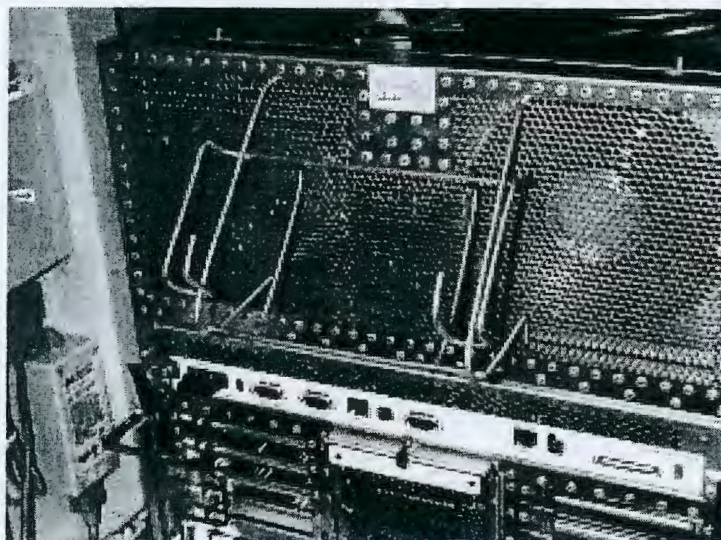


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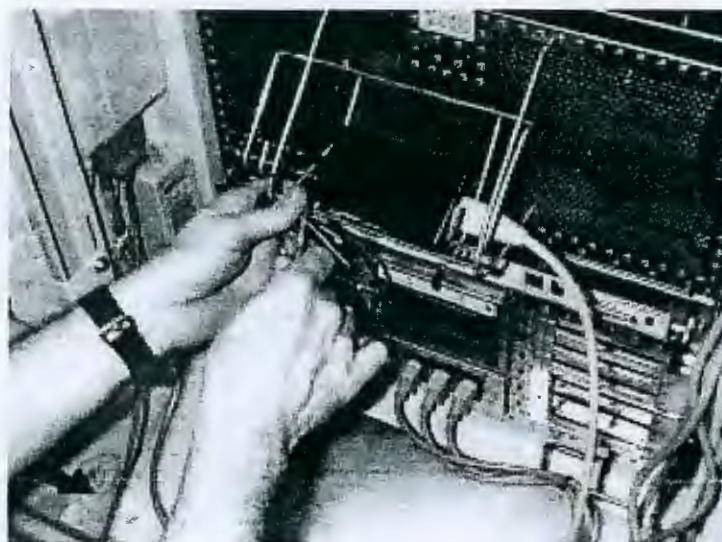
N-Class Server Unpack and Install Instructions
Install the Cables

To install the HP Secure Web Console on an N-Class server, refer to the previous figure, the documentation that came with it and proceed as follows.

1. Install the wire mounting bracket by carefully inserting the two top prongs (without the plastic caps) into the vent grill at the rear of the server chassis. Position the bracket in the top row of holes at the center.



2. Place the Secure Web Console power supply into the bottom portion of the wire mounting bracket as shown.



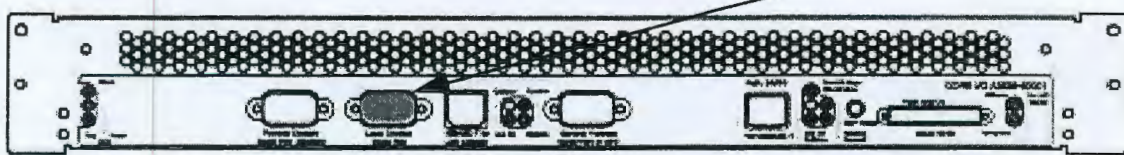
3. Connect one end of the power cable to the power supply where indicated.

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4. Position the Web Console in the mounting bracket.



5. Connect the DC out cable from the power supply to the Web Console.
6. Connect one end (RJ-45) of the LAN cable, provided, to the LAN port on the secure web console unit.
7. Connect one end of the data/LAN cable to the port labeled *Local Console Serial Port* on the N-Class server Core I/O panel.



CAUTION

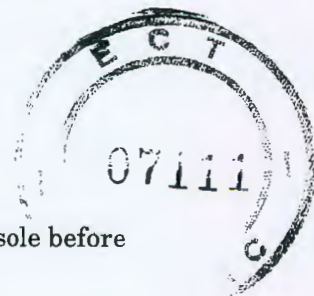
To prevent unauthorized access to your N-Class system, do not connect the other end of the serial cable to the Secure Web Console until both the N-Class and the Web Console have both been fully configured.

8. Connect the other end of the power cable into an available plug on a cabinet PDU.
9. Configure the Secure Web Console in accordance with the documentation that was provided with it or refer to <http://www.hp.com/go/webconsole>
10. Once the Web Console has been properly configured, the remaining end of the serial cable between the N-Class server and the Web Console may be connected.

LAN Console

This section describes how to configure a notebook PC as a console via a LAN cable connection. This process uses a terminal emulator software package set to emulate a VT100 terminal.

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NOTE

The N-Class server must first be configured via an HP700 system console before accessing it from a PC or UNIX system.

1. Connect a cable between your PC's network adapter and the 10BaseT LAN Console port on the rear of the N-Class server.
2. Launch your terminal emulator software and set emulation to VT100.
3. Connect to the N-Class server by entering the IP address for its Guardian Service Processor (GSP) and press <ENTER> or <RETURN>

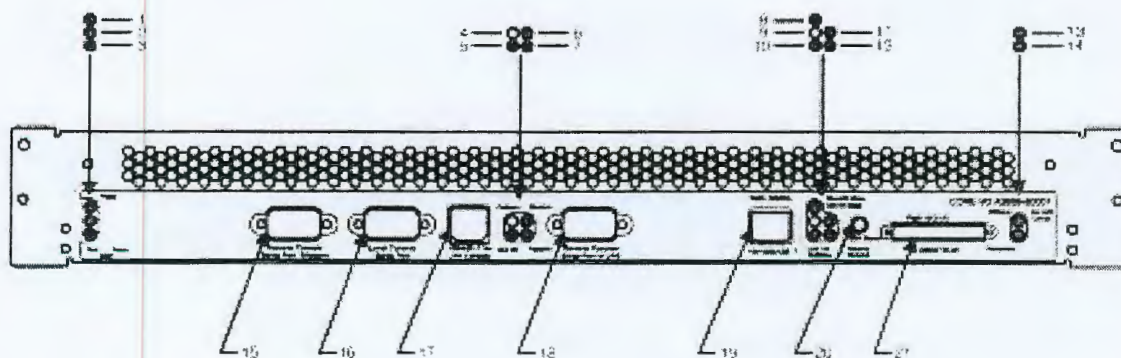
PC Direct Connect as System Console

This section describes how to configure a notebook PC as a console via a direct cable connection. This process uses a terminal emulator software package set to emulate a VT100 terminal.

1. Connect a serial port adapter cable between your PC's serial port and the Local Console Serial Port on the rear of the N-Class server.
2. You should have the HP-UX prompt at this point.
3. You can now log onto the system, or go into the GSP (with *ctrl+b*).

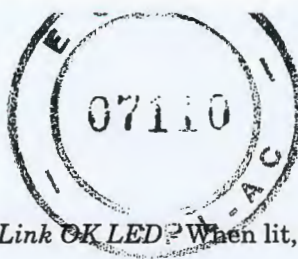
Core I/O Connections and Indicators

The following paragraphs describe of the operator indicators and Core I/O connections at the rear of the N-Class.



1. (Green) Core I/O board Power LED - When lit indicates that the Core I/O board has DC power available.
2. (Green) Guardian Service Processor Power LED - When lit indicates that the Guardian Service Processor has DC power available.
3. (Red) Failed Self-Test LED - When lit, indicates that one or more power-up self tests has failed.
4. (Amber) 10BASE-T Console LAN Collision LED - When lit, indicates that a data packet collision has occurred on the 10BASE-T LAN Console LAN.

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5. (Green) *10BASE-T Console LAN Link OK LED* - When lit, indicates that the 10BASE-T Console LAN Link status is OK.
6. (Green) *10BASE-T Console LAN Receive LED* - When lit, indicates that a data packet has been received over the 10BASE-T Console LAN.
7. (Green) *10BASE-T Console LAN Transmit LED* - When lit, indicates that a data packet has been transmitted over the 10BASE-T Console LAN.
8. (Green) *10BASE-T/100BASE-T Mode LED* - When lit, indicates that the LAN is in 100 Mbps Mode. When unlit, indicates that the LAN is in 10 Mbps Mode.
9. (Amber) *10BASE-T/100 BASE-T LAN Collision LED* - When lit, indicates that a data packet collision has occurred on the 10BASE-T/100BASE-T LAN.
10. (Green) *10BASE-T/100BASE-T LAN Link OK LED* - When lit, indicates that the 10BASE-T/100BASE-T LAN Link status is OK.
11. (Green) *10BASE-T/100 BASE-T LAN Receive LED* - When lit, indicates that a data packet has been received over the 10BASE-T/100BASE-T LAN.
12. (Green) *10BASE-T/100 BASE-T LAN Transmit LED* - When lit, indicates that a data packet has been transmitted over the 10BASE-T/100BASE-T LAN.
13. (Green) *Differential Sense (Diffsens) LED* - When Lit, indicates that the external SCSI bus is in *Low Voltage Differential* mode. When Unlit indicates the external SCSI bus is in *Single-Ended* mode.
14. (Green) *Terminator Power (Termpower) LED* - When Lit, indicates that SCSI terminator power is being supplied by the N-Class. When unlit, indicates that SCSI terminator power is being supplied by the external SCSI device.
15. *Remote Console Serial Port (Modem)* - Provides a 9-pin (Male), D-type, connector for a 9600 bps RS-232 serial port. For connection of a modem or other serial device.
16. *Local Console Serial Port* - Provides a 9-pin (Male), D-type, connector for a 9600 bps RS-232 serial port. For connection of a local system console/VT-100 terminal.
17. *10BASE-T LAN Console Port* - Provides an RJ45 10BASE-T LAN Console connection.
18. *UPS Only* - Provides a 9-pin (Male), D-type, connector for a 9600 bps RS-232 serial port. For connection of a serial device or UPS.
19. *10BASE-T/100BASE-T LAN Port* - Provides an RJ45 10BASE-T/100BASE-T System LAN connection.
20. *GPS Reset Button (recessed)* - When pressed causes a reset function to be executed in the Guardian Service Processor (GSP).
21. *Ultra SCSI II 68-Pin Very High Density Computer Interface (VHDCI)* - Provides connection to external SCSI devices. Autodetects Single ended (default) or Differential SCSI devices.

Console Connection and Configuration

The following describes of the installation and configuration of the N-Class system console.

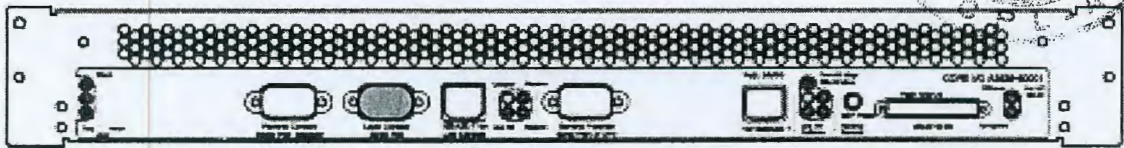
N-Class RS-232 Local System Console Installation The following describes how to install a system console on an N-Class system. The HP-700 series terminal is used as an example. Other terminals may be used as a system console as long as they are configured for VT100 terminal emulation mode.

1. Connect one end of a serial cable to the port labeled *Local Console Serial Port*, on the I/O Connector

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panel, at the rear of the N-Class server.



2. Connect the other end of the serial cable to the serial/RS232 port on the Console. (RS232 Serial Port labeling may vary depending on manufacturer.)
3. Connect the System Console to input AC power.

CAUTION

The PDU in the N-Class cabinet supplies 240 VAC. The HP-700 series is auto-ranging, other terminal types may not be. Do not plug a terminal into the PDU unless you have first made sure that it is autoranging and can operate on 240 VAC. Failure to follow this precaution can result in damage to the System Console Terminal.

4. Turn the System Console AC power switch to ON.

Console Configuration (VT100 mode) The following describes the steps required to configure the HP 700 series terminal for VT-100 mode for operation with the N-Class server.

Although any terminal capable of operating in VT-100 mode can be used, the HP700 series terminal is used here as an example because it is fairly common and it's configuration is typical of many terminals currently in use.

HP700 VT-100 Mode Configuration The following procedure outlines the steps to configure the HP700 series terminal for VT-100 operation.

NOTE

You may use either the arrow keys or the tab key to move between the setting options on the screen.

1. Press [config keys] function key. [f8]
2. Press [terminal config] function key. [f5]
3. Move to *Terminal ID* and enter "vt100".
4. Move to *Set TermMode* and, using the [Prev] and [Next] keys, select "EM100".
5. Press the [config keys] function key. [f8]
6. Press the [ansi config] function key. [f6]
7. Move to "multipage" and, using the [Prev] and [Next] keys, select "yes". (Enables screen scrolling).
8. Move to *Backspace Del* and, using the [Prev] and [Next] keys, select "Backspace/Del".
9. Move to *EM100 ID* and, using the [Prev] and [Next] keys, select "EM100".

SCSI Devices

This section provides basic cabling and setup procedures for *externally mounted SCSI devices*.

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External Media Devices

The N-Class does not include internally mounted removable media devices (DVD-ROM, CDROM, or DDS Tape) as a standard part of the system.

The N-Class provides an Ultra II, Low Voltage Differential (LVD), 68-pin Very High Density Computer Interconnect (VHDCI) SCSI port on the Core I/O connector panel. This connector is provided for the connection of external SCSI devices.

Cabinet mountable CDROM and DDS devices are available for the N-Class. Check your ordering guide for the correct devices, cables, and mounting enclosures.

HP Smart Rackmount Enclosure The HP Smart Rackmount Enclosure (C4318SZ) provides the ability to rack mount and connect two HD 50-pin SCSI external media devices to the N-Class.

The Smart Rackmount Enclosure is connected to the N-Class by a 68-pin, VHDCI connector on the Core I/O connector panel.

SCSI Termination

This section provides an overview of SCSI termination. The N-Class has three SCSI buses. Two internal buses, off of a dual-channel controller and one external accessed through a 68-pin VHDCI connection on the Core I/O board.

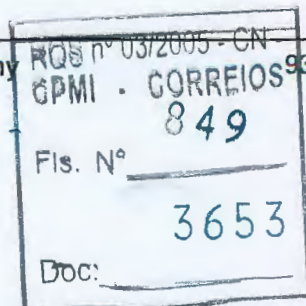
Each *internal* bus contains one disk drive which is terminated.

The *external* bus is self terminating when no devices are present. If devices are connected the external bus must be properly terminated at the *last physical device*.

Refer to the N-Class configuration guide and the manual for the device you are installing for proper termination procedures.

SCSI Termination General

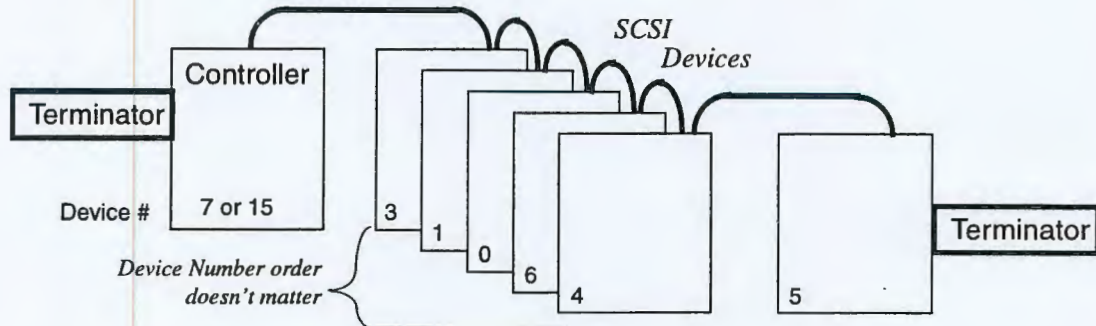
Each *physical end* of a SCSI chain must be properly terminated. Termination requirements varies with the length of bus, number of devices, and bus speed. An improperly terminated SCSI bus can cause faults and bus data errors.





SCSI Narrow Can support up to 8 devices (0 - 7) Device 7 = Controller

SCSI Wide Can support up to 16 devices (0 - 15) Device 15 = Controller



Supported SCSI Cables

The following section outlines the SCSI cables supported for use with the N-Class server.

Model Number	Description	
C2361A	1.0 Meter VHDCI to 68P HD cable (Part# 5183-2651)	
C2362A	2.5 Meter VHDCI to 68P HD cable (Part# 5183-2653)	
C2365A	5.0 Meter VHDCI to 68P HD cable (Part# 5183-2654)	LVD Only
C2363A	10.0 Meter VHDCI to 68P HD cable (Part# 5183-2655)	

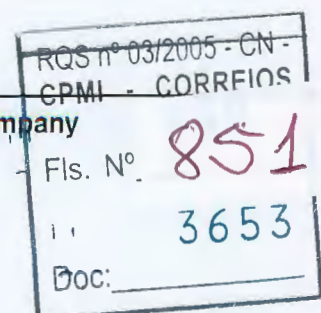
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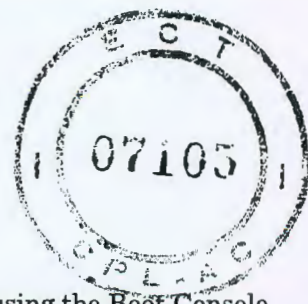


Supported SCSI Devices

The following section outlines the SCSI devices supported for use with the N-Class server.

Model Number	Description
C4318SZ	HP SMART Family of Storage Enclosures & Modules (Highlander)
C4314A	SMART Desktop DVD-ROM SCSI-2 module
C4315A	SMART Rack-Ready DVD-ROM SCSI-2 module
C6382A	DLT4000 Desk Top Narrow Differential Tape Drive
C6383A	DLT4000 Rack Ready Narrow Differential Tape Drive
C6362A	4-8GB DDS2 Desktop DAT Drive SE SCSI II
C6363A	4-8GB DDS2 Rack Ready DAT Drive SE SCSI II
C6364A	12-24GB DDS3 Desktop DAT Drive SE SCSI II
C6365A	12-24GB DDS3 Rack Ready DAT Drive SE SCSI II
C6366A	DDS3 Desktop Autoloader DAT Drive
C6367A	DDS3 Rack Ready Autoloader DAT Drive





SCSI Bus Speed Selection

This section describes the procedure for setting the speed of the external SCSI bus using the Boot Console Handler (BCH) commands. The HP-UX SCSI driver works with Prelude firmware to achieve correct SCSI speeds.

The driver does what the firmware says, no matter what the capabilities of the controller, drives, cables, and enclosure are.

The SCSI speed change command must be used with care. Results are unpredictable if you set a speed which the cable, drives, and controller board is not supported.

Setting SCSI Port Speed and Controller Initiator ID

The *SCSI* command is available from the Boot Console Handler (BCH) menu.

The command has as variety of uses including:

- Displaying and setting the SCSI transfer rates
- Displaying and setting SCSI controller initiator IDs

Displaying and Setting SCSI Transfer Rate

To set the SCSI transfer rate access the BCH menu and proceed as follows:

1. At the BCH prompt enter:

```
SCSI rate <HW path> <rate>
```

Acceptable Entries:

fast = Fast SCSI

ultra = Ultra SCSI

nolimit = Ultra II, if Ultra II capable, etc.

NOTE

The default rate equals *ultra* for the Core I/O internal drives. The default rate equals *fast* for the Core I/O SCSI external port controller. Add-in HBAs are un programmed by default. If programmed, the driver default value of *fast* is used for add-in HBAs.

2. Press <Return>

Displaying and setting SCSI Controller Initiator ID

To display and set SCSI controller initiator ID's proceed as follows:

1. At the BCH prompt enter:

```
SCSI init <HW path> <id#>
```

NOTE

id# = The SCSI ID number of the controller on which the device is located. Default ID = 7

2. Press <Return>

Example 5-1

Display SCSI transfer rate for a controller at 0/0/2/0 (Internal drive)

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Command:

SCSI RATE <0/0/2/0>

Response:

Path (dec)	Initiator ID	SCSI Rate
0/0/2/0	7	No Limit

Example 5-2

Set the SCSI transfer rate for a controller at 0/0/2/0 to Ultra II

Command:

SCSI RATE 0/0/2/0 0

Response:

Path (dec)	SCSI Rate
0/0/2/0	No Limit

Example 5-3

Display SCSI initiator ID for all controllers, busses, and slots.

** Shows all controllers and Id's that have been programmed. SCSI controllers that are in PCI slots that have not been altered from default will not show up. Only core controllers are displayed until the other slots are programmed.* 4. Set the SCSI initiator ID of a controller at 0/0/2/1

Command:

SCSI

Response:

Path (dec)	Initiator ID	SCSI Rate
0/0/2/0	5	Ultra
0/0/2/1	7	Ultra
0/0/1/0	7	No Limit
5/0/0	6	Fast
12/0/0	6	Fast
12/0/1	6	Fast
0/0/10/0/0	6	Unknown
0/0/10/0/1	6	Unknown
0/0/12/0/0	6	Unknown
0/0/12/0/1	6	Unknown
0/8/0/0	6	No Limit
0/8/0/1	6	No Limit

Example 5-4

Sets the SCSI initiator ID for a specified controller, bus, and slot.

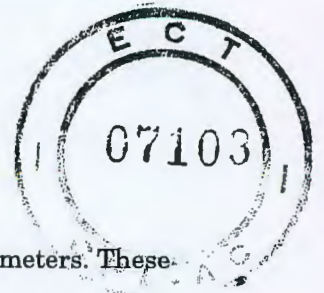
Command:

SCSI init 0/0/2/1 6

Response:

Path (dec)	Initiator ID
0/0/2/1	6

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SCSI BCH Commands - Summary

Boot Console Handler (BCH) SCSI commands displays or sets SCSI controller parameters. These parameters are used by the operating system SCSI driver.

SCSI	Display <i>all</i> SCSI controller parameters
SCSI INITiator	Display SCSI controller initiator IDs
SCSI INITiator <path>	Display initiator ID for specified path
SCSI INITiator <path> <id>	Set initiator ID for specified path
SCSI RATE	Displays all SCSI controller transfer rates
SCSI RATE <path>	Display transfer rate for specified path
SCSI RATE <path> <rate>	Set transfer rate for specified path
SCSI DELETE <path>	Delete the specified path from the table

<path> is in I/O notation, such as 1/2/3/4.5.6

<rate> is FAST, ULTRA, or NOLIMIT

If either the ID or PATH parameter is set to *Unknown* or a path is not in the parameters table, a default set of SCSI controller parameters, from firmware, is used by the OS SCSI driver.

Defaults values:

Initiator ID = 7

Rate = FAST

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PCI Device Information

To find the SCSI device hardware path information on your system PCI slots use the *in io* BCH command. The command will provide you with a display *similar* to the following example.

Description (dec)	Path	Vendor Id	Device Id#	Bus #	Slot #
-----	-----	-----	-----	---	---
Ethernet cntlr	0/0/0/0	0x1011	0x19	0	Built_In
SCSI bus cntlr	0/0/1/0	0x1000	0xc	0	Built_In
SCSI bus cntlr	0/0/2/0	0x1000	0xf	0	Built_In
SCSI bus cntlr	0/0/2/1	0x1000	0xf	0	Built_In
Comp. ser cntlr	0/0/4/0	0x103c	0x1048	0	Built_In
Comp. ser cntlr	0/0/5/0	0x103c	0x1048	0	Built_In
Ethernet cntlr	0/2/0/0	0x1011	0x19	16	6
SCSI bus cntlr	0/5/0/0	0x1000	0xf	40	1
SCSI bus cntlr	0/8/0/0	0x1000	0xb	64	4
SCSI bus cntlr	0/8/0/1	0x1000	0xb	64	4
SCSI bus cntlr	0/10/0/0	0x1000	0xf	80	5
SCSI bus cntlr	0/10/0/1	0x1000	0xf	80	5
SCSI bus cntlr	0/12/0/0	0x1000	0xf	96	3
SCSI bus cntlr	0/12/0/1	0x1000	0xf	96	



Cable Management

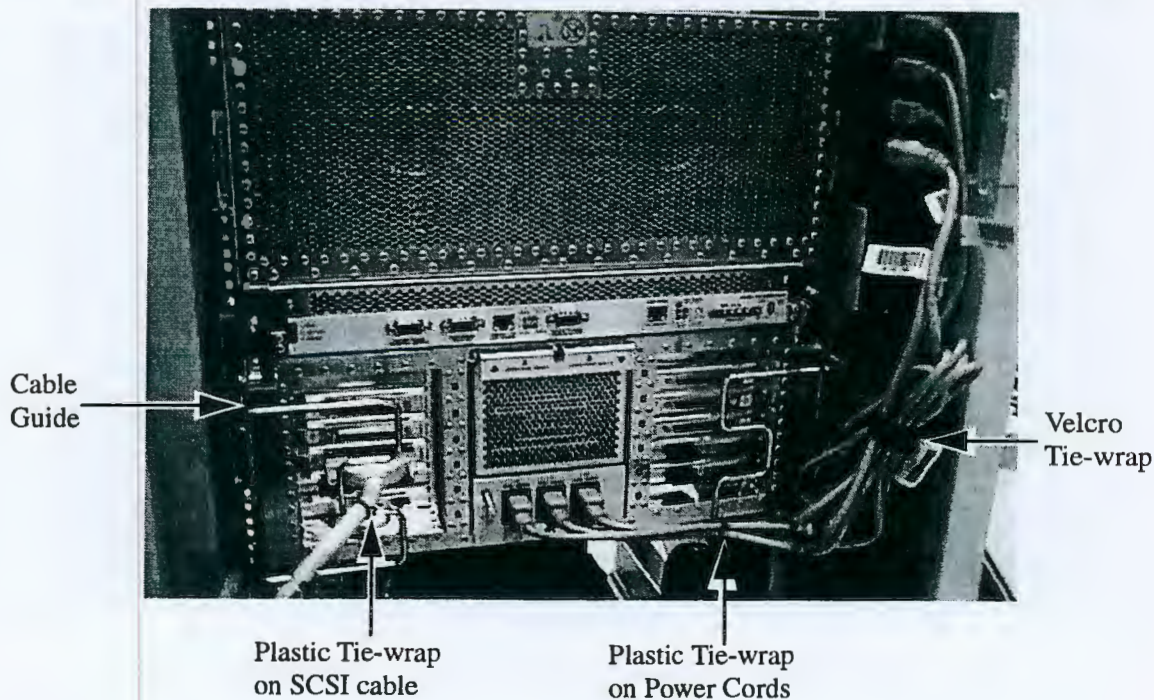
This section describes the management of cables inside the cabinet after all power and peripheral cables are identified and attached to the SPU. Attention to cable management is important in multiple SPU cabinets, or SPUs and other peripheral type enclosures in the same cabinet. The N-Class SPUs extend out the front and the rear of the cabinet for service access, so it is critical that cables be neat and dressed to allow movement without the need for re-cabling the SPUs.

The cable management scheme inside the cabinet consists of cable guides located on the left and right sides of the chassis, extending out from the back of the chassis. These cable guides in conjunction with plastic and velcro tie-wraps should provide appropriate strain relief and cable management for all SPUs in the cabinet.

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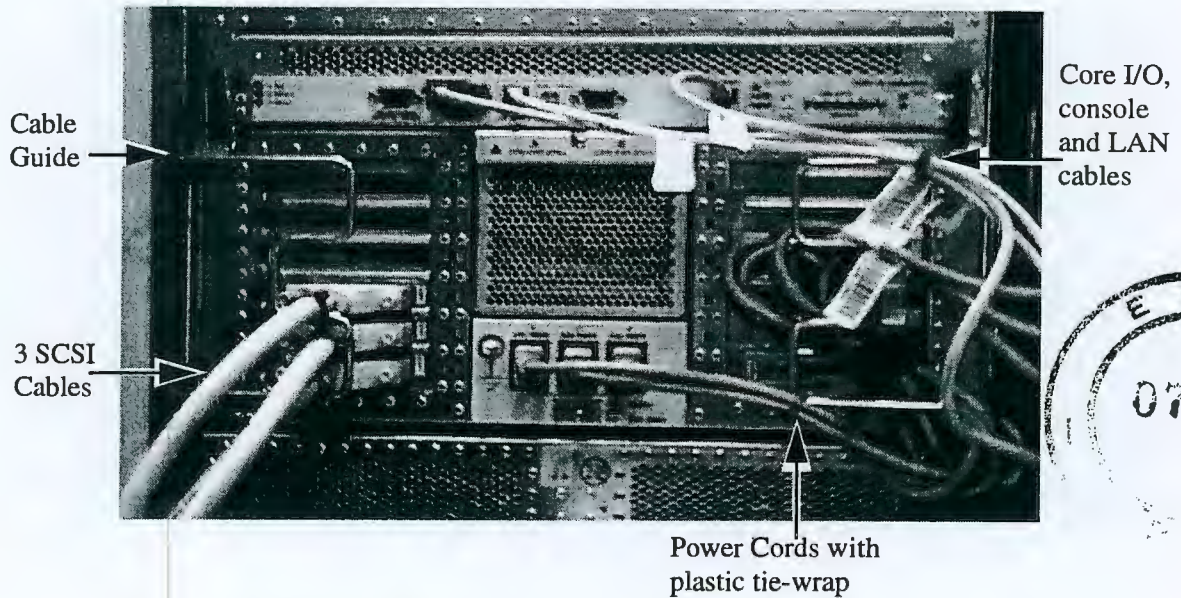
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The cables should be dressed to the left or right side of the cabinet as shown in the following diagrams.

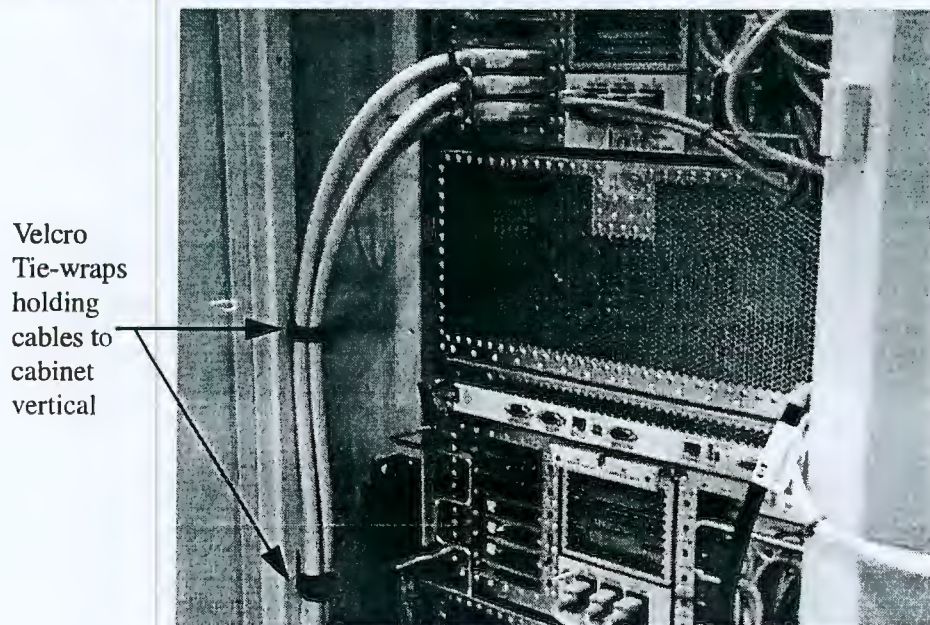


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The plastic tie-wraps are used to hold the various cables to the cable guides to provide strain relief. They can also be used to group like cable types together into one bundle, as shown:



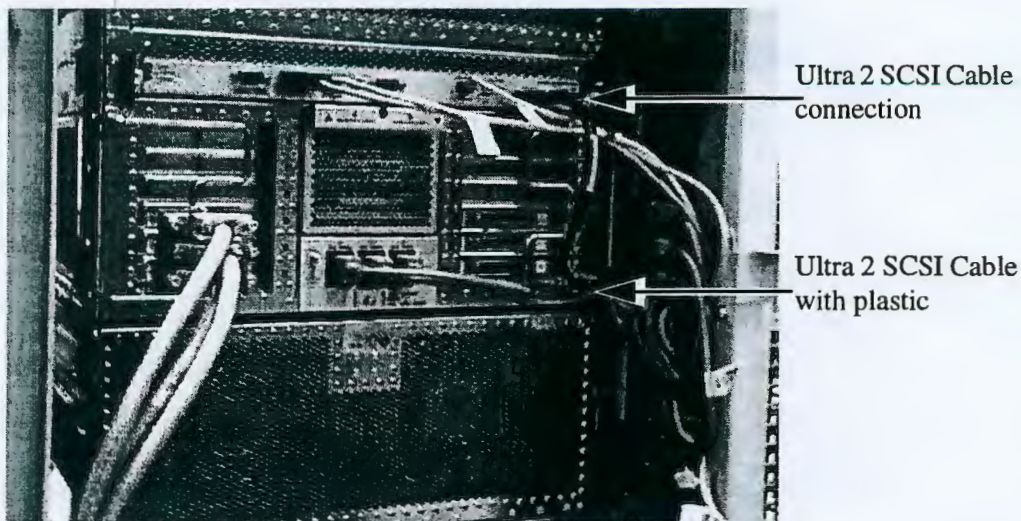
Once the cables are secured to the cable guides, they should then be routed down the sides of the cabinet.



There are slits in the cabinet vertical supports that allow the velcro tie-wraps to go through once you have bundled the cables together. This is one method for securing the cables inside the cabinet.

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Some cables may have a bend-radius issue at the connection point. In that case you can use the outside of the cable guide to secure the cable for strain relief.



The pictures in this section show a single N-Class SPU with cables. For a cabinet with multiple SPUs or an SPU with peripheral component bays installed, you would want to cable from the bottom up. Be sure to leave an adequate service loop in the cables so the SPU can be extended out the front or back of the cabinet. Some cables may have to be loosened or re-positioned to access and SPU in the middle positions of the cabinet.

CAUTION

Always be aware of cable interference while moving an SPU. Cable or connector damage could occur if this precaution is not followed.

Cabinet Extension Kit

This section lists the contents of the N-Class Cabinet Extension Kit(s) and the procedures for installing the components. There are three kits for the different sizes of cabinet (1.3m, 1.6m and 2.0m).

Cabinet Extension Kits:

- A5541A (Kit for a 1.2 meter cabinet)
- A5542A (Kit for a 1.6 meter cabinet)
- A5543A (Kit for a 2.0 meter cabinet)

The difference in the extension kits is the size (meters) of the cabinet. The following table is a list of parts

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that should be in each kit.

Table 5-1

Cabinet Expansion Kit Contents

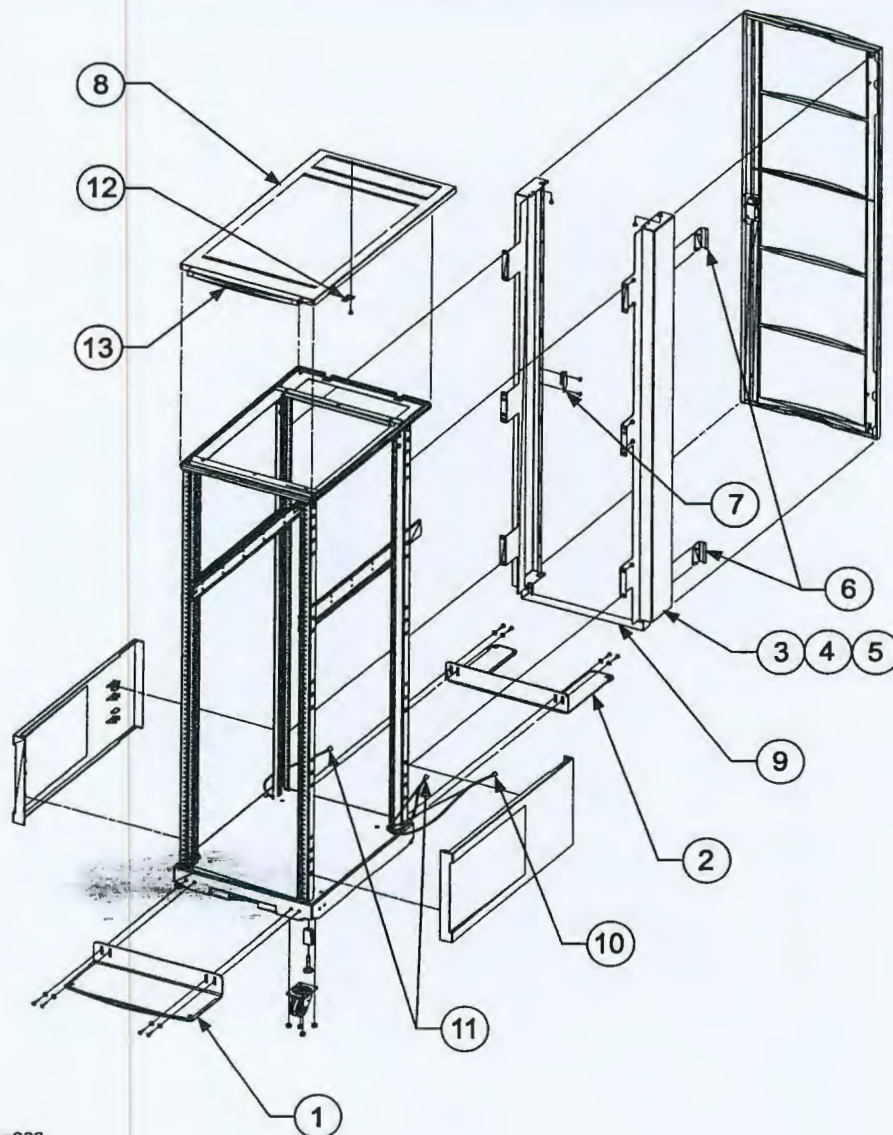
Part Number	Description	Quantity	Locator No.
A3639-00230	Front anti-tip foot (See Warning)	1	1
A3639-00231	Rear anti-tip foot (See Warning)	1	2
A5541-00001	1.2m side panel (see note 1)	2	3
A5542-00001	1.6m side panel (see note 1)	2	4
A5543-00001	2.0m side panel (see note 1)	2	5
A5543-00002	Door hinge	2	6
A5543-00003	Door latch catch	1	7
A5543-00004	Deep top panel	1	8
A5543-00005	Lower brace	1	9
0515-4216	Anti-tip foot bolts (M8 x 20mm)	8	
3050-2061	washer	8	
0515-0671	T25 screws	see note 2	
A5543-00007	Long ground wire	1	10
5064-6109	Short ground wire	2	11
A5543-00006	Door support bracket	1	12
5183-1866	Cabinet forehead, plastic	1	13

Note 1: Depending on which kit is ordered is which size of side panel would be contained in the kit.

Note 2: Quantities are; 18 for A5541A, 19 for A5542A, and 23 for A5543A.

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Figure 5-1 Exploded view of Cabinet with Extension Kit



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CAUTION

Once the cabinet has been fitted with the extension kit the original shipping material will no longer work. All new shipping material is needed, pallet, ramps, box, and top cap. DO NOT try to use the original shipping material with the new cabinet.

The cabinet must either be packaged with the new material or shipped via padded van.

WARNING

The anti-tip feet must be installed to ensure cabinet stability. Failure to do so could result in injury and equipment damage.

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Before installing the cabinet extension kit parts, you must first remove parts from the existing cabinet. Some of the parts (see note) removed are not usable with the cabinet extension kit or the N-Class system.

Preparing the Cabinet

1. Remove the cabinet plastic, side panels, by pulling them away from the cabinet (snap releases from the front).
2. Disconnect the ground wire from the back door.
3. Remove the rear door by opening it at approximately a 45 degree angle. Grasp the door and lift it up to disengage the door hinge pins.
4. Remove the top panel by pushing it forward from the rear, then lifting it up and off the cabinet.
5. Remove the door support bracket from the top of the cabinet frame.
6. Remove the door hinges from the cabinet vertical rails.
7. Remove the door latch plate from the cabinet vertical rails.
8. Remove any column mounted PDUs.

NOTE

The cabinet top panel, door hinges, and door latch plate, can be discarded, they are not used on a cabinet with the extension kit installed.

Cabinet Expansion Kit Installation

1. From the back, place the deep top panel over the top of the cabinet, with the front angled down and slightly forward so the tabs on the top panel can slide back into the slots on the front of the cabinet. Lower the back of the top panel down and pull the top panel toward the back until it is fully seated on top of the cabinet.
2. Snap the new, plastic cabinet forehead onto the front edge of the top panel.
3. Start a screw into the screw hole under the lower edge of the top panel. Do not tighten it, but make sure it is in by two or three turns.
4. Hang a side panel from either the left or right side screw inserted in the top panel in step 3.
5. Insert five (5) T25 mounting screws through the side panel into the cabinet vertical frame. Note, for the 1.2m (A5541-00001) side panel, you will only insert three (3) T25 screws.
6. Repeat steps 3 through 5 for the other side.
7. Place the lower brace across the bottom of the side panels and insert four (two on each side) T25 screws through the brace into the side panels.
8. Tighten all the T25 screws.
9. Attach the door hinges to the left side panel with four (two for each hinge) T25 screws.
10. Attach the door latch to the right side panel with two (2) T25 screws.
11. Attach the door stabilizer to the under side of the top panel with one (1) T25 screw.

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12. Replace the cabinet plastic, side panels.
13. Attach the two short ground wires (one for each side), between the cabinet frame and the extension side panels.
14. Attach the long ground wire between the cabinet frame and the rear door

WARNING

Do not install the outer rails or an N Class SPU without first installing the front and rear anti-tip feet.

Anti-Tip Feet Installation

Before any product is installed in the cabinet and the cabinet has been positioned at the installation site, the anti-tip feet need to be installed for safety and cabinet stability reasons.

1. Lower the cabinet leveler feet at all four corners of the cabinet. Be sure the leveler feet contact the floor surface.
2. Place the solid front anti-tip foot so the slotted holes align with the threaded holes on the bottom edge of the cabinet frame.
3. Insert four bolts and washers (two each side) through the anti-tip foot into the cabinet frame.
4. Press down on the anti-tip foot until it touches the floor, then tighten the bolts.
5. Place the rear anti-tip foot so the cable management slot aligns with the hole in the raised floor.
6. Insert four bolts and washers (two each side) through the anti-tip foot into the cabinet frame.
7. Press down on the anti-tip foot until it touches the floor, then tighten the bolts.

The cabinet is now ready for one or more N-Class SPUs, or other computer components to be installed.

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6 N-Class Operating Instructions

N-Class Server Boot up

When booting up your system, for the first time, the first thing you should do is configure the Guardian Service processor (GSP). Failure to configure the GSP will leave the system vulnerable to unauthorized access.

Configuring the Guardian Service Processor (GSP)

The Guardian Service Processor (GSP) is a resident processor within the system that allows the local or remote system administrator to monitor and perform administrator functions. This section provides configuration procedures that will instruct you to:

- Configure the LAN port
- Add or delete users (maximum of 20)
- Change the default GSP configuration

Go to the appropriate section for the task that you wish to accomplish.

Configuring the GSP LAN Port

Perform the LAN configuration from the systems local port (either console or the HP secure web console).

NOTE

The GSP has a separate LAN port from the system LAN port. It will need a separate LAN drop, IP address, and networking information from the port used by HP-UX. Before starting this procedure, you will need to know the following information:

- I.P. address (for GSP)
- Subnet mask
- Gateway address
- Hostname (this is used when messages are logged or printed)

To configure the GSP LAN port, perform the following steps:

1. Go into the GSP with the ctrl+b entry.
2. At the GSP prompt, enter the LAN Configuration (lc) command:

GSP> lc

The lc command will start a series of prompts. Respond to each prompt with the appropriate information.

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Adding Users

The GSP can only have a maximum of 20 users (one administrator and 19 operators). By design, the first user added to the GSP becomes the GSP administrator. Only the GSP administrator can add or remove users or change the GSP configuration.

NOTE

Before starting this procedure, you will need to know the following information:

- User's name
- Organization's name
- Login name
- User's password

To add a user, perform the following steps:

1. Go into the GSP with the ctrl+b entry.
2. At the GSP prompt, enter the Security options and access control (SO) command:

GSP> so

3. The first prompt you will see with the so command is for GSP wide parameters:

GSP wide parameters are:

Login Timeout: 1 minutes.

. Number of password Faults allowed: 3

. Flow Control Timeout: 5 minutes.

Do you want to modify the GSP wide parameters? (Y / [N]) __

At this point you can modify the GSP wide parameters, or continue with adding users. To add users, respond N for no.

NOTE

If this is the first time users are being added, the first user added will be the GSP administrator.

If this is not the first time you are adding users (you are adding additional users), you will need to step through all current users to reach the next available user prompt.

4. The next prompt that appears will ask the following question:

Do you want to modify the user number 1 parameters? (Y/[N]/Q to quit) __

Follow the series of prompts to enter all the required fields for adding a user.

CAUTION

Be sure to read each prompt carefully and enter the correct response. A missed or incorrect entry could deny entry to that user.

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An example of an added users information would be:

- . User's Name: Joe Smith
- . Organization's Name: IT Support
- . Dial-back configuration: Disabled
- . Access Level: Operator
- . Mode: multiple
- . User's state: enabled



For the number 1 user, the Access level is administrator. The Mode entry of single only allows entry for that user one time, then access will be denied. A Mode entry of multiple allows unlimited entries into the GSP.

Removing Users

You can remove (disable) a GSP user with the same Security options and access control (SO) command used to add a user.

To remove a user, perform the following steps:

1. Go into the GSP with the ctrl+b entry.
2. At the GSP prompt, enter the Security options and access control (SO) command:

GSP> so

3. The first prompt you will see with the so command is for GSP wide parameters:

GSP wide parameters are:

- . Login Timeout: 1 minutes.
- . Number of password Faults allowed: 3
- . Flow Control Timeout: 5 minutes.

Do you want to modify the GSP wide parameters? (Y / [N]) __

At this point you can modify the GSP wide parameters, or continue with removing a user. To remove users, respond N for no.

NOTE

You will have to step through each user number until you reach the user to be removed.

4. When you access the number of the user to be removed, you must change the data in the prompts for that number.

It is important that, at a minimum, you need to modify the User's state to Disabled.

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Changing the Default GSP Configuration

This section describes the process of changing GSP default configurations. To change the GSP default configuration, perform the following steps:

1. Go into the GSP with the ctrl+b entry.
2. At the GSP prompt, enter the Default Configuration (dc) command:
`GSP> dc`
3. Follow the prompts for the dc command, and be sure to have the change information available.

CAUTION

When the Security configuration is reset, all users are removed, including the GSP administrator. It also disables the remote. Remote must be re-enabled through the main console using the Enable Remote (er) command.

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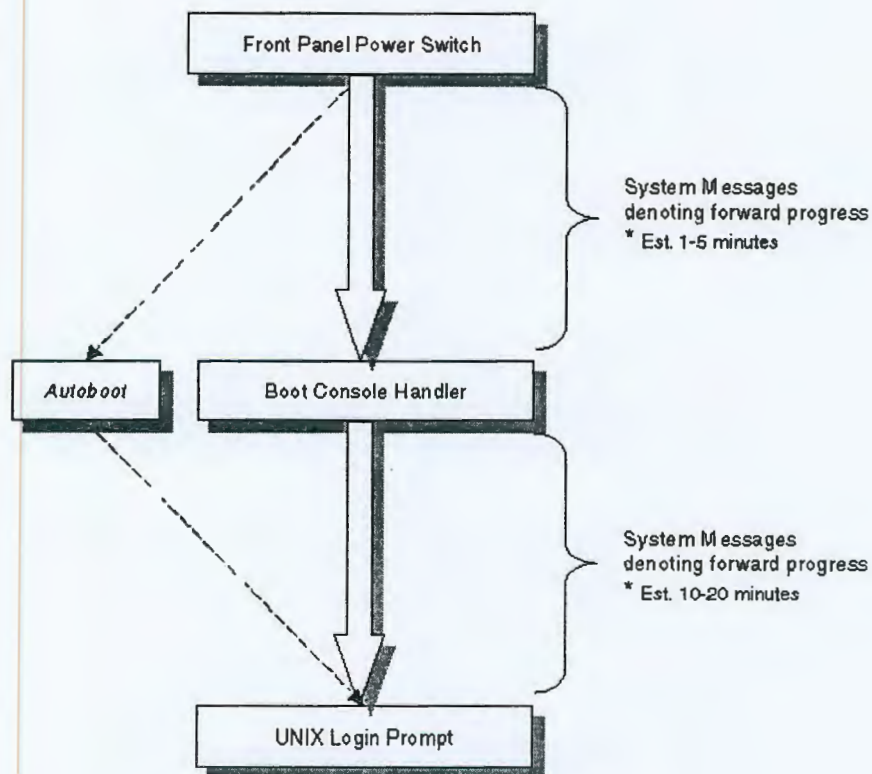


Booting the System

The length of time an N-Class will require to boot up depends on the number of processors and the amount of RAM memory installed. Average configurations can take up to 20 minutes or more.

The boot process consists of the following main steps:

Typical Boot Process



The duration of the full boot process can vary depending on:

- Number of CPUs installed
- Amount of memory installed
- UNIX version installed
- State of the network

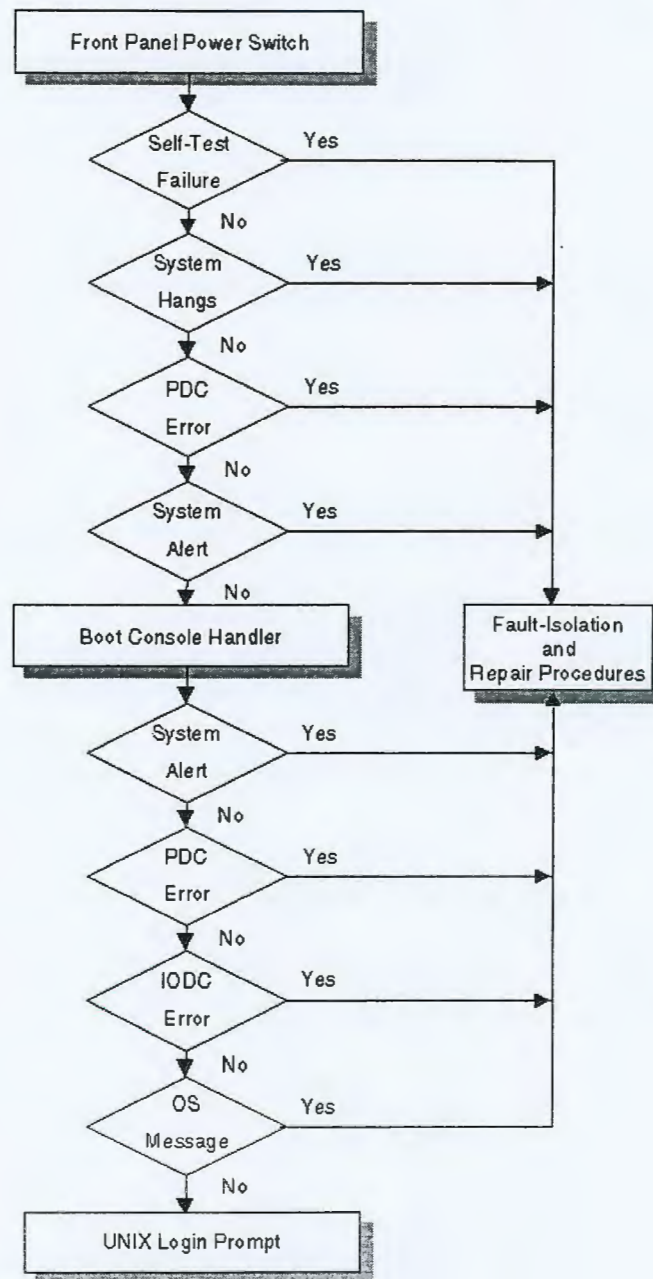
All times approximate - Your boot time may vary

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During the Boot process a variety of errors or problems can occur as follows:



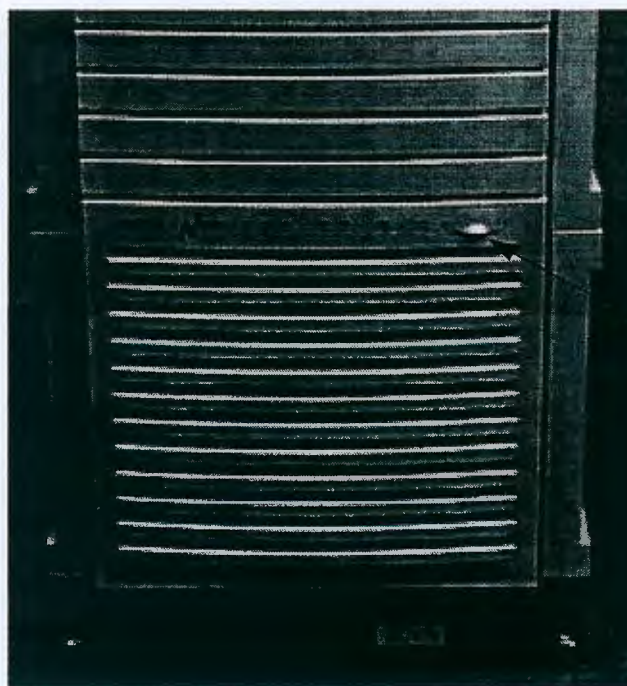
Potential Boot Problems



Initial Power-up

The following section will describe the process of applying power to the N-Class server and booting the system up to the UNIX Login prompt. The amount of time it takes to go through self-test and boot the system will vary widely depending on hardware configuration. The following provides a "typical" procedure yours may vary depending on software and hardware installed.

1. Apply AC Power to the system console, if you haven't already done so.
2. Apply power to the N-Class server by turning the front panel switch to ON.



Power Switch
(Under Cover)

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3. Many selftest boot progress screens will be displayed. These will scroll rapidly up the screen. Some tests may pause for up to one minute while the test completes. The following abbreviated examples of the forward progress screens are typical of the screens displayed. GSP Host Name: <HostName>

GSP>

***** VIRTUAL FRONT PANEL *****

System Boot detected

platform	config	626F
processor	slave rendezvous	1C17
processor	test	1142
processor	test	1100
processor	test	1100
processor	test	1100
processor	test	1100
processor	test	1100
processor	test	1100
processor	test	1100
processor	INIT	1701
processor	test	1120
processor	slave rendezvous	1C40
processor	test	1142
processor	test	113B
platform	test	612A
I/O	config	8238

*****EARLY BOOT VFP *****

End of early boot detected

Firmware Version XX.XX

Duplex Console IO Dependent Code (IODC) revision 1

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Processor Speed Number	State	CoProcessor State State	Cache Inst	Size Data
1	440 MHz Active	Functional	512 KB	1 MB
3	440 MHz Idle	Functional	512 KB	1 MB

Central Bus Speed (in MHz) : 120
Available Memory : 2752512 KB
Good Memory Required : 10304 KB

Primary boot path: 0/0/2/0.6
Alternate boot path: 0/0/2/1.6
Console path: 0/0/4/0.0



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Keyboard path: 0/0/4/0.0

WARNING: Memory subsystem address parity checking is disabled. This has been disabled via a NVM control bit. This may have been set manually. Or it may have been set automatically if this system has 64 MB DIMMs, which do not consistently return proper address parity.

Processor is booting from first available device.
To discontinue, press any key within 10 seconds.
Boot terminated.



4. When the initial power-up boot process completes, approximately one to five minutes, the BCH main menu will be displayed.

-----Main Menu -----	
Command	Description

BOot [PRI ALT <path>]	Boot from specified path
PAth [PRI ALT] [<path>]	Display or modify a path
SEArch [Display IPL] [<path>]	Search for boot devices
Configuration menu	Displays or sets boot values
Information menu	Displays hardware information
SERvice menu	Displays service commands
Display	Redisplay the current menu
HElp [<menu> <command>]	Display help for menu or command
RESET	Restart the system
-----Main Menu: Enter command or menu--	

5. To start the boot process, using the primary boot path, enter *BO PRI*, at Boot Console Handler BCH main menu prompt and press **<ENTER>**.

NOTE Booting a system to a UNIX login prompt from BCH main menu can take 20 minutes or longer depending on your software and hardware configuration. (Be patient)

6. Once the system reaches the UNIX login prompt the following will be displayed on the console screen:
HP-UX <system name> [System Name Version Date]Login:

Determine Current System State

To determine the current system state of an N-Class, first note the state of all LED indicators on the front panel. Processing this information using the decoders provided can greatly reduce the amount of time required to repair a suspected system fault.

The following is a list of tools available to aid you in determining the current system state.

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N-Class Operating Instructions
Determine Current System State

1. Determine if you can get a system prompt and if so, what kind of prompt.

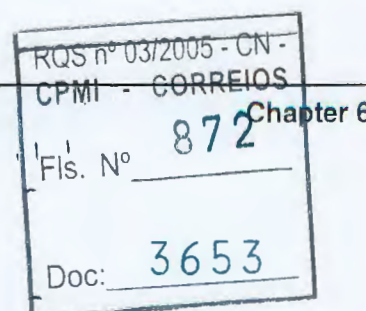
Software System	Screen Prompt
Boot Console Handler (BCH)	Main Menu: Enter command or menu>
Guardian Service Processor (GSP)	GSP>
Initial System Loader (ISL)	ISL>
HP UNIX (HP-UX)	<i>Prompt varies depending on UNIX state</i>

2. Decode the Run/Attn/Fault front panel LED states.

- Front Panel LED Decoder (Run/Attn/Fault LEDs)
- View all states of Front Panel LEDs (Run/Attn/Fault LEDs)
- View all states of Remote LEDs
- View all states of Power LEDs

3. Decode the PCI I/O LEDs

- View all states of PCI I/O LEDs



Accessing Guardian Service Processor Internal Port

The Guardian Service Processor (GSP) internal port can be used as a "back door" to reset security options in case the GSP administrator password is forgotten, for example. It can also be used in order to upgrade the GSP firmware from an HP-UX session. The internal port needs to be configured in order to use it.

1. On the system, the GSP internal port should be `/dev/tty1p0`.
2. SAM does not configure the GSP internal port.
3. If the device file is not present, it can be created as follows:

```
#cd/dev
#mknod tty1p0 c 1 0x010000
```

4. Since this allows unrestricted access to the GSP and bypasses GSP security features (no user or password required). Make sure to delete this device file when you have finished using it.
5. The internal port can be accessed via terminal emulators such as *cu*. To use *cu*, you need the follow entries (the entries must be exactly as shown):

/usr/lib/uucp/Systems needs the following entry:

```
gspiport Any;5 gspiport,f900 - '''\r\d\r\d\r ogin:-BREAK-
ogin: uucp asswrđ: uucp-BREAK-ogin: uucp asswrđ: uucp
```

The spelling looks unusual, but it needs to be exactly as shown.

/usr/lib/uucp/Devices needs the following entry:

```
gspiport tty1p0 - 9600 direct
```

6. when all of the configuration is done, you should be able to access the GSP internal port with the *cu* command:

```
cu-1/dev/tty1p0
```

7. To terminate the *cu* session, use "~." [return]
8. *Kermit* can also be used to access the special device file. See the *kermit* web pages for details.

CAUTION

Securing the `/dev/tty1p0` device file with root capabilities will not prevent non-root users from accessing the GSP internal port. This is due to the fact that *cu* and *kermit* carry root access and run with the sticky bit enabled.

To secure the internal port from unauthorized use, be sure to remove the `/dev/tty1p0` file after using it.

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7

Adding Components to an N-Class System

Add-On Memory

Follow these procedures to add memory to an N-Class server.

Memory Configuration Rules

N-Class systems support up to 4 memory carriers (numbered 0, 1, 2, and 3), each with slots for 4 memory DIMM pairs (numbered 0a/b, 1a/b, 2a/b, and 3a/b). For the DIMMs to work, both DIMMs in a slot pair must be the same type (i.e., the same part number).

- **Performance considerations.** For best performance, install DIMMs evenly among the carriers, loading carriers 0, 1, 2, and 3 in sequence. For example, four 512MB memory DIMM pairs should be loaded into slot 0a/b on carrier 0, then slot 0a/b on carrier 1, and so on. Although not a requirement for performance, the largest memory sizes should be installed first, making it more convenient if the memory DIMMs are re-sequenced at a later time.

- **Cooling considerations.** The following will help optimize air flow cooling within the system.

Always install memory carriers in the sequence 0, 1, 2, than 3. For example, if you have only two memory carriers, make sure they are installed as carrier 0 and carrier 1.

Install DIMMs into the carriers in the following slot order: 0a/b, 1a/b, 2a/b, 3a/b.

NOTE

The most important rule is that DIMMs of the same type are distributed evenly amongst the carriers. **If necessary, remove and re-sequence existing memory modules to balance the distribution; otherwise, a PDC error may occur.**

Procedure Overview

1. Remove power from the system.
2. Remove the front bezel.
3. Extend the SPU out the back of the cabinet.
4. Remove the back top cover
5. Remove the back air baffle
6. Remove the memory carrier.
7. Install new memory DIMMs in the memory carrier.
8. Reinstall the memory carrier.
9. Replace the back air baffle
10. Replace the top cover.
11. Slide the SPU back into the cabinet.
12. Replace the front bezel.
13. Power ON the SPU.
14. Verify the installation.

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Step 1. Remove Power From the System

CAUTION

Before starting any shut down type procedures, be sure to check with the System Administrator or customer to ensure a system backup has been performed recently.

To shut down and power off the N-Class computer system, perform the following steps.

- a. Stop all active applications.
- b. Perform a normal Operating System shut down, informing all logged on users of the impending shut down.
- c. Once the Operating system has halted, put the power switch in the standby (0) position.

CAUTION

With the power switch in the standby position, there is still power to the inside of the SPU.

- d. Remove A.C. from the SPU by unplugging the power cords (up to 3) from the back of the SPU.

Step 2. Remove the Front Bezel

- a. Grasp the front bezel on each side.
- b. Pull the front bezel away from the cabinet.

Step 3. Extend the SPU out the Back of the Cabinet

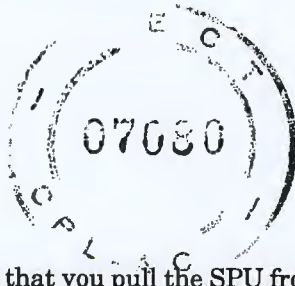
CAUTION

Be aware of the cables at the back of the SPU while moving the SPU in or out of the cabinet.

To extend the SPU out the back of the cabinet:

- a. Remove the four (two on each side) retainer screws, holding the bezel flange to the cabinet vertical post.
- b. Carefully extend the SPU out the front of the cabinet approximately 2 to 4 inches.
- c. Loosen the six (three on each side) mounting screws holding the bezel brackets to the side of the SPU.
- d. Lift the bezel bracket up and off the SPU chassis. Be sure that both left and right side brackets are removed.
- e. Be sure the rear door is open and does not swing closed during the SPU movement. If necessary the rear door can be removed
- f. Carefully extend the SPU out the back of the cabinet until the stops on the rails halt reward motion.

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NOTE

It is recommended that you pull the SPU from the back of the cabinet. This allows you to monitor the cable movement to avoid snags and tangles with other SPUs or cables.

The SPU should now be fully extended out the back of the cabinet.

WARNING

Only extend one SPU at a time. Never attempt to extend more than one SPU for any reason.

Step 4. Remove the Back Top Cover

CAUTION

Operating the system without the back top cover in place can make the SPU susceptible to EMI problems. Replace the back top cover before operating the system.

To remove a back top cover from the SPU:

- a. Loosen the two captive screws along the back edge of the top cover.
- b. Lift the back edge of the top cover up and away from the SPU

Step 5. Remove the Back Air Baffle

CAUTION

Operating the system without the back air baffle will create air flow problems and possibly shorten the life of the internal components. Hewlett-Packard does not recommend the system be powered on with the air baffles removed. Also, operation of the system without the top cover and air baffle in place can make the system susceptible to EMI problems.

To remove the back air baffle from the:

- a. Loosen the two captive mounting screws at the support bridge.
- b. Grasp the air baffle along the extruded handle on the back edge of the air baffle and lift it out of the SPU.

Step 6. Remove the Memory Carrier

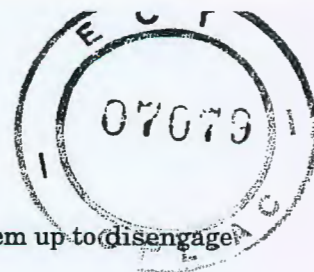
The memory carriers (up to four) are located along the back of the SPU.

CAUTION

Be sure to have an anti-static pad or ESD compliant work place to rest the memory carrier on.

To remove the memory carrier from the SPU:

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- a. Grasp the insertion/extractor levers on the appropriate memory carrier and pull them up to disengage the memory carrier from the system board.
- b. Carefully pull the memory carrier out of the SPU.

Step 7. Install the Memory DIMMs in the Memory Carrier

The memory DIMM resides in slots located on the memory carrier. The memory DIMMs are loaded in DIMM pairs.

Memory DIMMs are keyed and only install into a memory carrier one way. Memory DIMMs are only installed in matched (memory size) pairs. Be sure the memory DIMM being installed is matched to the appropriate DIMM in the pair slot.

To add a memory DIMM in the memory carrier:

- a. Align the memory DIMM over the correct memory carrier slot. Be sure the extractor levers are in the open position (angled out from the memory slot).
- b. Firmly and evenly (pressure on both ends of the memory DIMM) press the memory DIMM into the memory carrier slot until the memory DIMM fully seats and the extractor levers are up against the outside edges of the memory DIMM.
- c. Pick up the memory carrier and visually check to see that all memory DIMMs are seated fully. No memory DIMM card edge should be higher than the others. This indicates that a memory DIMM is not fully seated into the memory carrier slot. Press firmly on the raised edge to seat the memory DIMM into its' socket.
- d. Replace the memory DIMM hold down bracket.

Step 8. Replace the Memory Carrier

The memory carriers (up to four) are located along the back of the SPU. Memory carriers are installed from slot 0 through slot 3 (slot 0 is the right most slot facing the back of the SPU).

To replace the memory carrier in the SPU:

- a. While holding the memory carrier by the extended insertion/extractor levers, align the memory carrier with the appropriate slot card guides on the system board.
- b. Carefully lower the memory carrier into the card guides, until the insertion/extractor levers hook under the card guide edges.
- c. Press the insertion/extractor levers down until the memory carrier firmly seats into the system board. The insertion/extractor levers should be parallel with the memory carrier edge.

Step 9. Replace the Back Air Baffle

CAUTION

Operating the SPU without the back air baffle will create air flow problems and possibly shorten the life of the internal components. Hewlett-Packard does not recommend the SPU be powered on with the air baffles removed. Also, operation of the SPU without the top cover and air baffle in place can make the SPU susceptible to EMI problems.

To replace the back air baffle in the SPU:

- a. Angle the back edge of the air baffle onto the support bridge flange, then lower the air baffle over the CPU cooling towers (up to four).

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CAUTION

Be sure all CPU cooling tower tops are centered in the support brackets. The support brackets have enough play in them to allow proper alignment.

- b. Be sure the air baffle sits flush into the SPU.
- c. Tighten the two captive screws at the support bridge.

Step 10. Replace the Back Top Cover

To replace the back top cover in the SPU:

- a. Angle the back edge of the top cover into the support bridge. Be sure the tabs at the back edge of the top cover insert into the slots on the support bridge.
- b. Lower the top cover onto the SPU. Firmly press the top cover down onto the SPU, making sure the outer edges of the top cover are over the top edges of the chassis.
- c. Tighten the two captive screws.

Step 11. Insert the SPU Back into the Cabinet

CAUTION

Be aware of the cables at the back of the SPU while moving the SPU in or out of the cabinet.

To insert the SPU into the cabinet from the back:

- a. Press the rail slide locks (one on each side) to release the rail locks while gently pushing the SPU forward.
- b. Carefully insert the SPU all the way into the cabinet until the front of the SPU sticks out approximately 2 to 4 inches.

NOTE

It is recommended that you push the SPU from the back of the cabinet. This allows you to monitor the cable movement to avoid snags and tangles with other SPUs or cables.

- c. Align the left and right bezel bracket key slots over the three bracket screws on each side of the SPU.
- d. Slide the bezel brackets down and tighten the six (three on each side) bracket screws.
- e. Carefully push the SPU back into the cabinet until the bezel brackets contact the cabinet vertical rails.
- f. Insert the four (two on each side, T25) SPU retainer screws, located just below and above bezel snap tabs.

Check all cables to be sure none have been loosened during the previous procedure. Close or replace the rear door.



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Step 12. Replace the Front Bezel

To replace the front bezel, perform the following steps:

- a. Align the front bezel over the front of the SPU.
- b. Press the front bezel onto the cabinet until it snaps into place.

Step 13. Power the System On

CAUTION

Before applying A.C. power to an N-Class computer, be sure all covers and cooling fans are properly installed. Failure to perform this check could result in decreased computer component life and reliability.

- a. Be sure all connected peripherals are on, with no errors or faults indicated.
- b. Be sure the SPU power switch is in the standby (0) position.

CAUTION

When the power cords are connected to the SPU, there will be power present inside the SPU chassis, even with the power switch in the standby position.

- c. Carefully insert the A.C. power cords (3) into the line filter receptacles at the back of the SPU.

NOTE

Be sure to plug all three power cords into the back of the SPU. Also be sure the cabinet PDU is plugged into an appropriate wall outlet.

- d. Put the power switch in the on (I) position. At this time you will hear the cooling fans coming up to speed and being synchronized. This creates a high pitched squeak for a few seconds. The fans should drop to normal speed within a few seconds. If not check the front panel or console for fault indications.
- e. Check all front panel LEDs for normal indications, with no warnings or faults indicated.

The SPU should take a few minutes to perform all selftests and initialization routines. At the end of this you should be able to launch the operating system or initiate other software routines.

Step 14. Verify the Installation

Issue the **ME** command in the boot console handler to verify the system recognizes the new memory configuration.

Add I/O Cards

The N-Class server has 12 expansion I/O slots accessible through side panels on the rear of the SPU chassis. Six slots are located on each of the two sides.

Slots 3 through 12 are "TwinTurbo" slots supporting 66MHz, 64-bit I/O cards. Slots 1 and 2 are "Turbo" slots supporting cards with lower speed and bandwidth. If higher speed cards are installed in slots 1 or 2,

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they will function but their performance will be reduced. Similarly, slower cards can be installed in slots 3 through 12, but their performance will not be improved.

There are two configuration rules to consider:

- Load the slowest cards in slots 1 and 2.
- When possible, balance the total number of PCI cards between the two sides. E.g., when adding four PCI cards, install two on the right (slots 1 through 6) and two on the left (slots 7 through 12).

CAUTION

If you are installing the A3783A 10/100Base-TX LAN card, do not connect any type of MAU transceiver to the AUI connector while the system is powered up. Doing so will cause power to be shut off to the I/O slot and will generate a High Priority Machine Check (HPMC) error. If you are going to connect a MAU transceiver to this card's AUI connector, make sure the system is powered down first. When the system is powered back on, this connection will then not generate an error condition. Refer to the instructions shipped with this LAN card for further information.

Procedure Overview

1. Remove power from the system
2. Remove the front bezel
3. Extend the SPU out the back of the system
4. Remove the PCI slot cover
5. Insert the new PCI card
6. Replace the PCI slot cover
7. Slide the SPU back into the cabinet
8. Replace the front bezel
9. Power the system back on
10. Verify the procedure

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Step 1. Remove Power from the System.

CAUTION

Before starting any shut down type procedures, be sure to check with the System Administrator or customer to ensure a system backup has been performed recently.

To shut down and power off the N Class computer system, perform the following steps.

- a. Stop all active applications.
- b. Perform a normal Operating System shut down, informing all logged on users of the impending shut down.
- c. Put the power switch in the standby position.

CAUTION

With the power switch in the standby position, there is still power to the inside of the SPU.

- d. Remove A.C. from the SPU by unplugging the power cords (up to 3) from the back of the SPU.

Step 2. Remove the Front Bezel

- a. Grasp the front bezel on each side.
- b. Pull the front bezel away from the cabinet.

Step 3. Extend the SPU out the Back of the System

CAUTION

Be aware of the cables at the back of the SPU while moving the SPU in or out of the cabinet.

To extend the SPU out the back of the cabinet:

- a. Remove the four (two on each side) retainer screws, holding the bezel flange to the cabinet vertical post.
- b. Carefully extend the SPU out the front of the cabinet approximately 2 to 4 inches.
- c. Loosen the six (three on each side) mounting screws holding the bezel brackets to the side of the SPU.
- d. Lift the bezel bracket up and off the SPU chassis. Be sure that both left and right side brackets are removed.
- e. Be sure the rear door is open and does not swing closed during the SPU movement. If necessary the rear door can be removed
- f. Carefully extend the SPU out the back of the cabinet until the stops on the rails halt rearward motion.

NOTE

It is recommended that you pull the SPU from the back of the cabinet. This allows you to monitor the cable movement to avoid snags and tangles with other SPUs or cables.

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CPMI	CORREIOS
Fis. Nº	882
Doc:	3653

The SPU should now be fully extended out the back of the cabinet.

WARNING

Only extend one SPU at a time. Never attempt to extend more than one SPU for any reason.

Step 4. Remove the PCI Cover Plate

NOTE

Steps 4 through 8 apply to the six PCI card slots on either side of the SPU. As viewed from the rear of the cabinet, slots 1 through 6 are on the left side. The lowermost slot in the array is slot 1. Slots 7 through 12 are on the right side, with slot 7 being the lowermost slot in the array.

- a. Loosen the two captive screws at the end of the I/O card slot cover.
- b. Swing the cover away and off of the SPU.

Step 5. Insert the I/O Card Into the Slot

NOTE

The PCI card slots have separators which protect against touching adjacent cards when plugging in PCI cards. The separators also have tabs which facilitate removing the cards.

- a. Remove the metal slot cover, if present, at the rear of the SPU.
- b. Align the PCI card with the appropriate slot.
- c. Insert the PCI card into the card cage, between the separator/extractor cards.
- d. Press firmly on the PCI card to be sure it is fully seated.

Step 6. Replace the PCI Cover Plate

- a. Swing the I/O slot cover closed.
- b. Tighten the two captive screws at the end of the slot cover.

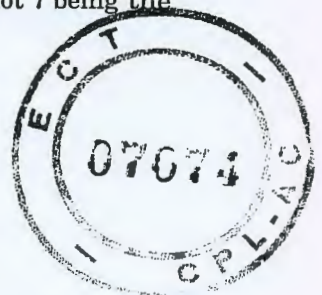
NOTE

The PCI card slots have separators which protect against touching adjacent cards when plugging in PCI cards. The separators also have tabs which facilitate removing the cards.

Step 7. Insert the SPU Back Into the Cabinet

CAUTION

Be aware of the cables at the back of the SPU while moving the SPU in or out of the cabinet.



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	883
Fls. N°	
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Doc:	

To insert the SPU into the cabinet from the back:

- a. Carefully insert the SPU all the way into the cabinet until the front of the SPU sticks out the front approximately 2 to 4 inches.
- b. Align the left and right bezel bracket key slots over the three bracket screws on each side of the SPU.
- c. Slide the bezel brackets down and tighten the six (three on each side) bracket screws.
- d. Carefully push the SPU back into the cabinet until the bezel brackets contact the cabinet vertical rails.
- e. Insert the four (two on each side, T25) SPU retainer screws, located just below and above bezel snap tabs.

Check all cables to be sure none have been loosened during the previous procedure. Close or replace the rear door.

Step 8. Replace the Front Bezel

To replace the front bezel, perform the following steps:

- a. Align the front bezel over the front of the SPU.
- b. Press the front bezel onto the cabinet until it snaps into place.

Step 9. Power the System On

CAUTION

Before applying A.C. power to an N-Class computer, be sure all covers and cooling fans are properly installed. Failure to perform this check could result in decreased computer component life and reliability.

- a. Be sure all connected peripherals are on, with no errors or faults indicated.
- b. Be sure the SPU power switch is in the standby (0) position.

CAUTION

When the power cords are connected to the SPU, there will be power present inside the SPU chassis, even with the power switch in the standby position.

- c. Carefully insert the A.C. power cords (3) into the line filter receptacles at the back of the SPU.

NOTE

Be sure to plug all three power cords into the back of the SPU. Also be sure the cabinet PDU is plugged into an appropriate wall outlet.

- d. Put the power switch in the on (I) position. At this time you will hear the cooling fans coming up to speed and being synchronized. This creates a high pitched squeak for a few seconds. The fans should drop to normal speed within a few seconds. If not check the front panel or console for fault indications.
- e. Check all front panel LEDs for normal indications, with no warnings or faults indicated.

The SPU should take a few minutes to perform all selftests and initialization routines. At the end of this you should be able to launch the operating system or initiate other software routines.

Step 10. Verify the Procedure



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Run the ioscan utility to ensure the system recognizes the I/O card.



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CPMI - CORREIOS

Fls Nº 887

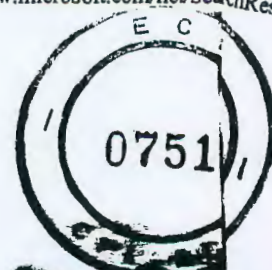
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Doc.	3653



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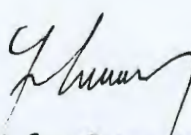


System/Server
Multiprocessor

IBM

IBM Netfinity 7100
Pentium III Dual
550MHz




Elói José Guimarães
Gerente da Unidade de Negócios
IBM - Brasil

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CPMI - CORREIOS
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Proposta Técnica

CONCORRÊNCIA Nº 001/2000 CPL/AC

OBJETO: Aquisição de 475 (quatrocentos e setenta e cinco) Equipamentos de Informática - Servidores de Rede, de Desenvolvimento e de Aplicação.

Comissão Especial de Licitação - A/C ECT

Brasília, 09 de Maio de 2000

IBM

SO
[Signature]

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Doc. <u>3653</u>

E

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 Internet: www.ibm.com.br
 CNPJ: 33.372.251/0001-56



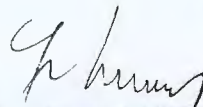
À
Comissão Especial de Licitação - A/C ECT

REF.: CONCORRÊNCIA N° 001/2000

OBJETO: Aquisição de 475 (quatrocentos e setenta e cinco) Equipamentos de Informática - Servidores de Rede, de Desenvolvimento e de Aplicação.

Prezados Senhores,

Em resposta ao Edital de Concorrência 001/2000, apresentamos nossa Proposta Técnica, referente a 430 (quatrocentos e trinta) Servidores de rede. Os equipamentos ofertados satisfazem todos os requisitos do Edital referenciado



 Elci José Guimarães
 Gerente Unid. Negócios

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PROPOSTA TÉCNICA



CONTEÚDO DA PROPOSTA:

Estamos oferecendo 430 (quatrocentos e trinta) Servidores de Rede, equipamento que satisfaz todos os requerimentos do Edital conforme descrito no Anexo I do Edital. A descrição e especificação técnica dos equipamentos e planilhas de pontuação estão no **Anexo I** desta proposta.

1. CONFIGURAÇÕES

A) Servidores INTEL

Servidor INT1

Fabricante: IBM Marca: Netfinity Modelo: 5100

Tipo /Modelo	Qtd	Descrição
8658-21Y	234	IBM NF5100 (PENTIUM III 733MHZ/256KB, 128MB, WIDE ULTRA SCSI DUAL, HOT-SWAP, ETHERNET 10/100, CD-ROM 32X) TECLADO E MOUSE
00N7943	234	UPGRADE PROCESSOR 733MHZ/256KB PENTIUM III
33L3123	234	NETFINITY 128MB 133 MHZ SDRAM ECC RDIMM
33L3125	234	NETFINITY 256MB 133 MHZ SDRAM ECC RDIMM
33L3127	234	NETFINITY 512MB 133 MHZ SDRAM ECC RDIMM
36L9745	702	IBM NETFINITY 18.2GB WIDE ULTRA SCSI HOT-SWAP HDD SL
04N7320	234	MONITOR 15"
33L3760	468	NETFINITY 250W REDUNDANT POWER SUPPLY
33L6881	234	NETFINITY HOT-SWAP POWER SUPPLY EXPANSION KIT
76H0901	234	TECLADO PORTUGUES PRETO

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**IBM****Servidor INT2**

Fabricante: IBM Marca: Netfinity Modelo: 5100

Tipo /Modelo	Qty	Descrição
8658-21Y	63	IBM NF5100 (PENTIUM III 733MHZ/256KB, 256MB, WIDE ULTRA SCSI DUAL, HOT-SWAP, ETHERNET 10/100, CD-ROM 32X) TECLADO E MOUSE.
00N7943	63	UPGRADE PROCESSOR 733MHZ/256KB PENTIUM III
33L3123	63	NETFINITY 128MB 133 MHZ SDRAM ECC RDIMM
33L3125	63	NETFINITY 256MB 133 MHZ SDRAM ECC RDIMM
33L3127	63	NETFINITY 512MB 133 MHZ SDRAM ECC RDIMM
36L9746	189	IBM NETFINITY 36,4GB WIDE ULTRA SCSI HOT-SWAP HDD SL
01K7364	63	SERVERAID 3L ULTRA2 ADAPTER
04N7320	63	MONITOR 15"
00N7990	63	UNIDADE DE FITA DLT 40/80
33L3760	126	NETFINITY 250W REDUNDANT POWER SUPPLY
37L6881	63	NETFINITY HOT-SWAP POWER SUPPLY EXPANSION KIT
76H0901	63	TECLADO PORTUGUES PRETO

Servidor INT3

Fabricante: IBM Marca: Netfinity Modelo: 7100

Tipo /Modelo	Qty	Descrição
8666-21Y	9	IBM NETFINITY 7100 (PENTIUM III XEON 550MHZ/1024KB , 256MB, WIDE ULTRA SCSI RAID DUAL , HOT-SWAP, ETHERNET 10/100, CD-ROM 40X) TECLADO E MOUSE .
33L5057	27	NETFINITY 550MHZ/1024KB PENTIUM III XEON PROCESSOR UPGRADE
33L3067	36	NETFINITY 64MB SDRAM ECC RDIMM
33L3113	36	NETFINITY 128MB SDRAM ECC RDIMM
33L3115	36	NETFINITY 256MB SDRAM ECC RDIMM
00N8071	18	IBM NETFINITY 9.1GB WIDE ULTRA SCSI 10K HDD SL
36L9749	45	IBM NETFINITY 18.2GB WIDE ULTRA SCSI 10K HOT-SWAP HDD SL
01K7364	18	SERVERAID 3L ADAPTER
01K1282	9	IBM 12/24GB DDS/3 4-MM INTERNAL TAPE DRIVE
04N7320	9	MONITOR 15"
76H0901	9	TECLADO PORTUGUES PRETO
33L3760	18	NETFINITY 250W HOT SWAP REDUNDANT POWER SUPPLY
3551001	9	NETMEDIA
03K9310	9	PC SERVER F/W TO F/W EXTERNAL SCSI CABLE 1M

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**IBM****Servidor INT4**

Fabricante: IBM Marca: Netfinity Modelo: 7100

Tipo /Modelo	Qtd	Descrição
8666-21Y	6	IBM NETFINITY 7100 (PENTIUM III XEON 550MHZ/1024KB, 256MB, WIDE ULTRA SCSI DUAL , HOT-SWAP, ETHERNET 10/100, CD-ROM 40X) TECLADO E MOUSE .
33L5057	18	NETFINITY 550MHZ/1024KB PENTIUM III XEON PROCESSOR UPGRADE
33L3115	48	NETFINITY 256MB SDRAM ECC RDIMM
33L3117	24	NETFINITY 512MB SDRAM ECC RDIMM
00N8071	12	IBM NETFINITY 9.1GB WIDE ULTRA SCSI 10K HDD SL
36L9749	36	IBM NETFINITY 18.2GB WIDE ULTRA SCSI 10K HOT-SWAP HDD SL
01K7364	12	SERVERAID 3L ADAPTER
01K1282	6	IBM 12/24GB DDS/3 4-MM INTERNAL TAPE DRIVE
04N7320	6	MONITOR 15"
76H0901	6	TECLADO PORTUGUES PRETO
33L3760	12	NETFINITY 250W HOT SWAP REDUNDANT POWER SUPPLY
3551001	6	NETMEDIA
03K9310	6	PC SERVER F/W TO F/W EXTERNAL SCSI CABLE 1M

Servidor INT5

Fabricante: IBM Marca: Netfinity Modelo: 7100

Tipo /Modelo	Qtd	Descrição
8666-11Y	46	IBM NETFINITY 7100 (PENTIUM III XEON 550MHZ/512KB , 256MB WIDE ULTRA SCSI DUAL , HOT-SWAP, ETHERNET 10/100, CD-ROM 40X) TECLADO E MOUSE .
33L5056	46	NETFINITY 550MHZ/512KB PENTIUM III XEON PROCESSOR UPGRADE
33L3067	184	NETFINITY 64MB SDRAM ECC RDIMM
33L3113	184	NETFINITY 128MB SDRAM ECC RDIMM
00N8071	92	IBM NETFINITY 9.1GB WIDE ULTRA SCSI 10K HDD SL
36L9749	230	IBM NETFINITY 18.2GB WIDE ULTRA SCSI 10K HOT-SWAP HDD SL
01K7364	92	SERVERAID 3L ADAPTER
01K1282	46	IBM 12/24GB DDS/3 4-MM INTERNAL TAPE DRIVE
04N7320	46	MONITOR 15"
76H0901	46	TECLADO PORTUGUES PRETO
33L3760	92	NETFINITY 250W HOT SWAP REDUNDANT POWER SUPPLY
3551001	46	NETMEDIA
03K9310	46	PC SERVER F/W TO F/W EXTERNAL SCSI CABLE 1M

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**IBM****Servidor INT6****Fabricante: IBM Marca: Netfinity Modelo: 5100**

Tipo /Modelo	Qtd	Descrição
8658-21Y	32	IBM NF5100 (PENTIUM III 733MHZ/256KB, 128MB, WIDE ULTRA SCSI DUAL, HOT-SWAP, ETHERNET 10/100, CD-ROM 32X) TECLADO E MOUSE
00N7943	32	UPGRADE PROCESSOR 733MHZ/256KB PENTIUM III
33L3123	32	NETFINITY 128MB 133 MHZ SDRAM ECC RDIMM
33L3125	32	NETFINITY 256MB 133 MHZ SDRAM ECC RDIMM
33L3127	32	NETFINITY 512MB 133 MHZ SDRAM ECC RDIMM
00N8071	64	IBM NETFINITY 9,1GB WIDE ULTRA SCSI 10K HDD SL
36L9749	160	IBM NETFINITY 18.2GB WIDE ULTRA SCSI 10K HOT-SWAP HDD SL
01K7364	64	SERVERAID 3L ULTRA2 ADAPTER
01K1282	32	IBM 12/24GB DDS/3 4-MM INTERNAL TAPE DRIVE
04N7320	32	MONITOR 15"
33L3760	64	NETFINITY 250W HOT SWAP REDUNDANT POWER SUPPLY
33L6881	32	NETFINITY HOT-SWAP POWER SUPPLY EXPANSION KIT
76H0901	32	TECLADO PORTUGUES PRETO

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**IBM****B) Servidores UNIX****Servidor Tipo RISC1****Fabricante: IBM Marca: Risc 6000 Modelo : 270**

Tipo/Modelo	Qtde	Descrição
7044 270	3	RS/6000 MODELO 270
7044 2624	3	UNID. CD-ROM SCSI-2 - 32X MAX
7044 2830	3	PLACA GRÁFICA POWER GXT130P
7044 3103	6	DISCO 18.2GB U.-SCSI ENHANCED
7044 3627	3	MONITOR COLORIDO P76, PRETO
7044 4098	3	FEATURE DEE EXPANSÃO DE MEMORI
7044 4119	6	MEM. SDRAM 512MB - 200PIN/10N
7044 4362	3	CARTÃO-2 PROC POWER 3-II 375MH
7044 6204	3	PLACA ULTRA SCSI DIFFERENCIAL
7044 8700	3	TECLADO PRETO 103P ING.
7044 8741	3	MOUSE PRETO
7044 9300	3	MANUAL - INGLÊS
7044 9800	3	CABO DE FORÇA

Fita para Servidor Tipo RISC1**Fabricante: IBM Marca: DLT Modelo : 311**

Tipo/Modelo	Qtde	Descrição
7205 311	3	FITA EXTERNA DLT 35GB
7205 1748	3	CUSTOM QUICKSHIP EXPEDITE
7205 9143	3	CABO SCSI F/W 2.5M P/ PCI
7205 9200	3	1 KIT DLT
7205 9300	3	LINGUAGEM - INGLES US
7205 9800	3	POWER CORD 2.7M, 125V, U.S./C

Servidor Tipo RISC2**Fabricante: IBM Marca : Risc 6000 Modelo :170**

Tipo/ Modelo	Qtde	Descrição
7044 170	25	RS/6000 MODELO 170
7044 2624	25	UNID. CD-ROM SCSI-2 - 32X MAX
7044 2830	25	PLACA GRÁFICA POWER GXT130P
7044 2908	25	DISCO 9.1 GB ULTRA-SCSI
7044 3627	25	MONITOR COLORIDO P76, PRETO
7044 4119	25	MEM. SDRAM 512MB - 200PIN/10N
7044 4360	25	CARTÃO -1 PROC POWER3-II 332MH
7044 6204	25	PLACA ULTRA SCSI DIFFERENCIAL
7044 8700	25	TECLADO PRETO 103P ING.

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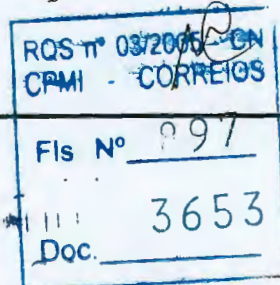
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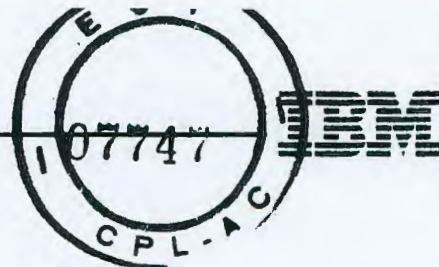
**Fita para Servidor Tipo RISC2****Fabricante: IBM Marca: DLT Modelo : 311**

Tipo/ Modelo	Qtde	Descrição
7205 311	25	FITA EXTERNA DLT 35GB
7205 1748	25	CUSTOM QUICKSHIP EXPEDITE
7205 9143	25	CABO SCSI FW 2.5M P/ PCI
7205 9200	25	1 KIT DLT
7205 9300	25	LINGUAGEM - INGLES US
7205 9800	25	POWER CORD 2.7M, 125V, U.S./C

Servidor Tipo RISC3**Fabricante: IBM Marca : Risc 6000 Modelo :S80**

Tipo / Modelo	Qtde	Descrição
7017 S80	10	SERVIDOR EMPRESARIAL S80
7017 2447	10	CABO 16-BIT SE ADAP-DASD 6PAC
7017 2624	10	DRIVE CD-ROM SCSI-2 32X (MAX)
7017 2830	10	PLACA GRAFICA GXT130P
7017 2913	20	9.1GB ULTRA-SCSI H/S DISK DRI
7017 2968	10	ADAP.ETHERNET PCI 10/100 MBPS
7017 3143	20	CABO I/O REMOTO, 6M
7017 3627	10	MONITOR COLORIDO P76 (PRETO)
7017 4192	10	MEMORIA 4096MB (4 X 1024MB)
7017 5318	10	PROC. RS64III,6-WAY,450MHZ,8M
7017 6000	10	CABO INICIAL. E CONTROLE SIST
7017 6008	20	CABO CONT.FORCA,COMPLEXO PROC
7017 6171	10	POWER DIST. UNIT, SINGLE PHAS
7017 6206	20	ADAPT. PCI ULTRA SCSI S-ENDED
7017 6207	10	PCI DIFF. ULTRA SCSI ADAPTER
7017 6230	10	ADAP. SERIALRAID PLUS AVANCAD
7017 6320	10	I/O DRAWER, 10EIA, AC POWER
7017 6321	10	GRUPO P/ GAVETAS I/O PRIMARIA
7017 6326	10	GRUPO PROCESSADOR DE SUPORTE
7017 6503	10	HUB S/O REMOTO, DUAL LOOP
7017 6547	10	SCSI 6-PACK HOT SWAP BACKPLAN
7017 7000	10	I/O RACK
7017 8700	10	TECLADO US ENGLISH - PRETO
7017 8741	10	MOUSE 3-BOTOES (PRETO)
7017 9004	10	DESIGNAÇÃO HEMISFÉRICO SUL
7017 9171	10	POWER DIST.UNIT, SINGLE PHASE
7017 9300	10	LANGUAGE GROUP US ENGLISH
7017 9800	10	POWER CORD US/CANADA





Disco para Servidor Tipo RISC3
Fabricante: IBM Marca: SSA Modelo : D40

Tipo / Modelo	Qtde	Descrição
7133 D40	10	SISTEMA DE DISCO SERIAL
7133 0550	10	HUNGARY MANUFACTURING
7133 8022	10	FONTE AC 50/60 HZ
7133 8031	10	COBERTURA GAVETAS COR PRETA
7133 8518	80	AVANÇADO DISK DRIVE 10K/18.2G
7133 8805	40	1 CABO SSA 5M (ADVANCED)
7133 9300	10	LANGUAGE GROUPS-US ENGLISH

Fita para Servidor Tipo RISC3
Fabricante: IBM Marca: DLT Modelo : 311

Tipo / Modelo	Qtde	Descrição
7205 311	10	FITA EXTERNA DLT 35GB
7205 1748	10	CUSTOM QUICKSHIP EXPEDITE
7205 9143	10	CABO SCSI F/W 2.5M P/ PCI
7205 9200	10	1 KIT DLT
7205 9300	10	LINGUAGEM - INGLES US
7205 9800	10	POWER CORD 2.7M, 125V, U.S./C

Servidor Tipo RISC4
Fabricante: IBM Marca: Risc 6000 Modelo : S70 A dvanced

Tipo / Modelo	Qtde	Descrição
7017 S7A	2	SERVIDOR S70 - ADVANCED
7017 2447	2	CABO 16-BIT SE ADAP-DASD 6PAC
7017 2624	2	DRIVE CD-ROM SCSI-2 32X (MAX)
7017 2830	2	PLACA GRAFICA GXT130P
7017 2968	2	ADAP.ETHERNET PCI 10/100 MBPS
7017 2913	4	9.1GB ULTRA-SCSI H/S DISK DRI
7017 3627	2	MONITOR COLORIDO P76 (PRETO)
7017 4173	4	1024MB R1 MEMORY (4X256MB)
7017 5312	2	PROC. 4WAY,262MHZ,8MB L2 CACH
7017 5520	2	COMPLETE ORDER INDICATOR
7017 6159	2	UNIDADE FITA 4MM INT. 12/24GB
7017 6206	4	ADAPT. PCI ULTRA SCSI S-ENDED
7017 6320	2	I/O DRAWER, 10EIA, AC POWER
7017 6321	2	GRUPO P/ GAVETAS I/O PRIMARIA
7017 6322	2	GRUPO PROCESSADOR DE SUPORTE
7017 6547	2	SCSI 6-PACK HOT SWAP BACKPLAN
7017 7000	2	I/O RACK
7017 8700	2	TECLADO US ENGLISH - PRETO
7017 8741	2	MOUSE 3-BOTOES (PRETO)
7017 9171	2	POWER DIST.UNIT, SINGLE PHASE
7017 9300	2	LANGUAGE GROUP US ENGLISH
7017 9800	2	POWER CORD US/CANADA

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**IBM****C) SISTEMA OPERACIONAL****SO para Servidor Tipo RISC1****Fabricante: IBM Marca: Unix da IBM Modelo: AIX 4.3**

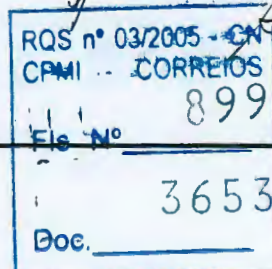
Tipo / Modelo	Qtde	Descrição
5765 C34	3	AIX V4 INCLUDED WITH RS/6000
5765 C34 T2YFGB	3	PU CHARGED WITH HW
5692 AIX	3	AIX VERSION 4 SPO
5692 AIX 0838	3	AIX 4.3 UPDATE CD
5692 AIX 0857	3	5765-C34 AIX 4.3
5692 AIX 0861	3	AIX 4.3 BONUS PACK
5692 AIX 1004	3	AIX V4 MEDIA PROCESS CHARGE
5692 AIX 2924	3	US ENGLISH

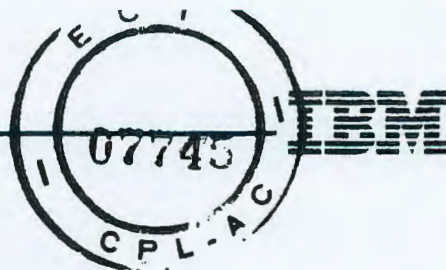
SO para Servidor Tipo RISC2**Fabricante: IBM Marca: Unix da IBM Modelo: AIX 4.3**

Tipo / Modelo	Qtde	Descrição
5765 C34	25	AIX V4 INCLUDED WITH RS/6000
5765 C34 T2YFGB	25	PU CHARGED WITH HW
5692 AIX	25	AIX VERSION 4 SPO
5692 AIX 0838	25	AIX 4.3 UPDATE CD
5692 AIX 0857	25	5765-C34 AIX 4.3
5692 AIX 0861	25	AIX 4.3 BONUS PACK
5692 AIX 1004	25	AIX V4 MEDIA PROCESS CHARGE
5692 AIX 2924	25	US ENGLISH

SO para Servidor Tipo RISC3**Fabricante: IBM Marca: Unix da IBM Modelo: AIX 4.3**

Tipo / Modelo	Qtde	Descrição
5765 C34	10	AIX V4 INCLUDED WITH RS/6000
5765 C34 T2YFGB	10	PU CHARGED WITH HW
5692 AIX	10	AIX VERSION 4 SPO
5692 AIX 838	10	AIX 4.3 UPDATE CD
5692 AIX 857	10	5765-C34 AIX 4.3
5692 AIX 861	10	AIX 4.3 BONUS PACK
5692 AIX 1004	10	AIX V4 MEDIA PROCESS CHARGE
5692 AIX 2924	10	US ENGLISH





SO para Servidor Tipo RISC4

Fabricante: IBM Marca: Unix da IBM Modelo: AIX 4.3

Tipo / Modelo	Qtde	Descrição
5765 C34	2	AIX V4 INCLUDED WITH RS/6000
5765 C34 T2YFGB	2	PU CHARGED WITH HW
5692 AIX	2	AIX VERSION 4 SPO
5692 AIX 0838	2	AIX 4.3 UPDATE CD
5692 AIX 0857	2	5765-C34 AIX 4.3
5692 AIX 0861	2	AIX 4.3 BONUS PACK
5692 AIX 1004	2	AIX V4 MEDIA PROCESS CHARGE
5692 AIX 2924	2	US ENGLISH

OBS 1: Os prospectos Técnicos referentes aos equipamentos cotados encontram-se no anexo IV desta proposta.

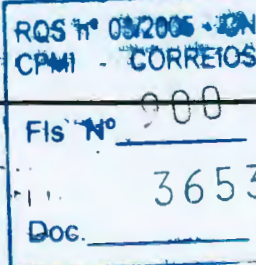
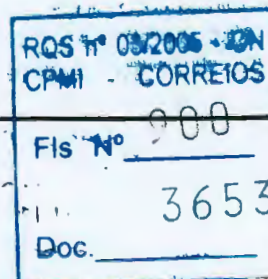
OBS 2: Conforme solicitado no Edital todos os servidores são acompanhados de Mouse-Pad.

OBS 3: A oferta de Programas constante desta proposta refere-se a licença de uso.

Os Programas estão protegidos por direitos autorais e são licenciados (não vendidos). A propriedade não é transferida ao Cliente.

2. INFORMAÇÕES ADICIONAIS

Prazo de Garantia dos Equipamentos		
Item	Qtd	Prazo em meses
Servidor Tipo INT 1	234	60 meses
Servidor Tipo INT 2	63	60 meses
Servidor Tipo INT 3	9	60 meses
Servidor Tipo INT 4	6	60 meses
Servidor Tipo INT 5	46	60 meses
Servidor Tipo INT 6	32	60 meses
Servidor Tipo RISC 1	3	24 meses
Servidor Tipo RISC 2	25	24 meses
Servidor Tipo RISC 3	10	24 meses
Servidor Tipo RISC 4	2	24 meses
	430	



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**IBM****Prazo de Entrega dos Equipamentos**

Item	Qtd	Prazo / dias
Servidorr Tipo INT 1	37	45 d
Servidorr Tipo INT 1	18	90 d
Servidorr Tipo INT 1	70	120 d
Servidorr Tipo INT 1	109	150 d
Servidorr Tipo INT 2	63	45 d
Servidorr Tipo INT 3	9	45 d
Servidorr Tipo INT 4	1	45 d
Servidorr Tipo INT 4	5	90 d
Servidorr Tipo INT 5	24	45d
Servidorr Tipo INT 5	22	90 d
Servidorr Tipo INT 6	32	90 d
Servidorr Tipo RISC 1	3	150d
Servidorr Tipo RISC 2	25	150d
Servidorr Tipo RISC 3	10	120d
Servidorr Tipo RISC 4	2	45d
	430	

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IBM

Pauta de Distribuição / Quantidades a serem entregues

TIPO		INT1				INT 2	INT 3	INT 4		INT 5		INT 6	RISC1	RISC2	RISC 3	RISC4
Local	Prazo de Entrega	45	90	120	150	45	45	45	90	45	90	90	150	150	120	45
AC		3	0	9	13	8	2	1	1	3	1	11	1	1	1	2
AL		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
AM		1	1	2	6	2	0	0	0	0	2	0	0	1	0	0
BA		1	1	2	2	2	0	0	0	2	0	0	0	1	1	0
BSB		1	1	3	6	2	0	0	0	2	0	0	0	1	1	0
CE		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
ES		1	1	2	6	2	0	0	0	2	0	0	0	1	0	0
GT		1	1	2	4	2	0	0	0	2	0	0	0	1	0	0
MA		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
MG		1	0	4	4	2	1	0	0	1	0	4	0	1	1	0
MS		1	1	2	3	2	0	0	0	2	0	0	0	1	0	0
MT		1	1	2	5	2	0	0	0	2	0	0	0	1	0	0
NO		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
PA		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
PB		1	1	2	4	2	0	0	0	0	2	0	0	1	0	0
PE		1	1	2	4	2	0	0	0	2	0	0	0	1	1	0
PI		1	1	2	5	2	0	0	0	0	2	0	0	1	0	0
PR		1	0	3	5	2	1	0	0	1	0	4	0	1	1	0
RJ		1	0	6	3	4	1	0	0	1	0	4	1	1	1	0
RN		1	1	2	6	2	0	0	0	0	2	0	0	1	0	0
RS		1	0	3	3	2	1	0	0	1	0	4	0	1	1	0
SC		1	1	2	4	2	0	0	0	2	0	0	0	1	0	0
SE		1	1	2	3	2	0	0	0	0	2	0	0	1	0	0
SPM		1	0	7	3	4	2	0	1	0	1	5	1	1	1	0
SPI		11	0	1	0	5	1	0	3	1	0	0	0	1	1	0
Total		37	18	70	109	63	9	1	5	24	22	32	3	25	10	2

Local de Entrega dos Equipamentos	Conforme Anexo II desta proposta
Relação de Rede Credenciada de Assistência Técnica / Estabelecimentos IBM Brasil	Conforme Anexo III desta proposta

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3. DESCRIÇÃO DOS SERVIÇOS OFERTADOS

a) Instalação de Hardware

O serviço de instalação tem como objetivo a desembalagem e instalação dos equipamentos em seus locais definitivos.

- Desembalagem e conferência dos equipamentos;
- Montagem dos servidores e periféricos;
- Instalação dos equipamentos em seus lugares definitivos;
- Interconexão entre servidores e periféricos externos;
- Conexão à rede elétrica;
- Verificação da configuração;
- Teste da configuração usando CD's ou mídias específicas de diagnóstico;
- Preenchimento de relatório de atividades.

Os seguintes itens devem ser providenciados pelo cliente:

- Rede elétrica pronta (estabilizada) e que comporte a instalação dos novos equipamentos;
- Equipamentos novos já deverão estar disponíveis no local na data agendada para instalação e de acordo com a configuração específica;

As responsabilidades da IBM estarão terminadas no momento em que os equipamentos estiverem instalados em seus lugares definitivos e operacionais (prontos para receberem seus respectivos Softwares) e o relatório de instalação estiver corretamente preenchido e com a assinatura do responsável ECT no local.

b) Instalação de Software

Implementação AIX

O serviço IBM de Implementação de AIX coloca um Especialista de Serviços nas instalações do Cliente para coordenar a instalação dos equipamentos RS/6000; instalar e configurar o Sistema Operacional AIX. Este serviço também prevê transferência de conhecimentos básicos para o pessoal técnico do Cliente.

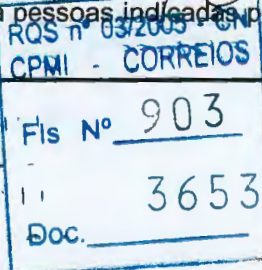
Para a execução dos serviços é necessária a observância das seguintes premissas:

O Especialista de Serviços IBM irá executar as seguintes atividades em cada equipamento RS/6000 a ser instalado:

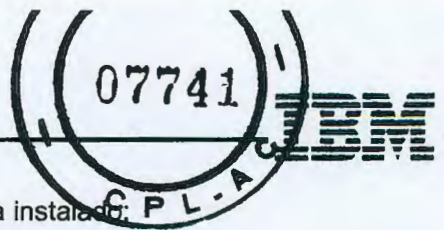
- planejar, com o representante do Cliente, a instalação do novo equipamento RS/6000;
- coletar, com o representante do Cliente, dados sobre o sistema e a configuração desejada;
- criar "file systems" padrão, "file systems" para os programas-produto IBM e selecionar uma interface padrão;
- instalar o sistema operacional AIX;
- definir um usuário no AIX, indicado pelo Cliente, com os parâmetros e senhas apropriados;
- configurar a interface (windows);
- configurar o ambiente de trabalho (desktop);
- configurar o TCP/IP;
- prover instrução básica, durante a execução dos serviços, para pessoas indicadas pelo Cliente;



IBM



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- realizar uma cópia de segurança (mksysb backup) do sistema instalado;
- criar e entregar um documento que documente a configuração do sistema.

As responsabilidades da IBM estarão terminadas quando as atividades acima forem finalizadas e o sistema RS/6000 estiver pronto para que as aplicações e dados sejam instaladas pelo Cliente.

Isto ficará evidenciado quando puder ser efetuado um ping a partir do equipamento RS/6000 para um outro equipamento da rede local do cliente.

Os seguintes itens devem ser providenciados pelo Cliente:

- colocar à disposição para a execução dos serviços o sistema RS/6000, bem como programas-produto IBM contratados, manuais e demais documentações necessárias;
- fornecer a chave do RS/6000, usuários e senhas que permitam a realização dos serviços e
- fornecer meio magnético suficiente e apropriado para a realização da cópia de segurança do sistema RS/6000.

Após a realização dos serviços descritos de instalação e configuração, o Cliente é responsável pela instalação de aplicações e dados.

c) Telesuporte ao SW dos servidores RISC1, RISC2, RISC3 e RISC4

A IBM fornece serviços de suporte a software - TeleSuporte IBM - para assisti-lo remotamente na operação dos programas suportados dentro dos grupos de produtos especificados e nos sistemas operacionais dentro das plataformas de hardware elegíveis, conforme descrição dos servidores especificados no Anexo I.

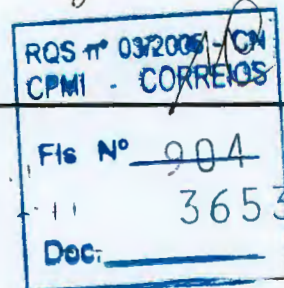
Horário de Atendimento: 24 horas por dia, 7 dias por semana, inclusive feriados. O atendimento fora do expediente normal de trabalho (horário comercial) será feito em regime de plantão, ou seja, os Especialistas IBM serão acionados pela IBM através de sistema pager. Neste caso o retorno da ligação se dará em até 2 (duas) horas a partir da ligação do Cliente.

Produtos "Back Level": São os produtos que não possuem mais suporte dos laboratórios IBM, ou que tenham a sua data de validade expirada na "Lista de Produtos Suportados".

Produtos Suportados: São todos os produtos contidos dentro de um grupo de produtos identificados na ficha cadastral que rodam sob um determinado sistema operacional nas plataformas de hardware elegíveis. Os produtos com suporte IBM e seu respectivo período de validade estão identificados através de uma "Lista de Produtos Suportados" localizada no endereço Internet da IBM <http://www.as.ibm.com/asww/sl/products> - opção Brazil.

A Lista de Produtos Suportados identificará os produtos, grupos de produtos, sistemas operacionais e plataformas de hardware elegíveis ao serviço de TeleSuporte IBM, por país. Esta lista será atualizada periodicamente para refletir a adição de novos produtos, assim como a eliminação de produtos back-level (no final de seu prazo de validade/suporte).

Prazo do Telesuporte : 36 meses



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**IBM**

Descrição do Serviço

A IBM irá fornecer assistência remota (via telefone através do Centro de Apoio ao Cliente - CAC) para as seguintes questões relacionadas aos produtos suportados dentro dos grupos de produtos e sistemas operacionais especificados:

1. Questões básicas de uso, configuração e instalação de curta duração;
2. Questões relacionadas a problemas no código do produto;
3. Questões relacionadas a publicações IBM dos produtos suportados;
4. Informações relativas a diagnóstico para auxiliá-lo no isolamento da causa de um problema (por exemplo, ajuda na interpretação de "traces" e "dumps" para problemas relacionados aos produtos IBM);
5. Para os casos de defeitos conhecidos, fornecer as informações disponíveis sobre a correção ou a própria correção.

Usando o TeleSuporte IBM

1) Callers Autorizados

São as pessoas que você identifica para a IBM e que estarão autorizadas a acessar o serviço de TeleSuporte IBM. Podem ser designados 2 usuários ("Callers Autorizados") por sistema operacional ou por produto inter-plataforma (cross platform) que você selecionar na ficha cadastral. Cada "Caller Autorizado" terá permissão de contactar o Centro de Apoio ao Cliente - CAC, e submeter questões para todos os produtos que o Cliente tiver cobertura sob este Contrato. Deverá ser notificado à IBM quem são os "Callers Autorizados", assim como quem é o principal contato técnico (que pode ser um dos "Callers Autorizados") da empresa, para quem poderemos enviar informações técnicas gerais pertinentes aos produtos suportados e que terá autoridade para modificar os "Callers Autorizados" e comunicar esta mudança à IBM.

2) Forma de Acesso e Tempo de Resposta

Telefones de acesso ao Centro de Apoio ao Cliente:

- 0-800-11-1092 / 0-800-78-7378 (Discagem Direta Gratuita)
- (011) 3050-5523 ou 3050-5329 (Fac-Símile)

O usuário autorizado ligará para a IBM através dos telefones acima, fornecendo seu código de Cliente IBM, seu nome, a severidade do problema (conforme tabela abaixo) e um número telefônico para contato.

Nível de severidade de um problema:

- **Severidade 1:** Sistema sem condições de operação
- **Severidade 2:** Problema ou dúvida grave, prejudicando a operação do sistema
- **Severidade 3:** Problemas ou dúvidas que criam algumas restrições a operação do sistema
- **Severidade 4:** Problemas ou dúvidas que não afetam a operação do sistema

A IBM irá atualizar todos os seus esforços para responder, via telefone, aos chamados realizados pelos seus "Callers Autorizados" em até 2 horas, dentro do horário comercial. Nosso contato inicial, poderá resultar na resolução da questão efetuada ou irá formar uma base para determinar quais ações adicionais terão que ser feitas para se chegar a solução técnica que resolverá sua questão.

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É de responsabilidade do Cliente:

- Garantir que qualquer código de acesso que a IBM forneça seja usado somente pelos seus "Callers Autorizados";
- Fornecer à IBM todas as informações de diagnóstico relevantes e disponíveis pertinentes ao problema para o qual foi aberta uma questão no CAC - Centro de Apoio ao Cliente;
- Providenciar, se necessário, o apropriado acesso remoto ao seu sistema, a fim de auxiliar a isolar a causa de problemas. O Cliente continuará responsável por proteger adequadamente seus sistemas e dados, mesmo quando a IBM remotamente acessá-los, com a sua permissão;

d) Manutenção e Garantia

Assistência Técnica IBM / Estrutura de Hardware / Recursos de Suporte no País

Estrutura

A coordenação das atividades de Suporte ao Hardware é de responsabilidade da Diretoria de Operações e Serviços da IBM, cuja a gerência central fica, situada em São Paulo.

A Gerência de Campo, onde está a estrutura propriamente dita que presta o atendimento ao cliente, está distribuída nas seguintes localidades :

São Paulo, Mato Grosso do Sul, Paraná, Santa Catarina, Rio Grande do Sul, Distrito Federal, Rio de Janeiro, Espírito Santo, Mato Grosso, Goiás, Minas Gerais, Bahia, Pernambuco, Ceará, Pará e Amazonas.

Nos locais onde a IBM não possui Filiais, o atendimento é feito por:

1. Escritórios e RSC (Representante de Serviços a Clientes) residentes nos locais ou regiões quando a carga de trabalho assim exigir;
2. RSC de Filiais ou Escritórios mais próximos, no caso de localizações remotas.

Filiais

Estas estão distribuídas em cada Região do Brasil e serão responsáveis pelo atendimento ao Cliente em todo o País. São compostas por:

Almoxarifados das filias.

É responsável pelo controle distribuição de peças de manutenção. É o departamento de ligação com o Almoxarifado Central.

Departamento de Instalações Físicas

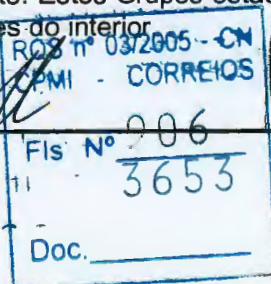
É responsável pelo suporte e acompanhamento das instalações físicas junto aos Clientes.

Departamento Administrativo

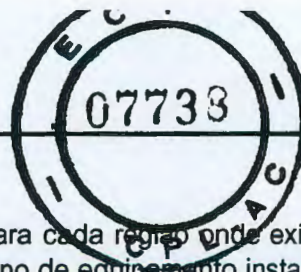
É responsável pelo controle de chamadas dos Clientes, encaminhamento de documentos, arquivos e elaboração da estrutura de apoio secundário, tais como, móveis, telefones, áreas necessárias ao bom funcionamento das Filiais e Escritórios da DT.

Grupos de Atendimento ao Campo

Responsáveis por todas as operações realizadas junto ao Cliente. Estes Grupos estão localizados nas Filiais e nos Escritórios que a IBM mantém atualmente em cidades do interior.



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**IBM**

O esquema de atendimento baseia-se no princípio de que para cada região onde exista equipamento, exista RSC designado, com o treinamento adequado para o tipo de equipamento instalado. Em paralelo existe RSC secundário, geralmente com treinamento idêntico, podendo substituir o primeiro em qualquer eventualidade como: emergência, treinamento, férias, etc.

ATENDIMENTO TÉCNICO DE HARDWARE

Os RSC's que atendem por área geográfica fazem parte de uma equipe subordinada a um Gerente de Serviços.

A atividade do RSC consiste em prestar serviços de Manutenção corretiva, durante 365 dias/24 horas por dia, a fim de solucionar rapidamente problemas em equipamentos de forma a assegurar maior disponibilidade ao Cliente. Para tal o RSC dispõe das mais avançadas ferramentas especiais para testes, além de programas específicos que possibilitam um rápido diagnóstico e uma estrutura de suporte especializada em toda linha de produtos e conectada a todos os laboratórios e fábricas da IBM no Brasil e exterior.

Para restringir as interrupções no sistema, programas de manutenção preventiva e preditiva são estabelecidos de forma a assegurar a maior disponibilidade do equipamento para o Cliente.

A Estrutura de Suporte é uma potente ferramenta para garantir a qualidade do serviço e a rapidez da solução. Está dividida em recursos no país e no exterior.

Os recursos no país são:

Representante de Serviços a Clientes (RSC)

Especialistas Designados nas filiais

Grupo de Suporte Área (ASG)

O Grupo de Suporte Técnico para a Área Latino Americana atualmente está sediado no Brasil, em São Paulo.

Os Grupos de Suporte tem acesso a um banco de dados (RETAIN), onde ficam registrados todos os problemas ocorridos nos produtos IBM, a nível mundial, e as suas correções.

O RSC pode, do local onde se encontra, obter ajuda remota (por telefone) ou física (presença local) aos especialistas no produto, que usam ferramentas que possibilitam conexões telefônicas dos sistemas dos Clientes às consoles instaladas na IBM.

SUPORTE DE HARDWARE

O suporte de Hardware é formado por um grupo de Especialistas Técnicos com o mais alto nível de especialização, sediado em São Paulo, que prestará suporte remoto ou físico ao RSC e diretamente ao Cliente na ocasião da abertura de um chamado, sempre que houver necessidade.

Este grupo é dividido da seguinte forma:

Centro de Serviços On-line (CSO)

Grupo Suporte de Área (ASG)

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CENTRO DE SERVIÇOS ON-LINE:

Este é o primeiro nível de suporte disponível ao RSC, para todos os tipos de equipamentos que serão ofertados.

Este grupo é constituído de RSC's experientes que utilizam o RETAIN, Sistemas Especialistas, documentação dos produtos e experiência anterior de campo.

Neste contato telefônico o especialista do CSO fará uma determinação rápida do problema e procurará uma alternativa de continuidade operacional (se for Sistema parado) e/ou coleta informações relativas ao defeito para fazer algumas recomendações como as citadas abaixo:

- pedir e enviar peças ao mesmo tempo em que é acionado o RSC;
- isolar o equipamento com falha para que o Cliente possa dar continuidade ao seu processamento.

GRUPO SUPORTE DA ÁREA (ASG)

Este grupo é constituído de especialistas altamente qualificados e será responsável por toda linha de equipamentos ofertados, tendo a função de dar suporte remoto ou físico para todos os chamados não concluídos dentro do prazo adequado à sua severidade.

O ASG, traça planos de ação, recomenda alocar recursos apropriados, presta assistência física de acordo com a necessidade do momento e acompanha o problema até a solução final.

SISTEMAS DE COMUNICAÇÃO

Rádio Chamada

Visando reduzir o tempo de resposta aos pedidos de manutenção, os chamados telefônicos dos Clientes, solicitando assistência técnica, são recebidos por uma central de comunicação equipada (Sistema CALL DISPATCH) com um Sistema de Rádio Transmissor. O pedido é transmitido para um Técnico que recebe a mensagem através do seu rádio receptor portátil.

É um sistema ON-LINE tendo todos os Clientes registrados com uma estrutura de atendimento definida, o que possibilita direcionar rapidamente o RSC responsável pelo atendimento do Cliente, ou na ausência deste o substituto imediato. Este sistema também controla os tempos de atendimento, e por ser um sistema ON-LINE, toda linha gerencial pode acompanhar a evolução de cada chamado desde o seu início até o seu fechamento operando 24 horas durante 365 dias no ano.

Outra facilidade é que este sistema pode gerar dados estatísticos de chamados bem como os tempos gastos para dar início ao atendimento e a duração do serviço.

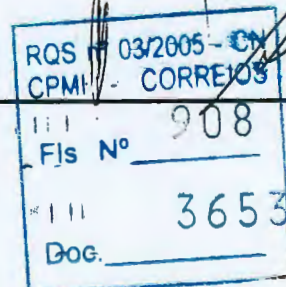
SERVIÇOS DE APOIO TÉCNICO

Sistema Gerencial de Alerta

Consiste de um sistema de comunicação Gerencial de Alerta, que mantém todos os níveis gerenciais informados sobre os problemas críticos de Clientes desde o início até a solução final.

Centro Educacional DT

Para a formação e treinamento dos funcionários do Departamento de Operações e Serviços, a IBM mantém um Centro Educacional (CEDT) em São Paulo, situado na Rua Tutóia, 1.157, com salas de aula, Biblioteca Técnica, Laboratório de aulas práticas, além de salas destinadas à administração.



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O CEDT dispõe de diversos tipos de equipamentos e sistemas IBM destinados exclusivamente ao treinamento de RSC's.

Curso de Learning System

O "Learning System" é um treinamento disponível no CEDT e em Filiais em que o aluno utiliza um sistema de multimedia. Sua utilização é necessária como pré-requisito ou complemento de cursos de sistemas IBM.

Atualmente existem mais de 500 cursos disponíveis utilizando o Learning System.

Biblioteca Técnica

Para complementar o treinamento prático existe uma biblioteca com cerca de 20.000 manuais técnicos, fitas, discos e microfichas, abordando mais de 2.000 temas distintos.

Formação do Técnico

O nível mínimo exigido na seleção do RSC é a formação escolar em Curso Técnico de Eletrônica. A partir da admissão, o funcionário recebe um treinamento composto das seguintes etapas:

1. Treinamento Inicial

Nesta fase do curso, o aluno dedica-se ao estudo básico de informática, arquiteturas de sistemas e de redes, e já inicia os cursos específicos dos produtos em que irá atuar, tais como unidades periféricas, terminais, PS, etc. Utilizando a filosofia de diagnósticos, o aluno se capacita a reparar, testar, configurar e instalar os equipamentos, bem como utilizar a estrutura de suporte da IBM para os casos mais críticos. Após esta primeira fase, os novos RSC's são designados a estágios, com a duração mínima de seis meses.

2. Treinamento Avançado

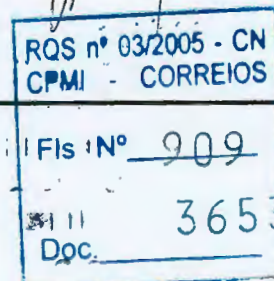
Após os estágios, que duram entre 6 e 18 meses, os RSC's são submetidos a treinamentos mais complexos, para determinação de problemas em sistemas, redes locais ou remotas, bem como cursos específicos para produtos mais complexos e de maior porte.

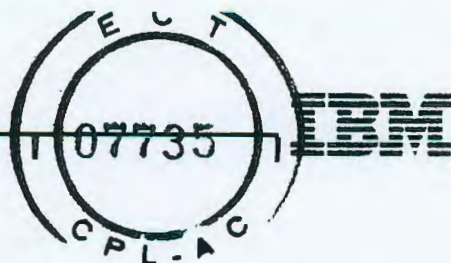
Normalmente, o treinamento dos RSC's é totalmente realizado no Brasil, utilizando-se alternativamente os próprios RSC's, com larga experiência, como instrutores, além dos instrutores efetivos.

Eventualmente, após o lançamento de novos equipamentos, visando melhor especialização, os RSC's são enviados a Centros de Treinamento no exterior e a estágios em fábricas, nas próprias linhas de montagem.

Nestes estágios e cursos, os RSC's recebem instruções sobre novas técnicas de diagnósticos, utilização de novos aparelhos de testes, etc.

Os RSC's após receberem a formação inicial e iniciarem suas atividades nos Clientes continuam recebendo periodicamente treinamento que corresponde, em média, a cerca de 14% do seu tempo de trabalho.





FILOSOFIA DE TREINAMENTO

Nossa filosofia de treinamento, baseia-se em pré-requisitos disponíveis em Multimedia, onde o aluno tem praticamente toda a teoria do produto em questão, e em seguida um curso formal no Centro Educacional, onde com a ajuda de um instrutor o aluno terá a oportunidade de exercitar as operações relativas a manutenção dos equipamentos. O aluno deverá através de avaliação formal e individual, provar que esta apto a atender o produto, caso contrario, será retreinado. O Centro Educacional mantém ainda um controle rígido do histórico do aluno, de forma a assegurar que este efetue a sequência de pré-requisitos correta e completa. Este histórico reflete ainda os equipamentos que o profissional está apto a atender, que em conjunto com os departamentos de Despacho de Chamados e Controle de Atividades, assegura um atendimento de qualidade aos Clientes

MANUTENÇÃO

A Assistência Técnica de Manutenção se destina, em última análise, a prover ao Cliente o máximo possível de disponibilidade do equipamento .

Naturalmente, dentro desse objetivo, duas funções básicas se revelam necessárias:

- Manutenção preventiva regular e preditiva (para os equipamentos que assim o requeiram).

A manutenção preventiva regular e/ou preditiva está a cargo do RSC responsável pela instalação.

A manutenção preventiva segue um programa regular traçado inicialmente pelo setor responsável pelo projeto de fabricação e posteriormente atualizado pelos Departamentos Técnicos, em diversos níveis e de acordo com a utilização do equipamento.

Além deste controle, cada sistema instalado possui em seus sistemas operacionais programas que registram automaticamente os problemas ocorridos e emitem relatórios estatísticos sobre a operação do sistema, para controle do Cliente e análise do desempenho pelo RSC. De comum acordo, o Cliente e o RSC decidem efetuar correções ou manutenção em determinadas unidades, com o fim específico de melhorar seu desempenho e evitar defeitos inesperados. Este tipo de manutenção é chamada de preditiva.

Note-se que, neste tipo de equipamento, normalmente não pode haver demora de atendimento, o que nos levou a organizar um sistema de controle permanente dos períodos de atividade de cada um dos nossos Clientes, inclusive, fora do expediente normal.

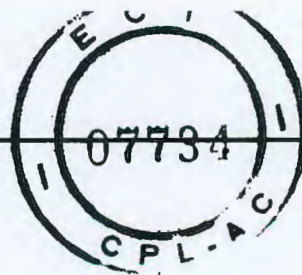
A manutenção preditiva, acima exposta, não se aplica a todos os equipamentos oferecidos pela IBM. Apresentamos aqui o seu conceito, por uma questão de respeito ao Cliente e para que este tenha visão do tipo de estrutura que temos para dar suporte.

Adicionalmente à manutenção propriamente dita, outra função se enquadra dentro das atribuições do RSC. A execução das Alterações de Engenharia, através da inclusão ou alteração de circuitos ou dispositivos, com a finalidade de melhorar o desempenho técnico do equipamento.

As alterações de Engenharia são realizadas por comando direto do setor de fabricação de cada sistema, a quem compete a remessa do material e diagrama relativo a cada alteração. Normalmente são executadas durante as paradas de manutenção preventiva, se houverem, ou, de comum acordo com os Clientes, pelo próprio RSC encarregado do sistema. Sempre que o fabricante julgar necessário.

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Manutenção corretiva

Manutenção corretiva é realizada sempre que qualquer defeito inesperado ocorra, mediante aviso imediato ao Setor de Controle de cada Filial IBM, a quem compete designar um RSC para o atendimento. Normalmente o chamado é passado ao responsável pelo Cliente e em sua impossibilidade, ao RSC que o substitui.

O controle individualizado de cada Sistema instalado, com suas respectivas Unidades e Dispositivos, será efetuado centralizadamente por nossos próprios Sistemas, a fim de assegurar o cumprimento de prazos certos, em função de uma variedade de fatores, tais como horas de trabalho efetivo, tempos de instalação, estatísticas de defeito, etc., sempre visando reduzir ao mínimo o tempo de parada do equipamento por defeitos eventuais.

PLANO DE MANUTENÇÃO

Procedimentos Gerais

Manutenção Preventiva

A manutenção preventiva obedece a um programa regular, traçado inicialmente pelo setor responsável pelo projeto de fabricação do equipamento e posteriormente atualizado em diversos níveis.

A manutenção preventiva objetiva reduzir ao mínimo possível os tempos de paralização do equipamento por defeitos eventuais e é executada em horário previamente estabelecido e de comum acordo com o usuário.

Facilidades do sistema, combinando "Hardware" e "Software" permitem a Manutenção Preditiva como parte da Manutenção Preventiva. Este método permite, através de relatórios produzidos pelo próprio sistema, prever quais unidades do sistema possam sofrer possíveis falhas futuras e deste modo executar manutenção em tempo, antes que afetem a produtividade do sistema.

Essas modalidades de Manutenção são designadas por equipamentos. O descritivo técnico de cada equipamento descreverá se o mesmo é suscetível ou não desse tipo de manutenção.

Manutenção Corretiva

Os Sistemas operacionais atuais da IBM estão equipados com vários tipos de SER (System Error Retry), que registram as principais ocorrências de operação do sistema, auxiliando sobremaneira a manutenção preventiva que reduz a incidência de defeitos.

Com esses dispositivos, que compõem a filosofia de "Reliability", "Avaliability", "Serviciability" - RAS (Confiabilidade, Disponibilidade e Manutenibilidade) Facilidade de Serviço, a intervenção do operador e as paralisações por falhas de "Hardware" são bem reduzidas. Quando a falha se tornar permanente resta a opção ao Cliente de isolar a máquina afetada e contactar o Help Desk para abrir o chamado de correção.

A manutenção corretiva será realizada atendendo aos chamados originários do Cliente. A IBM estruturou-se de maneira que as chamadas possam ser atendidas o quanto antes e de forma eficaz.

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**IBM**

Manutenção de Produtos Fora de Fabricação

Para os equipamentos fora de fabricação, a IBM normalmente mantém técnicos treinados a fim de que o serviço de manutenção não sofra solução de continuidade e mantém estoques de peças de reposição.

Instalação de Equipamentos

Pela IBM

Os serviços de instalação do equipamento contratado são realizados de acordo com um cronograma, dentro de um prazo determinado. A instalação do equipamento é de responsabilidade da IBM, que o colocará em funcionamento. Excetua-se a essa condição os equipamentos classificados como CSU (Customer Setup User), entendidos estes como equipamentos cuja responsabilidade de instalação cabe ao cliente. Geralmente são equipamentos de pequeno porte que não acarretam conhecimento técnico específico para sua instalação.

Manutenção Corretiva

É realizada atendendo aos chamados dos Clientes. A fim de atender aos chamados de manutenção de emergência, foi criado um Plantão Técnico, que possibilita o atendimento durante as 24 (vinte e quatro) horas do dia, já descrita anteriormente.

Estoque de Peças

Centro de Distribuição de Peças (C.D.P)

Para o suprimento de peças de reposição a IBM está estruturada da seguinte forma:

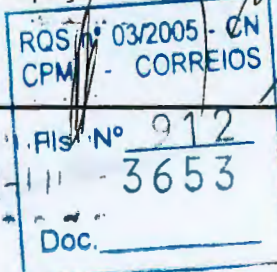
- Um Centro de Distribuição de Peças - CDP, no Rio de Janeiro com responsabilidade de suporte para todo país;
- Estoques de peças nas Filiais e
- Estações de Suporte e Malas de Diagnósticos, para atendimento a localidades remotas.

O atendimento nos diversos níveis acima está preparado para funcionar 24 (vinte e quatro) horas por dia e 7 (sete) dias por semana.

Complementando os recursos operacionais em peças de manutenção a IBM utiliza no Brasil um Sistema Mecanizado de Controle de Inventário, especificamente desenvolvido para este fim, usando os mais recentes modelos de pesquisa operacional aplicáveis a inventário.

As características operacionais de distribuição de peças são as seguintes:

- A IBM trabalha com níveis de estoque determinados, por local, sendo parte da demanda atendida pelo estoque local e parte por pedidos de emergência;
- Os pedidos de emergência são dirigidos ao Centros de Distribuição de Peças;
- Estes pedidos são atendidos com toda urgência e levados ao estoque solicitante por um serviço especial de entregas;
- Quando a peça não existe no país, é colocado o pedido em Emergência "A" ao exterior. Emergência "A" é a máxima prioridade para peças com extrema urgência. Estes pedidos são atendidos através de Centros Distribuidores no exterior;
- Antes de se colocar um pedido no exterior em emergência, todos os estoques do país são pesquisados, bem como a possibilidade de recuperação local da peça.



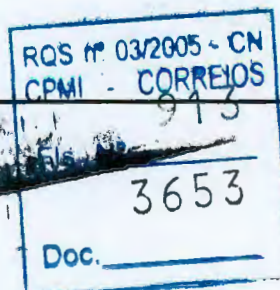
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**IBM**

Distribuição de Peças

A IBM Brasil, já conta hoje em dia com a seguinte estrutura de distribuição de peças :

- 1) Os almoxarifados são Integrados, o que possibilita melhor distribuição do sistema de reposição de peças, assim como do suporte inter-almoxarifados.
- 2) Existe um sistema mecanizado de controle de estoque e distribuição de peças.
- 3) Na possibilidade de saldo zero, de uma determinada peça, numa determinada localidade, a integração entre almoxarifados permite que uma localidade suporte outra, através de voos comerciais.
- 4) Existe o esquema denominado HOT, que utiliza um profissional, em voo comercial, para transportar determinada peça em mãos, dependendo da urgência.
- 5) E o JATO. Quando a disponibilidade de voos comerciais não atender a demanda e a situação justificar, aciona-se um Jato, já sob contrato, em alguns pontos estratégicos.



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IBM

ANEXO I

DESCRIÇÃO E ESPECIFICAÇÃO TÉCNICA DOS EQUIPAMENTOS OFERTADOS E PLANILHAS DE PONTUAÇÃO

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SERVIDOR TIPO INT1**Fabricante: IBM Marca: Netfinity Modelo: 5100****IBM****1. PADRONIZAÇÃO (PZ)****PESO 05**

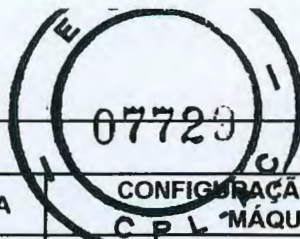
O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Dois Processadores Intel Pentium III, com clock mínimo de 500 MHz cada.	Dois Processadores Intel Pentium III, com clock de 733 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 133 MHz.
Memória Cache	512 KBytes ECC L2 por processador ou 256 Kbytes ECC L2 "full speed" por processador.	256 Kbytes ECC L2 "full speed" por processador.
Memória RAM	512 MBytes ECC SDRAM, expansível até 1 GByte, instalada "on board".	1024 MBytes ECC SDRAM, expansível até 4 GByte, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Cinco slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento.	Bivolt, compatível com configuração máxima do equipamento, com redundância e hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Controladora de Disco	Tecnologia Ultra/Wide SCSI ou superior.	Tecnologia Wide Ultra160 SCSI
Unidades de Disco Rígido	Três unidades internas, hot-swappable, com capacidade mínima de 9 (nove) GBytes, cada, formatados.	Três unidades internas, Wide Ultra SCSI, hot-swappable, com capacidade de 18.2 (Dezoito ponto dois) GBytes, cada, formatados.
Gabinete	Modelo Torre, com capacidade interna para no mínimo cinco unidades de disco rígido hot-swappable.	Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable.
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com 8 MByte.

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CPMI - CORREIOS

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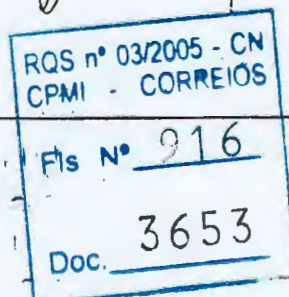


ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA C.P.L. MÁQUINA
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 1024 x 768, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de 1024 x 768, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, tecnologia IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade de 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosenso ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, <i>onboard</i> , de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosenso ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



**IBM**

2. DESEMPENHO (DE)

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

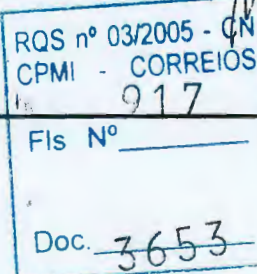
- Processador;
- Memória RAM;
- Capacidade de Disco Rígido;
- Fonte de alimentação redundante.

Processador		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.	ATENDE	02

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual ou superior a 1 GByte.	ATENDE	02

Capacidade do Disco Rígido		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento.	Resposta	Pontos
Acima de 18 GBytes, cada.	ATENDE	02
Entre 10 e 17 GBytes, cada		01

Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação redundante, hot-swappable.	ATENDE	02
Fonte de alimentação redundante.		01



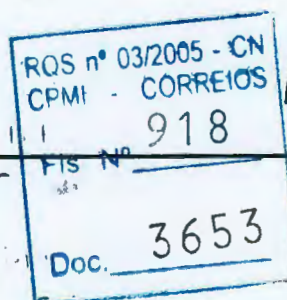


3. QUALIDADE (QD)

PESO 04

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

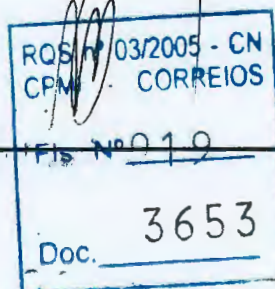
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:

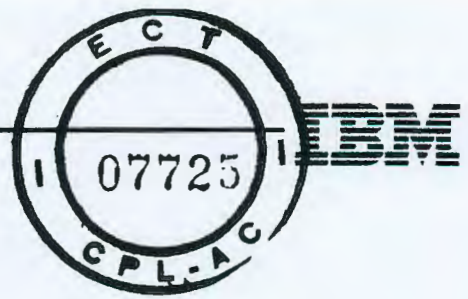
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:

O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01





SERVIDOR DE REDE TIPO INT2

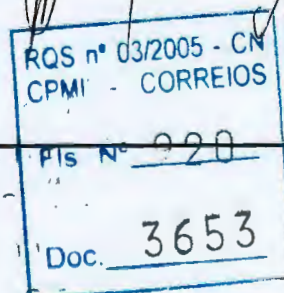
Fabricante: IBM Marca: Netfinity Modelo: 5100

1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a 30 pontos para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Dois Processadores Intel Pentium III, com clock mínimo de 500 MHz cada.	Dois Processadores Intel Pentium III, com clock de 733 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 133 MHz.
Memória Cache	512 KBytes ECC L2 por processador ou 256 Kbytes ECC L2 "full speed" por processador.	256 Kbytes ECC L2 "full speed" por processador.
Memória RAM	512 MBytes ECC SDRAM, expansível até 1 GByte, instalada "on board".	1024 MBytes ECC SDRAM, expansível até 4 GByte, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Quatro slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento.	Bivolt, compatível com configuração máxima do equipamento, com redundância e hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Controladora RAID	Tecnologia Ultra/Wide SCSI ou superior, com suporte para, no mínimo, RAID 5.	Tecnologia Wide Ultra2 SCSI, com suporte para RAID 0, 1 e 5.
Unidades de Disco Rígido	Três unidades internas, hot-swappable, com capacidade mínima de 18 (dezoito) GBytes, cada, formatados. Deve suportar, no mínimo, RAID 0 e 5.	Três unidades internas, Wide Ultra SCSI, hot-swappable, com capacidade de 36.4 (Trinta e seis ponto quatro) GBytes, cada, formatados.
Unidade de Fita DLT	Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 35 GBytes, sem compressão, e com taxa de transferência sustentada de 5 MBytes/seg.	Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 40 GBytes, sem compressão, e com taxa de transferência sustentada de 5 MBytes/seg.



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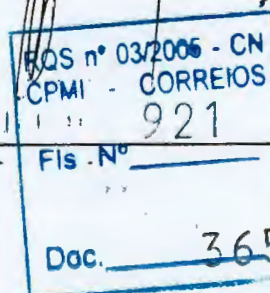
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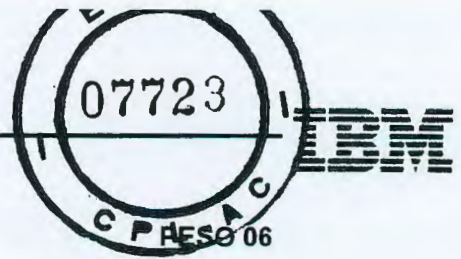
ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Gabinete	Modelo Torre, com capacidade interna para no mínimo cinco unidades de disco rígido hot-swappable.	Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable.
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com 8 MByte.
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 1024 x 768, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de 1024 x 768, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, tecnologia IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade de 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, onboard, de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.





2. DESEMPENHO (DE)

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

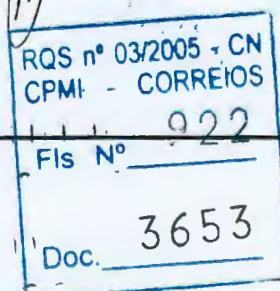
- Processador;
- Memória RAM;
- Capacidade de Disco Rígido;
- Fonte de alimentação redundante.

Processador		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.	ATENDE	02

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual a 1 GByte.	ATENDE	02

Capacidade do Disco Rígido		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento.	Resposta	Pontos
Acima de 30 Gbytes, cada.	ATENDE	02
Entre 20 e 28 GBytes, cada	—	01

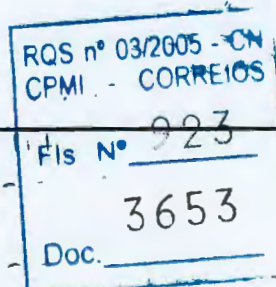
Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação redundante, hot-swappable.	ATENDE	02
Fonte de alimentação redundante.	—	01



**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



**IBM****4. SUPORTE DE SERVIÇOS (SS)****PESO 06**

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao **prazo máximo de atendimento** ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao **horário de atendimento às chamadas** referentes ao equipamento cotado:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às **facilidades oferecidas no atendimento às chamadas** referentes ao equipamento cotado:

Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à **duração da garantia dada pelo fabricante** para o equipamento cotado:

O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01

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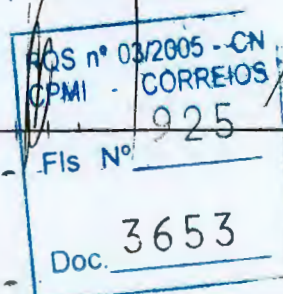
**IBM**

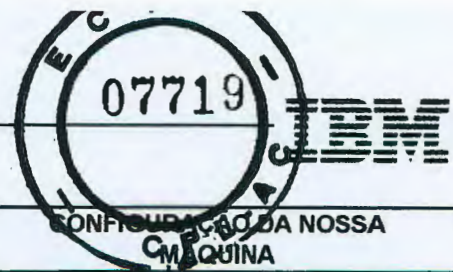
SERVIDOR DE APLICAÇÃO TIPO INT3
Fabricante: IBM Marca: Netfinity Modelo: 7100

1. PADRONIZAÇÃO (PZ)**PESO 05**

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Quatro Processadores Intel Pentium III Xeon, com clock mínimo de 500 MHz cada.	Quatro Processadores Intel Pentium III Xeon, com clock de 550 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 100 MHz.
Memória Cache	1 MB ECC L2 por processador.	1 MB ECC L2 por processador.
Memória RAM	2 Gbytes ECC SDRAM ou EDO, expansível até pelo menos 4 GBytes, instalada "on board".	2 Gbytes ECC SDRAM, expansível até 16 GBytes, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Quatro slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento, com redundância.	Bivolt, compatível com configuração máxima do equipamento, com redundância, Hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Disco Interno e Controladora de Disco SCSI	Wide Ultra SCSI ou superior. Deve suportar, no mínimo, RAID 0. Capacidade mínima de 9 GB cada, espelhado, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 10.000 RPM.	Wide Ultra2 SCSI. Com suporte a RAID 0, 1 e 5. Dois discos internos Wide Ultra SCSI com capacidade de 9,1 GB cada, espelhados, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.
Controladora de Array de Disco	Wide Ultra SCSI ou superior, que suporte, no mínimo, RAID 0 e 5.	Wide Ultra SCSI com suporte a RAID 0, 1 e 5.
Array de Discos	Wide Ultra SCSI ou superior, "Hot-swappable", com capacidade mínima de 18 (dezoito) Gbytes cada, formatados, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor ou igual a 9 ms. Deve suportar pelo menos RAID 0 e 5, com "HOT SPAIR".	Cinco unidades de disco Wide Ultra SCSI, "Hot-swappable", com capacidade de 18.2 (dezoito ponto dois) GBytes cada, formatados, perfazendo um total de 54 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8.39 ms. Com suporte a RAID 0, 1 e 5, com HOT SPARE.
Unidade de Fita DAT	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Deverá existir um canal de I/O, ou uma controladora SCSI, dedicado.	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão, com uma controladora SCSI dedicada.



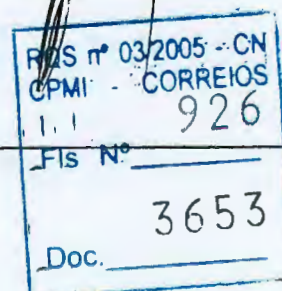


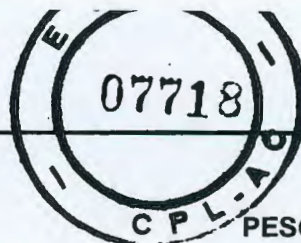
ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Gabinete	Modelo Torre, com capacidade interna para no mínimo cinco unidades de disco rígido "Hot-swappable".	Modelo Torre, com capacidade interna para dez unidades de disco rígido "Hot-swappable".
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 4 MByte.
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, tecnologia IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade mínima 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autossense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, onboard, de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autossense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



**IBM**

2. DESEMPENHO (DE)

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação "hot-swappable".

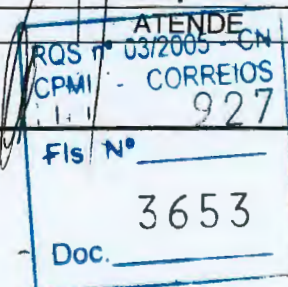
Processador		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.	—	03
Quatro processadores Intel Pentium III Xeon, clock igual a 550 MHz, cada.	ATENDE	02

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual a 4 GBytes.	—	02

Disco Interno e Controladora de disco SCSI		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à disco interno e controladora de disco SCSI do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à controladora de Array de disco do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02



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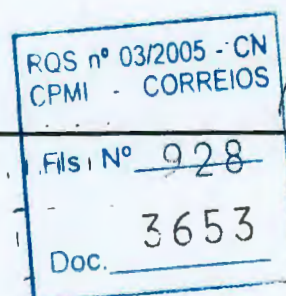
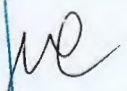
PESO 04

3. QUALIDADE (QD)

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01





**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao **prazo máximo de atendimento ao equipamento cotado**:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:

	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao **horário de atendimento às chamadas referentes ao equipamento cotado**:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:

	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às **facilidades oferecidas no atendimento às chamadas** referentes ao equipamento cotado:

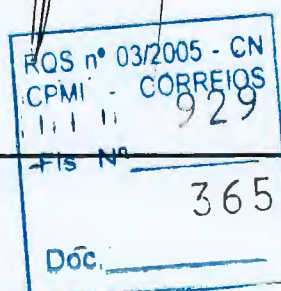
	Resposta	Pontos (cumulativos)
Está disponível, para o atendimento aos chamados:		
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à **duração da garantia dada pelo fabricante** para o equipamento cotado:

O fabricante oferece garantia para o produto por um período de:

	Resposta	Pontos
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01



SERVIDOR DE APLICAÇÃO TIPO INT4
Fabricante: IBM Marca: Netfinity Modelo: 7100



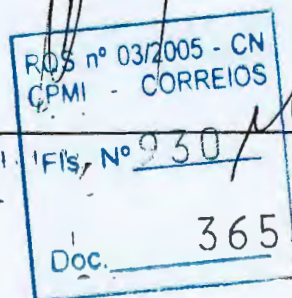
IBM

1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Quatro Processadores Intel Pentium III Xeon, com clock mínimo de 500 MHz cada.	Quatro Processadores Intel Pentium III Xeon, com clock de 550 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 100 MHz.
Memória Cache	1 MB ECC L2 por processador.	1 MB ECC L2 por processador.
Memória RAM	4 GBytes ECC SDRAM ou EDO.	4352 Mbytes ECC SDRAM, expansível até 16 GBytes, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Quatro slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento, com redundância.	Bivolt, compatível com configuração máxima do equipamento, com redundância, Hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Disco Interno e Controladora de Disco SCSI	Wide Ultra SCSI ou superior. Deve suportar, no mínimo, RAID 0. Capacidade mínima de 9 GB cada, espelhado, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 10.000 RPM.	Wide Ultra2 SCSI. Com suporte a RAID 0, 1 e 5. Dois discos internos Wide Ultra SCSI com capacidade de 9,1 GB cada, espelhados, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.
Controladora de Array de Disco	Wide Ultra 2 SCSI que suporte, no mínimo, RAID 0 e 5.	Wide Ultra SCSI com suporte a RAID 0, 1 e 5.
Array de Discos	Wide Ultra 2 SCSI ou superior, "Hot-swappable", com capacidade mínima de 18 (dezoito) GBytes cada, formatados, perfazendo um total mínimo de 72 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor ou igual a 9 ms. Deve suportar pelo menos RAID 0 e 5, com HOT SPAIR.	Seis unidades de disco Wide Ultra SCSI, "Hot-swappable", com capacidade de 18.2 (dezoito ponto dois) GBytes cada, formatados, perfazendo um total de 72 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8.39 ms. Com suporte a RAID 0, 1 e 5, com HOT SPARE.



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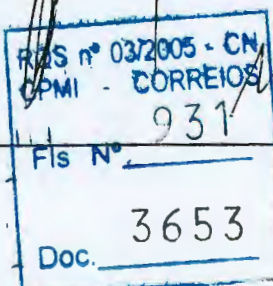
IBM

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Unidade de Fita DAT	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Deverá existir um canal de I/O, ou uma controladora SCSI, dedicado.	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão, com uma controladora SCSI dedicada.
Gabinete	Modelo Torre, com capacidade interna para no mínimo cinco unidades de disco rígido "Hot-swappable".	Modelo Torre, com capacidade interna para dez unidades de disco rígido "Hot-swappable".
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 4 MByte.
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, tecnologia IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade mínima 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, onboard, de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

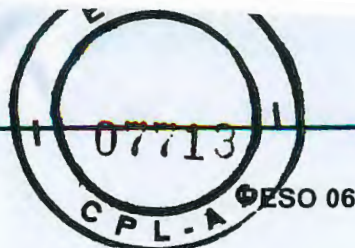
A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



2. DESEMPENHO (DE)

**IBM**

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação "hot-swappable".

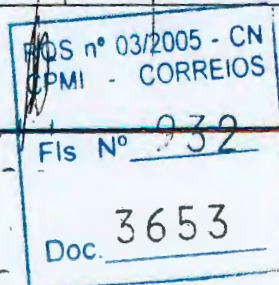
Processador		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.	—	02
Quatro processadores Intel Pentium III Xeon, clock igual a 550 MHz, cada.	ATENDE	02

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Superior a 4 GBytes.	ATENDE	02

Disco Interno e Controladora de disco SCSI		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à controladora de Array de Disco do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	ATENDE	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02



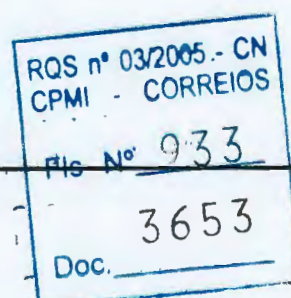
**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação

Assinalar com a palavra "Atende" para as **certificações** que o modelo do equipamento cotado possui:

	Resposta	Pontos
Possui Certificação atualizada conforme segue:		
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao **prazo máximo de atendimento ao equipamento cotado**:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:

	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao **horário de atendimento às chamadas referentes ao equipamento cotado**:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:

	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às **facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado**:

Está disponível, para o atendimento aos chamados:

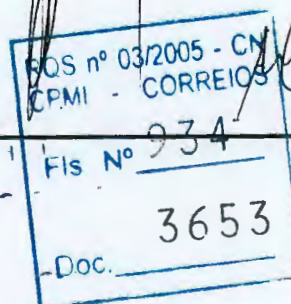
	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à **duração da garantia dada pelo fabricante para o equipamento cotado**:

O fabricante oferece garantia para o produto por um período de:

	Resposta	Pontos
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01





SERVIDOR DE APLICAÇÃO TIPO INT5
Fabricante: IBM Marca: Netfinity Modelo: 7100

1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados ba configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

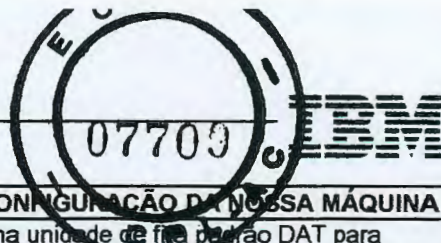
ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Dois Processadores Intel Pentium III Xeon, com clock mínimo de 500 MHz, cada.	Dois Processadores Intel Pentium III Xeon, com clock de 550 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 100 MHz.
Memória Cache	512 KB ECC L2 por processador.	512 KB ECC L2 por processador.
Memória RAM	1 GBytes ECC SDRAM ou EDO.	1 Gbytes ECC SDRAM, expansível até 16 GBytes, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Quatro slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento, com redundância.	Bivolt, compatível com configuração máxima do equipamento, com redundância, Hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Disco Interno e Controladora de Disco SCSI	Wide Ultra SCSI ou superior. Deve suportar, no mínimo, RAID 0. Capacidade mínima de 9 GB cada, espelhado, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 10.000 RPM.	Wide Ultra2 SCSI. Com suporte a RAID 0, 1 e 5. Dois discos internos Wide Ultra SCSI com capacidade de 9,1 GB cada, espelhados, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.
Controladora de Array de Disco	Wide Ultra SCSI ou superior, que suporte, no mínimo, RAID 0 e 5.	Wide Ultra SCSI com suporte a RAID 0, 1 e 5.
Array de Discos	Wide Ultra SCSI ou superior, "Hot-swappable", com capacidade mínima de 18 (dezoito) GBytes cada, formatados, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor ou igual a 9 ms. Deve suportar pelo menos RAID 0 e 5, com HOT SPAIR.	Cinco unidades de disco Wide Ultra SCSI, "Hot-swappable", com capacidade de 18.2 (dezoito ponto dois) GBytes cada, formatados, perfazendo um total de 54 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8.39 ms. Com suporte a RAID 0, 1 e 5, com HOT SPARE.

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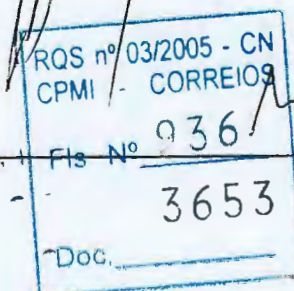


ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Unidade de Fita DAT	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Deverá existir um canal de I/O, ou uma controladora SCSI, dedicado.	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão, com uma controladora SCSI dedicada.
Gabinete	Modelo Torre, com capacidade interna para no mínimo 5 (cinco) unidades de disco rígido "Hot-swappable".	Modelo Torre, com capacidade interna para dez unidades de disco rígido "Hot-swappable".
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 4 MByte.
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, interface IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade mínima 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, onboard, de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



**IBM****2. DESEMPENHO (DE)**

PESO 06

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação "hot-swappable".

Processador

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.</i>	Resposta	Pontos
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.	—	03
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 550 MHz, cada.	ATENDE	02

Memória RAM

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.</i>	Resposta	Pontos
Igual a 4 GBytes.	—	02
Igual a 2 GBytes.	—	01

Disco Interno e Controladora de disco SCSI

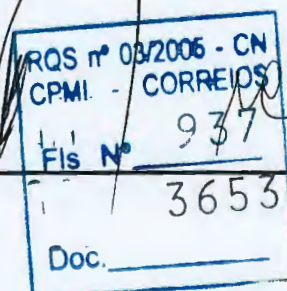
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à disco interno e controladora de disco SCSI do equipamento.</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à controladora de Array de disco do equipamento.</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco.	ATENDE	02

**Fonte de Alimentação Hot-swappable
(que suporte a configuração máxima do equipamento)**

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02



**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação

Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:

Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



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**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:

	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:

	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:

	Resposta	Pontos (cumulativos)
Está disponível, para o atendimento aos chamados:		
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:

	Resposta	Pontos
O fabricante oferece garantia para o produto por um período de:		
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01

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SERVIDOR DE APLICAÇÃO TIPO INT6
Fabricante: IBM Marca: Netfinity Modelo: 5100



IBM

1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Processador	Dois Processadores Intel Pentium III, com clock mínimo de 500 MHz, cada.	Dois Processadores Intel Pentium III, com clock de 733 MHz cada.
Barramento	Barramento do sistema de 100 MHz.	Barramento do sistema de 133 MHz.
Memória Cache	512 KBytes ECC L2 por processador ou 256 Kbytes ECC L2 "full speed" por processador.	256 Kbytes ECC L2 "full speed" por processador.
Memória RAM	512 MBytes ECC SDRAM ou EDO, expansível até 1 GByte, instalada "on board".	1024 MBytes ECC SDRAM, expansível até 4 GByte, instalada "on board".
Slots	Dois slots PCI livres, após montada configuração proposta.	Cinco slots PCI livres, após montada configuração proposta.
Interface Serial	Duas interfaces seriais padrão RS-232C.	Duas interfaces seriais padrão RS-232C.
Interface Paralela	Uma interface paralela padrão Centronics.	Uma interface paralela padrão Centronics.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento, com redundância.	Bivolt, compatível com configuração máxima do equipamento, com redundância e hot-swap.
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.
Disco Interno e Controladora de Disco SCSI	Wide Ultra SCSI ou superior. Deve suportar, no mínimo, RAID 0. Capacidade mínima de 9 GB cada, espelhado, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 10.000 RPM.	Wide Ultra2 SCSI. Com suporte a RAID 0, 1 e 5. Dois discos internos Wide Ultra SCSI com capacidade de 9,1 GB cada, espelhados, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.
Controladora de Array de Disco	Wide Ultra SCSI ou superior, que suporte, no mínimo, RAID 0 e 5.	Wide Ultra2 SCSI com suporte a RAID 0, 1 e 5.
Array de Discos	Wide Ultra SCSI ou superior, "Hot-swappable", com capacidade mínima de 18 (dezoito) GBytes cada, formatados, perfazendo um total mínimo de 54 GB líquidos. Rotação mínima de 10.000 RPM, com tempo médio de acesso menor ou igual a 9 ms. Deve suportar pelo menos RAID 0 e 5, com HOT SPAIR.	Cinco unidades de disco Wide Ultra SCSI, "Hot-swappable", com capacidade de 18.2 (dezoito ponto dois) GBytes cada, formatados, perfazendo um total de 54 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8.39 ms. Com suporte a RAID 0, 1 e 5, com HOT SPARE.
Unidade de Fita DAT	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Deverá existir um canal de I/O, ou uma controladora SCSI, dedicado.	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Conectada a uma controladora SCSI dedicada.
Gabinete	Modelo Torre, com capacidade interna para no mínimo 5 (cinco) unidades de disco rígido "Hot-swappable".	Modelo Torre, com capacidade interna para seis unidades de disco rígido hot-swappable.

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ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Teclado Alfanumérico	Com mínimo de 101 teclas, preferencialmente com 104 teclas padrão ABNT 2.	Com 104 teclas padrão ABNT 2.
Placa de Vídeo	Integrada à placa-mãe (on-board), padrão VGA, com no mínimo 1 MByte.	Integrada à placa-mãe (on-board), padrão VGA, com 8 MByte.
Monitor de Vídeo	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de, no mínimo 14", dot-pitch máximo de 0.28mm. Atinge resolução de, pelo menos, 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.	SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28mm. Atinge resolução de 1024 x 768, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.
Mouse Serial	Duas teclas padrão Microsoft com resolução mínima de 400 dpi, mouse-pad e driver de instalação.	Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.
Unidade de CD-ROM	Uma unidade interna, interface IDE, com velocidade mínima 32X, com driver de instalação para Windows NT Server 4.0.	Uma unidade interna, tecnologia IDE, com velocidade de 40X, com driver de instalação para Windows NT Server 4.0.
Placa de Rede	Uma placa padrão Ethernet de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.	Uma placa padrão Ethernet, onboard, de 32 bits - IEEE 802.3, saídas 10Base-T/100Base-TX, velocidade dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.
Compatibilidade	O equipamento cotado deve apresentar compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.	O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificado HCL - Hardware Compatibility List, na categoria System/Server Multiprocessador.

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

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CPMI - CORREIOS
Fls Nº _____
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**IBM****2. DESEMPENHO (DE)**

PESO 06

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação "hot-swappable".

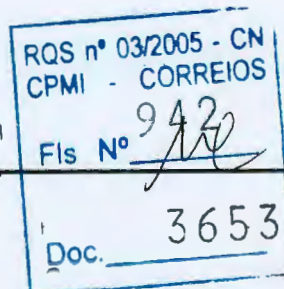
Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.</i>	Resposta	Pontos
Dois processadores Intel Pentium III, clock igual ou superior a 600 MHz, cada.	ATENDE	03
Dois processadores Intel Pentium III, clock igual ou superior a 550 MHz, cada.	—	02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.</i>	Resposta	Pontos
Igual a 1 GByte.	ATENDE	02

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à disco interno e controladora de disco SCSI do equipamento.</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)	ATENDE	02

Controladora de Array de Disco		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à controladora de Array de disco do equipamento.</i>	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco.	ATENDE	02

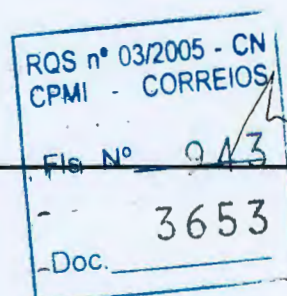
Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.</i>	Resposta	Pontos
Fonte de alimentação hot-swappable.	ATENDE	02



**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	ATENDE	02
Até 06 horas	—	01

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:

Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

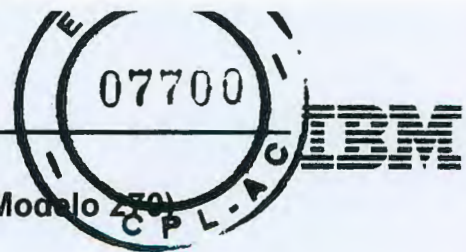
Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:

O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
5 (cinco) anos	ATENDE	03
4 (quatro) anos	—	02
3 (três) anos	—	01

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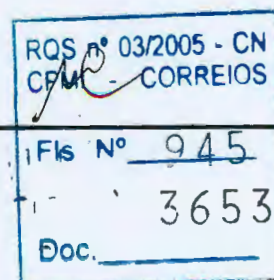
SERVIDOR DE REDE TIPO RISC1: IBM Risc/ 6000 (Modelo 270)

1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
CPU	Processadores RISC, de 64 bits, em número igual ou superior a 2 (dois), expansível a, pelo menos, 4 (quatro) processadores.	Atendemos com 2 processadores RISC de 64 bits POWER3-II @ 375 MHz, expansível a 4 processadores
Memória Cache Instruction - Data (Primary - Secondary)	Mínima instalada de 1,5 MBytes por processador.	Atendemos com memória cache instalada L1 de 64 + 32 Kbytes (Instruction + Data) e L2 de 4 MB, por processador
Memória RAM	ECC com capacidade mínima de 512 MBytes expansível até 2 GBytes, "on board", tempo de acesso máximo de 60 ns.	Atendemos com 1GB de memória ECC, expansível a 8 GB, e tempo de acesso de 10 ns
Performance	SPECint_rate95 igual ou superior a 210 / SPECint_95 12 e SPECfp_rate95 igual ou superior a 220 / SPECfp_95 20	Atendemos com SPECint_base95 de 24.4, SPECfp_base95 de 47.3, SPECint_rate95 de 437 e SPECfp_rate95 de 767 para o servidor configurado
Suporte à Arquitetura	SMP - Symetric Multi Processing.	Atendemos com arquitetura de servidor e o sistema operacional AIX com kernel SMP
Slots	Apresenta no mínimo, após configuração proposta: 02 (dois) slots livres de, no mínimo, 32 bits.	Atendemos com um total de 5 slots PCI (3 32-bit / 2 64-bit) disponíveis sendo 1 ocupado com a controladora de vídeo, 1 ocupado com a controladora SCSI para fita e outros 3 slots livres.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento.	Atendemos com fonte de alimentação bivolt Universal 110/220 V
Controladora e Disco Rígido Interno	Padrão SCSI-II ou superior, com capacidade mínima de 18 (dezoito) GBytes formatado, tempo médio de acesso menor ou igual a 10 ms e taxa de transferência mínima de 20 MBytes/seg.	Atendemos com controladora interna padrão Ultra SCSI com taxa de transferência de 40 MB/s. Atendemos com unidade de disco de 18.2 GB com tempo de acesso médio de 6.7 ms e taxa de transferência de 40 MB/s
Monitor de Vídeo	Policromático, com no mínimo 14", dot-pitch máximo de 0.28 mm., atender às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 100-240 VAC - full-range. Com resolução mínima de 800 x 600.	Atendemos com monitor policromático de 17", com dot-pitch de 0.24 mm, resolução de 1024 x 768 a 85 Hz ou ainda 1600 x 1200 a 75 Hz, seleção automática de tensão entre 90 - 240 V, suporte às normas MPR II e EPA Energy Star



**IBM**

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Teclado Alfanumérico	Com mínimo de 101 teclas.	Atendemos com teclado alfanumérico de 103 teclas
Mouse	02 ou 03 teclas com resolução mínima de 320 dpi, mouse-pad e driver de instalação.	Atendemos com mouse de 3 teclas e resolução mínima
Unidade de Disco Flexível	Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.	Atendemos com unidade de disco flexível de 1.44 MB
Interface Serial	Duas interfaces seriais padrão RS-232C.	Atendemos com 2 interfaces seriais padrão RS-232C
Unidade de CD-ROM	Velocidade mínima 24X - SCSI-II ou superior, instalada e reconhecida pelo S.O. Unix fornecido.	Atendemos com unidade de CD-ROM 32x SCSI-II instalada e reconhecida pelo AIX
Unidade de Fita DLT	Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 35 GBytes, sem compressão, e com taxa de transferência sustentada de 5 MBytes/seg.	Atendemos com unidade de fita padrão DLT com mídias 35 GB sem compressão e taxa de transferência de 5 MB/s
Placa de Rede	01 (uma) placa padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.	Atendemos com uma interface de rede Ethernet padrão IEEE 802.3 com porta 100Base-TX RJ-45, autosense de 10 ou 100 Mbps ou configurável. Atendemos com gerenciamento SNMP compatível com TCP/IP. Atendemos com a documentação de hardware do sistema e a documentação da gerência de rede do AIX
Sistema Operacional	Padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa da ECT, com um mínimo de 3 acessos simultâneos, com capacidade para suportar a Plataforma de Gerenciamento HP Open View - NNM (Network Node Management) na versão 5.0 ou superior e os módulos HP Open View, entregue em mídia CD-ROM com toda documentação e licenças.	Atendemos com o Sistema Operacional AIX, que atende aos padrões Unix, arquitetura de 64 bits e configurado para acesso a rede e 3 acessos simultâneos, mídia, documentação e licenças. Atendemos a compatibilidade com o Software de Gerenciamento HP Openview 5.0

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

RQS nº 03/2005 - C.V.
CPMI - CORREIOS

Fis Nº 946

Doc 3653

**IBM**

2. DESEMPENHO (DE)

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

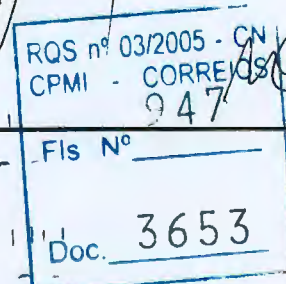
- Processador;
- Performance;
- Memória RAM;
- Capacidade de Disco Rígido;
- Fonte de alimentação redundante.

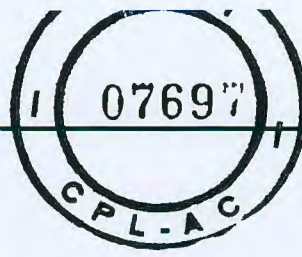
Processador		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a performance solicitada do equipamento .	Resposta	Pontos
SPECint_rate95 igual ou superior a 240	ATENDE	01
SPECfp_rate95 igual ou superior a 250	ATENDE	01

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento .	Resposta	Pontos
Igual ou superior a 1 GByte.	ATENDE	01

Capacidade do Disco Rígido		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento .	Resposta	Pontos
Igual ou superior a 30 GBytes.	ATENDE	01

Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento .	Resposta	Pontos
Fonte de alimentação redundante, hot-swappable.	—	02
Fonte de alimentação redundante.	—	01



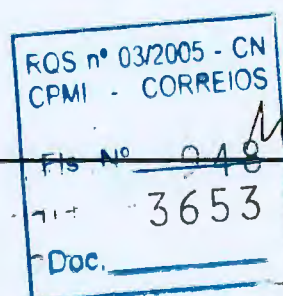
**IBM**

PESO 04

3. QUALIDADE (QD)

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01





4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

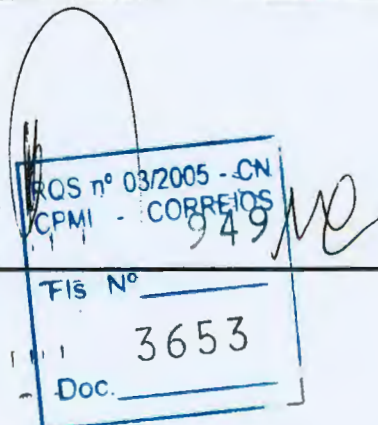
- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento		
Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 02 horas	ATENDE	02

Horário de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	----	01

Central de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:		
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia		
Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:		
O fabricante oferece garantia para o produto por um período de::	Resposta	Pontos
5 (cinco) anos	---	03
4 (quatro) anos	---	02
3 (três) anos	---	01





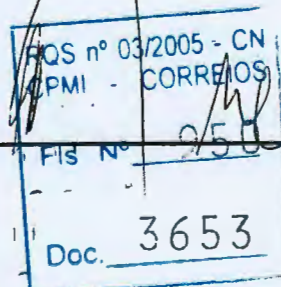
SERVIDOR DE REDE TIPO RISC2: IBM Risc 6000 (Modelo 170)

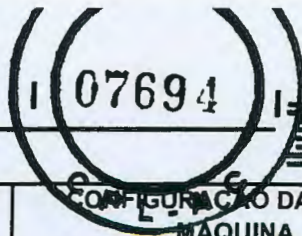
1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a 30 pontos para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
CPU	Processadores RISC, de 64 bits, em número igual ou superior a 1 (um).	Atendemos com 1 processador RISC de 64 bits POWER3-II @ 332 MHz
Memória Cache Instruction - Data (Primary - Secondary)	Mínima instalada de 1,5 MByte por processador.	Atendemos com memória cache instalada L1 de 64 + 32 Kbytes (Instruction + Data) e L2 de 1 MB, no processador
Memória RAM	ECC com capacidade mínima instalada de 512 MBytes expansível até 2 GBytes, "on board", tempo de acesso máximo de 60 ns.	Atendemos com 512 MB de memória ECC, expansível a 2 GB, e tempo de acesso de 10 ns
Performance	SPECint_95 igual ou superior a 12 ou SPECint_rate95 igual ou superior a 80 SPECfp_95 igual ou superior a 20 ou SPECfp_rate95 igual ou superior a 100	Atendemos com SPECint_base95 de 21.6 e SPECfp_base95 de 35.8 para o servidor configurado
Slots	Apresenta no mínimo, após configuração proposta: 02 (dois) slots livres de, no mínimo, 32 bits.	Atendemos com um total de 6 slots PCI (4 32-bit / 2 64-bit) disponíveis sendo 1 ocupado com a controladora de vídeo, 1 ocupado com a controladora SCSI para fita e outros livres.
Fonte de Alimentação Interna	Bivolt, compatível com configuração máxima do equipamento.	Atendemos com fonte de alimentação bivolt Universal 100 - 127 a 200 - 240 V
Controladora e Disco Rígido Interno	Padrão EIDE, SCSI-II ou superior, com capacidade mínima de 9 (nove) GBytes formatado, tempo médio de acesso menor ou igual a 10 ms e taxa de transferência mínima de 16,6 MBytes/seg.	Atendemos com controladora interna padrão Ultra SCSI com taxa de transferência de 40 MB/s. Atendemos com unidade de disco de 9 GB com tempo de acesso médio de 6.7 ms e taxa de transferência de 40 MB/s
Monitor de Vídeo	Policromático, com no mínimo 14", dot-pitch máximo de 0.28 mm., atender às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 100-240 VAC - full-range. Com resolução mínima de 800 x 600.	Atendemos com monitor policromático de 17", com dot-pitch de 0.24 mm, resolução de 1024 x 768 a 85 Hz ou ainda 1600 x 1200 a 75 Hz, seleção automática de tensão entre 90 - 240 V, suporte às normas MPR II e EPA Energy Star
Teclado Alfanumérico	Com mínimo de 101 teclas.	Atendemos com teclado alfanumérico de 103 teclas





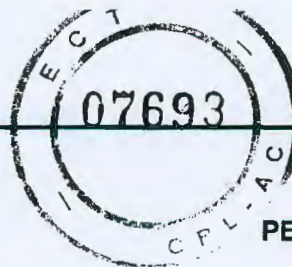
ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Mouse	02 ou 03 teclas com resolução mínima de 320 dpi, mouse-pad e driver de instalação.	Atendemos com mouse de 3 teclas e resolução mínima
Interface Serial	Duas interfaces seriais padrão RS-232C.	Atendemos com 2 interfaces seriais padrão RS-232C
Unidade de CD-ROM	Velocidade mínima 24 X - EIDE, SCSI-II ou superior, instalada e reconhecida pelo S.O. Unix fornecido.	Atendemos com unidade de CD-ROM 32x SCSI-II instalada e reconhecida pelo AIX
Unidade de Fita DLT	Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 35 GBytes, sem compressão, e com taxa de transferência sustentada de 5 MBytes/seg.	Atendemos com unidade de fita padrão DLT com mídias 35 GB sem compressão e taxa de transferência de 5 MB/s
Placa de Rede	01 (uma) placa padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de dupla 10 ou 100 Mbps autosenso ou configurável por software, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.	Atendemos com uma interface de rede Ethernet padrão IEEE 802.3 com porta 100Base-TX RJ-45, autosenso de 10 ou 100 Mbps ou configurável. Atendemos com gerenciamento SNMP compatível com TCP/IP. Atendemos com a documentação de hardware do sistema e a documentação da gerência de rede do AIX
Sistema Operacional	Padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa da ECT, com um mínimo de 3 acessos simultâneos, com capacidade para suportar a Plataforma de Gerenciamento HP Open View - NNM (Network Node Management) na versão 5.0 ou superior e os módulos HP Open View, entregue em mídia CD-ROM com toda documentação e licenças.	Atendemos com o Sistema Operacional AIX, que atende aos padrões Unix, arquitetura de 64 bits e configurado para acesso a rede e 3 acessos simultâneos, mídia, documentação e licenças. Atendemos a compatibilidade com o Software de Gerenciamento HP Openview 5.0

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

ROS nº 03/2005 - CN
CPMI - CORREIOS
Fis. Nº 51
Doc. 3653

**IBM****2. DESEMPENHO (DE)****PESO 06**

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

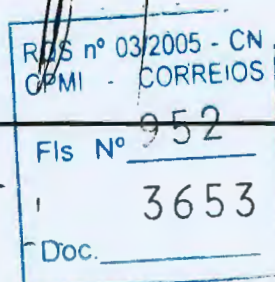
- Processador;
- Performance;
- Memória RAM;
- Capacidade de Disco Rígido;
- Fonte de alimentação redundante.

Performance		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a performance solicitada do equipamento.	Resposta	Pontos
SPECint_95 igual ou superior a 19 ou SPECint_rate95 igual ou superior a 92.	ATENDE	01
SPECfp_95 igual ou superior a 27 ou SPECfp_rate95 igual ou superior a 115.	ATENDE	01

Memória RAM		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual ou superior a 1 GByte.	—	01

Capacidade do Disco Rígido		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade do disco rígido do equipamento.	Resposta	Pontos
Igual ou superior a 10 GBytes.	—	01

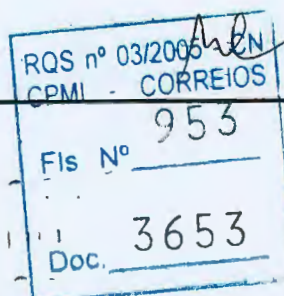
Fonte de Alimentação Redundante (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação redundante, hot-swappable.	—	02
Fonte de alimentação redundante.	—	01

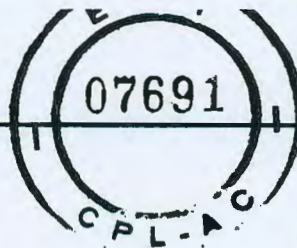


**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



**IBM****4. SUPORTE DE SERVIÇOS (SS)****PESO 06**

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 02 horas	ATENDE	02

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:

Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:

O fabricante oferece garantia para o produto por um período de::	Resposta	Pontos
5 (cinco) anos	—	03
4 (quatro) anos	—	02
3 (três) anos	—	01

RQS nº 03/2005 - CN
CPMI - CORREIOS

Fis. Nº 954

3653

Doc.

**IBM****SERVIDOR DE APLICAÇÃO TIPO RISC3: IBM Risc 6000 (Modelo S80)****1. PADRONIZAÇÃO (PZ)****PESO 05**

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a **30 pontos** para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
CPU	Processadores RISC, de 64 bits, em número ^(*) igual ou superior a 2 (dois) processadores.	Atendemos com 6 processador RISC de 64 bits PowerPC RS64-III @ 450MHz
Memória Cache Instruction - Data (Primary - Secondary)	Mínima instalada de 1,5 MByte por processador.	Atendemos com memória cache instalada L1 de 64 + 64 Kbytes (Instruction + Data) e L2 de 8 MB por processador
Memória RAM	ECC com capacidade mínima instalada de 4 (quatro) GBytes expansível a pelo menos 16 (dezesesseis) GBytes, "on board", tempo de acesso máximo de 60 ns.	Atendemos com 4 GB de memória ECC, expansível a 64 GB, e tempo de acesso de 10 ns
Performance	TpmC igual ou superior a 21.000, expansível a pelo menos 32.000 auditados segundo o TPC-C, cujos resultados deverão estar publicados no site www.tpc.org na Internet, ou estimado ^(*) com base em valor auditado por uma configuração diferente da cotada, porém da mesma família de equipamentos do mesmo fabricante.	Atendemos baseando-se na performance auditada de 135.815 tpmC (www.tpc.org) : resulta em uma performance estimada de 33.953,75 tpmC
Suporte à Arquitetura	SMP - Symetric Multi Processing.	Atendemos com arquitetura de servidor e o sistema operacional AIX com kernel SMP
Slots	No mínimo 06 (seis) slots livres, após montada configuração proposta, de pelo menos 32 bits. Entendo-se cada "slot" livre como sendo uma interface de I/O disponível.	Atendemos com um total de 14 slots sendo 2 para interfaces Ultra SCSI de mídia interna, 1 para interface de rede, 1 para controladora gráfica, 1 para controladora de disk array, 1 para controladora da unidade de fita externa e 1 para Service Processor, totalizando 7 slots livres para expansão
Fonte de Alimentação Interna	Bivolt, ou com transformador 220V/110V, compatível com configuração máxima do equipamento, redundante.	Atendemos com fonte de alimentação 220 V e possibilidade de uso de transformador para 110 V

RQS nº 03/2005 - CN
CPMI - CORREIOS

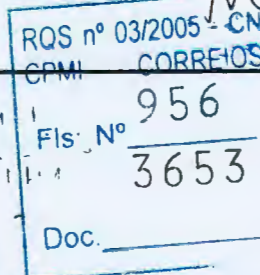
Fis Nº 55

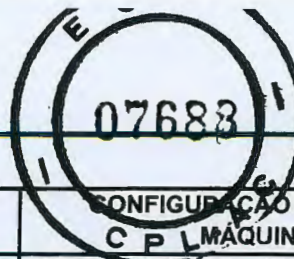
3653

-Doc.

**IBM**

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA C PMAQUINA
Controladora e Disco Rígido Interno	Wide Ultra SCSI ou superior, com capacidade mínima de 18 (dezoito) Gbytes (em duas unidades de igual capacidade), formatados, espelhados, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 7.200 RPM.	Atendemos com controladora interna padrão Ultra Wide SCSI com taxa de transferência de 40 MB/s. Atendemos com 2 unidades de disco de 9 GB com rotação de 7.200 RPM, hot-swappable e tempo médio de acesso de 6.7 ms
Controladora de Array e Array de Discos	Wide Ultra SCSI ou superior, que suporte pelo menos RAID 0 e 5, por hardware, com capacidade mínima de 18 GB cada, totalizando 108 (cento e oito) GBytes formatados, líquidos, com tempo médio de acesso igual ou inferior a 9 ms, rotação mínima de 10.000 RPM, "hot-swappable" e com "Hot Spair".	Atendemos com controladora SSA, implementando padrão SCSI-3, com suporte em hardware a RAID one-initiator 0, 0+1 e 5, two-initiator 1, 0 + 1 e 5. Discos de 18.2 GB a 10.002 RPM com tempo médio de acesso de 6.5 ms e hot-swappable. Suporte a disco Hot-Spare no loop
Monitor de Vídeo	Policromático, com no mínimo 14", dot-pitch máximo de 0.28 mm., atender às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 100-240 VAC - full-range. Com resolução mínima de 800 x 600.	Atendemos com monitor policromático de 17", com dot-pitch de 0.24 mm, resolução de 1024 x 768 a 85 Hz ou ainda 1600 x 1200 a 75 Hz, seleção automática de tensão entre 90 - 240 V, suporte às normas MPR II e EPA Energy Star
Placa de Vídeo	Gráfica com pelo menos 2 MB de memória.	Atendemos com a controladora gráfica GXT130P com 2 MB de memória
Teclado Alfanumérico	Com mínimo de 101 teclas.	Atendemos com teclado alfanumérico de 103 teclas
Mouse	02 ou 03 teclas com resolução mínima de 320 dpi, mouse-pad e driver de instalação.	Atendemos com mouse de 3 teclas e resolução mínima
Interface Serial	Duas interfaces seriais padrão RS-232C.	Atendemos com 2 interfaces seriais padrão RS-232C
Unidade de CD-ROM	Velocidade mínima 32X - SCSI-2 ou superior, instalada e reconhecida pelo S.O. Unix fornecido.	Atendemos com unidade de CD-ROM 32x SCSI-II instalada e reconhecida pelo AIX
Unidade de Fita DLT	Uma unidade de fita padrão DLT para utilização de mídias com capacidade de 35 GBytes, sem compressão, e com taxa de transferência sustentada de 5 MBytes/seg. Deverá existir uma controladora ou um canal de I/O exclusivo para a unidade DLT, ou, no máximo, esta poderá compartilhar o mesmo canal de I/O com a unidade de CR-ROM.	Atendemos com unidade de fita padrão DLT com mídias 35 GB sem compressão e taxa de transferência de 5 MB/s. Atendemos com controladora Ultra SCSI Diferencial exclusiva para acesso ao dispositivo.



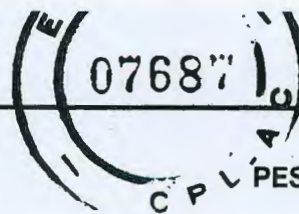


ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA C P L MÁQUINA
Placa de Rede	01 (uma) placa padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de dupla 10 ou 100 Mbps autossense ou configurável por software, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.	Atendemos com uma interface de rede Ethernet padrão IEEE 802.3 com porta 100Base-TX RJ-45, autossense de 10 ou 100 Mbps ou configurável. Atendemos com gerenciamento SNMP compatível com TCP/IP. Atendemos com a documentação de hardware do sistema e a documentação da gerência de rede do AIX
Sistema Operacional	Padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa dos Correios - CorreiosNet, com número ilimitado de usuários simultâneos entregues em mídia CD-ROM com toda documentação e licenças. Deve ter capacidade para suportar a Plataforma de Gerenciamento HP Open View - NNM (Network Node Management) na versão 5.0 ou superior, os módulos HP OpenView. Deve também ter capacidade para suportar o Maestro Tivoli e compatível com a Solução Integrada de Gestão Empresarial dos Correios.	Atendemos com o Sistema Operacional AIX, que atende aos padrões Unix, arquitetura de 64 bits e configurado para acesso a rede e 3 acessos simultâneos, mídia, documentação e licenças. Atendemos a compatibilidade com o Software de Gerenciamento HP Openview 5.0

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

**IBM****2. DESEMPENHO (DE)**

PESO 06

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Escalabilidade de Performance Auditada ou estimada, com base em equipamento auditado da mesma família;
- Performance Auditada ou estimada, com base em equipamento auditado da mesma família;
- Memória RAM;
- Memória Cache;
- Expansibilidade de memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco; e
- Fonte de Alimentação Interna "Hot-swappable".

Escalabilidade de Performance Auditada ou Estimada

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à capacidade máxima de performance atingida pelo equipamento.</i>	Resposta	Pontos
TpmC igual ou superior a 50000	ATENDE	03
TpmC igual ou superior a 40000	—	02
TpmC igual ou superior a 35000	—	01

Performance Auditada ou Estimada

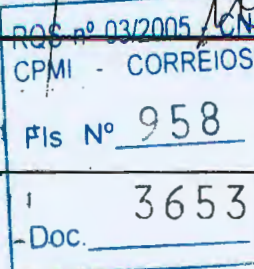
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento.</i>	Resposta	Pontos
TpmC igual ou superior a 28000	ATENDE	03
TpmC igual ou superior a 24500	—	02
TpmC igual ou superior a 22000	—	01

Memória RAM

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória RAM instalada equipamento.</i>	Resposta	Pontos
Igual ou superior a 8 GByte.	—	02
Igual a 6 GBytes	—	01

Memória Cache

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória cache por processador do equipamento.</i>	Resposta	Pontos
8 MBytes por processador.	ATENDE	03
4 MBytes por processador	—	02
2 MBytes por processador	—	01



**IBM****Expansibilidade de Memória RAM**

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a **capacidade de expansão de memória RAM** do equipamento.

Acima de 16 GBytes

Resposta

ATENDE

Pontos

01

Disco Interno e Controladora de disco SCSI

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a **Disco interno e controladora de disco SCSI** do equipamento.

RAID 1 por Hardware para controladora SCSI (Discos Interno)

Resposta

—

Pontos

02

Controladora de Array de Disco

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a **controladora de Array de disco** do equipamento.

RAID 1 por Hardware para controladora de Array de Disco

Resposta

ATENDE

Pontos

02

**Fonte de Alimentação Interna "Hot-swappable"
(que suporte a configuração máxima do equipamento)**

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à **Fonte de Alimentação Interna** do equipamento.

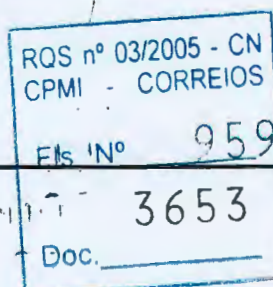
Fonte "Hot-swappable".

Resposta

ATENDE

Pontos

01

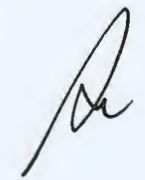




3. QUALIDADE (QD)

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01



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4. SUPORTE DE SERVIÇOS (SS)

PESO 06

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

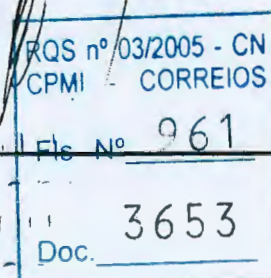
- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

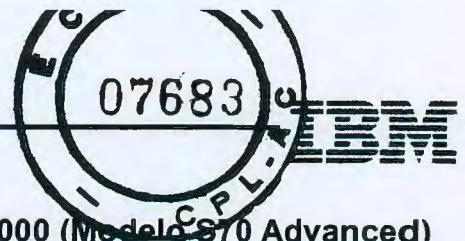
Prazo de Atendimento		
Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 02 horas	ATENDE	02

Horário de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral - 24 horas / 7 dias por semana	ATENDE	02
Horário semi-integral - 24 horas (de 2ª a 6ª feira)	—	01

Central de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:		
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software	ATENDE	01

Duração da Garantia		
Assinalar com a palavra "Atende" a opção correspondente à duração da garantia dada pelo fabricante para o equipamento cotado:		
O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
5 (cinco) anos	—	03
4 (quatro) anos	—	02
3 (três) anos	—	01





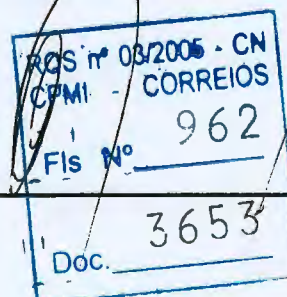
SERVIDOR DE APLICAÇÃO TIPO RISC4: IBM Risc 6000 (Modelo S70 Advanced)

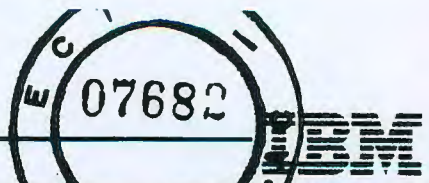
1. PADRONIZAÇÃO (PZ)

PESO 05

O atendimento pleno dos atributos abaixo relacionados na configuração mínima exigida fará jus a 30 pontos para o fator PADRONIZAÇÃO (PZ).

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
CPU	Processadores RISC, de 64 bits, em número (*) igual ou superior a 2 (dois).	Atendemos com 4 processador RISC de 64 bits PowerPC RS64-II @ 262 MHz
Performance	TpmC igual ou superior a 8.000, expansível a pelo menos 24.000 auditados segundo o TPC-C, cujos resultados deverão estar publicados no site www.tpc.org na Internet, ou estimado (*) com base em valor auditado por uma configuração diferente da cotada, porém da mesma família de equipamentos do mesmo fabricante.	Atendemos baseando-se na performance auditada de 34.139 tpmC (www.tpc.org) : resulta em uma performance estimada de 11.379,67 tpmC
Memória Cache Instruction - Data (Primary - Secondary)	Mínima instalada de 1,5 MByte por processador.	Atendemos com memória cache instalada L1 de 64 + 64 Kbytes (Instruction + Data) e L2 de 8 MB por processador
Memória RAM	ECC com capacidade mínima instalada de 2 (dois) GBytes expansível a pelo menos 8 (oito) GBytes, "on board", tempo de acesso máximo de 60 ns.	Atendemos com 2 GB de memória ECC, expansível a 34 GB, e tempo de acesso de 10 ns
Suporte à Arquitetura	SMP - Symetric Multi Processing.	Atendemos com arquitetura de servidor e o sistema operacional AIX com kernel SMP
Slots	No mínimo 02 (dois) slots livres, após montada a configuração proposta, de pelo menos 32 bits.	Atendemos com um total de 14 slots sendo 2 para interfaces Ultra SCSI de mídia interna, 1 para interface de rede, 1 para controladora gráfica e 1 para Service Processor
Fonte de Alimentação Interna	Bivolt, ou com transformador 220V/110V, compatível com configuração máxima do equipamento.	Atendemos com fonte de alimentação 220 V e possibilidade de uso de transformador para 110 V
Controladora e Disco Rígido Interno	Wide Ultra SCSI ou superior, com capacidade mínima de 18 (dezoito) Gbytes (em duas unidades de igual capacidade), formatados, espelhados, com tempo médio de acesso menor ou igual a 9 ms e rotação mínima de 7.200 RPM.	Atendemos com controladora interna padrão Ultra Wide SCSI com taxa de transferência de 40 MB/s. Atendemos com unidades de disco de 9 GB com rotação de 7.200 RPM, hot-swappable e tempo médio de acesso de 6.7 ms
Monitor de Vídeo	Policromático, com no mínimo 14", dot-pitch máximo de 0.28 mm., atender às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 100-240 VAC - full-range. Com resolução mínima de 800 x 600	Atendemos com monitor policromático de 17", com dot-pitch de 0.24 mm, resolução de 1024 x 768 a 85 Hz ou ainda 1600 x 1200 a 75 Hz, seleção automática de tensão entre 90 - 240 V, suporte às normas MPR II e EPA Energy Star



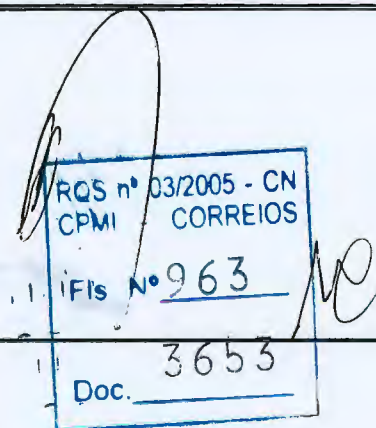


ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA	CONFIGURAÇÃO DA NOSSA MÁQUINA
Placa de Vídeo	Gráfica com pelo menos 2 MB de memória.	Atendemos com a controladora gráfica GXT130P com 2 MB de memória
Teclado Alfanumérico	Com mínimo de 101 teclas.	Atendemos com teclado alfanumérico de 103 teclas
Mouse	02 ou 03 teclas com resolução mínima de 320 dpi, mouse-pad e driver de instalação.	Atendemos com mouse de 3 teclas e resolução mínima
Interface Serial	Duas interfaces seriais padrão RS-232C.	Atendemos com 2 interfaces seriais padrão RS-232C
Unidade de CD-ROM	Velocidade mínima 32X - SCSI-2 ou superior, instalada e reconhecida pelo S.O. Unix fornecido.	Atendemos com unidade de CD-ROM 32x SCSI-II instalada e reconhecida pelo AIX
Unidade de Fita DAT	Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 12 GBytes, sem compressão. Deverá existir uma controladora ou um canal de I/O exclusivo para a unidade DLT, ou, no máximo, esta poderá compartilhar o mesmo canal de I/O com a unidade de CR-ROM.	Atendemos com unidade de fita padrão DAT DDS-3 com 12 / 24 GB sem compressão e taxa de transferência de 5 MB/s. Atendemos com controladora Ultra SCSI compartilhando acesso ao dispositivo de CD-ROM.
Placa de Rede	01 (uma) placa padrão Ethernet de 32 bits - IEEE 802.3 - CSMA/CD com driver para Unix, saída 100Base-TX (RJ-45), velocidade de dupla 10 ou 100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, compatível com TCP/IP, acompanhada dos respectivos manuais de documentação.	Atendemos com uma interface de rede Ethernet padrão IEEE 802.3 com porta 100Base-TX RJ-45, autosense de 10 ou 100 Mbps ou configurável. Atendemos com gerenciamento SNMP compatível com TCP/IP. Atendemos com a documentação de hardware do sistema e a documentação da gerência de rede do AIX
Sistema Operacional	Padrão Unix, 64 bits, instalado e configurado para Rede Local e Corporativa da ECT, com número ilimitado de usuários simultâneos.	Atendemos com o Sistema Operacional AIX, que atende aos padrões Unix, arquitetura de 64 bits e configurado para acesso a rede e 3 acessos simultâneos, mídia, documentação e licenças. Atendemos a compatibilidade com o Software de Gerenciamento HP Openview 5.0

A empresa IBM BRASIL - Indústria, Máquinas e Serviços Ltda. declara que:

(x) Atende () Não Atende

plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



**IBM****2. DESEMPENHO (DE)****PESO 06**

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais:

- Performance Auditada ou estimada, com base em equipamento auditado da mesma família;
- Memória RAM;
- Memória Cache;
- Expansibilidade de memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Fonte de Alimentação Interna "Hot-swappable".

Performance Auditada ou Estimada

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à performance solicitada do equipamento.</i>	Resposta	Pontos
TpmC igual ou superior a 13000	___	03
TpmC igual ou superior a 10000	ATENDE	02
TpmC igual ou superior a 8500	___	01

Memória RAM

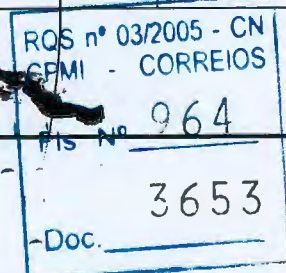
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória RAM instalada do equipamento.</i>	Resposta	Pontos
Igual ou superior a 6 GByte.	___	04
Igual ou superior a 4 GBytes	___	02

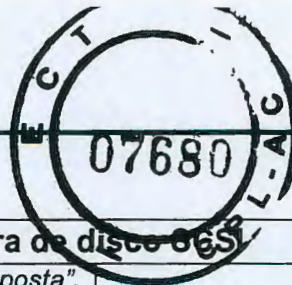
Memória Cache

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória cache por processador do equipamento.</i>	Resposta	Pontos
8 MBytes por processador.	ATENDE	03
4 MBytes por processador	___	02
2 MBytes por processador	___	01

Expansibilidade de Memória RAM

<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a capacidade de expansão de memória RAM do equipamento.</i>	Resposta	Pontos
Acima de 8 GBytes	ATENDE	01



**IBM****Disco Interno e Controladora de disco SCSI**

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente a **Disco interno e controladora de disco SCSI** do equipamento.

Resposta**Pontos**

RAID 1 por Hardware para controladora SCSI (Discos Interno)

02

**Fonte de Alimentação Interna "Hot-swappable"
(que suporte a configuração máxima do equipamento)**

Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à **Fonte de alimentação interna do equipamento**.

Resposta**Pontos**

Fonte "Hot-swappable".

ATENDE

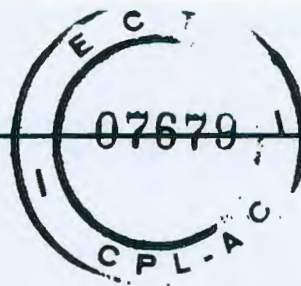
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Fls Nº 965

3653

Doc.

**IBM****3. QUALIDADE (QD)****PESO 04**

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO9002 referente a serviços de suporte de hardware e software	ATENDE	01

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IFIs Nº 966

Doc. 3653

**IBM**

PESO 06

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.

Prazo de Atendimento

Assinalar com a palavra "Atende" a opção correspondente ao **prazo máximo de atendimento ao equipamento cotado**:

Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:

Até 02 horas

Resposta**Pontos**

ATENDE

02

Horário de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente ao **horário de atendimento às chamadas referentes ao equipamento cotado**:

Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:

Horário integral - 24 horas / 7 dias por semana

Horário semi-integral - 24 horas (de 2ª a 6ª feira)

Resposta**Pontos**

ATENDE

02

01

Central de Atendimento e Suporte

Assinalar com a palavra "Atende" a opção correspondente às **facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado**:

Está disponível, para o atendimento aos chamados:

(0800) para hardware e software

Resposta**Pontos
(cumulativos)**

ATENDE

01

Duração da Garantia

Assinalar com a palavra "Atende" a opção correspondente à **duração da garantia dada pelo fabricante para o equipamento cotado**:

O fabricante oferece garantia para o produto por um período de::

5 (cinco) anos

4 (quatro) anos

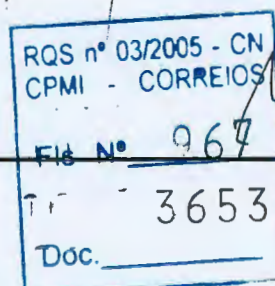
3 (três) anos

Resposta**Pontos**

03

02

01





IBM

ANEXO II

LOCAL DE ENTREGA DOS EQUIPAMENTOS

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Doc. 3653

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**IBM**

Endereços dos Almojarifados das Diretorias Regionais

Obs: Os equipamentos destinados à AC - Administração Central serão entregues no Almojarifado da DR/BSB

DR/AL - Rod. BR 101 Lote. 8 Q. A Conj. Santos Dumont
Tabuleiro dos Martins
57080-000 - Maceió - AL
CNPJ : 34.038.316/0004-56
Insc. Est. : 240.002.223-8

DR/AM - Rua André Araújo, 82 - Aleixo
69060-000 - Manaus - AM
57080-000 - Maceió - AL
CNPJ: 34.028.316/0003-75
Insc. Est. : 04.175.363-1

DR/BA - BR 324, Rod. Km 06 - Rod. Salvador - Feira de Santana
41275-120 - Salvador - BA
CNPJ: 34.028.316/0005-37
Insc. Est. : 00.901.190

DR/BSB - SBN Quadra 01 Ed. Sede da ECT - 4º subsolo
70002-900 - Brasília - DF
CNPJ: 34.028.316/0007-07
Insc. Est. : 07.333.821/002-05

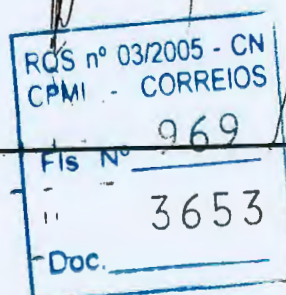
DR/CE - Av. Almirante Tamandaré, 75
60060-200 - Fortaleza - CE
CNPJ: 34.028.316/0010-02
Insc. Est. : 06.842.096-0

DR/ES - R. Dona Maria Rosa, 425 - Bairro Santa Luzia
29045-110 - Vitória - ES
CNPJ: 34.028.316/0012-66
Insc. Est. : 08.025.225-7

DR/GT - Av. T-1 1005 - Setor Bueno
74210-020 - Goiânia - GO
CNPJ: 34.028.316/0013-47
Insc. Est. : 10.054.877-6

DR/MA - R. São Pantaleão, 999, Centro
65015-560 - São Luiz - MA
CNPJ: 34.028.316/0034-71
Insc. Est. : 120.740.729

DR/MG - Av. Izabel Bueno, 442 - Jaraguá
31270-900 - Belo Horizonte - MG
CNPJ: 34.028.316/0015-09
Insc. Est. : 062.014.462-0013



**IBM**

- DR/MT** - Av. Dom Orlando Chaves, 1087 - Cristo Rei
78115-800 - Várzea Grande - MT
CNPJ: 34.028.316/0016-90
Insc. Est. : 13.072.481-5
- DR/MS** - Av. Coronel Antonino, 2530 - Bairro Cel. Antonino
79023-000 - Campo Grande - MS
CNPJ: 34.028.316/0009-60
Insc. Est. : 28.079.808-3
- DR/NO (ACRE e RONDÔNIA)**
Av. Costa e Silva, 2.137 - Bairro São Sebastião
78903-900 - Porto Velho - GO
CNPJ: 34.028.316/0027-42
Insc. Est. : 10.102.819-3
- DR/PA** - Av. Pedro Álvares Cabral, 1240 - Marambaia
66050-040 - Belém - PA
CNPJ: 34.028.326/0018-51
Insc. Est. : 15.063.283-5
- DR/PB** - R. Cel Estevão D'avila Lins, 405 - Cruz das Armas
58085-010 - João Pessoa - PB
CNPJ: 34.028.316/0019-32
Insc. Est. : 16.074.550-0
- DR/PE** - R. São Mateus, 891 - Monsenhor Fabrício
50680-000 - Recife - PE
CNPJ: 34.028.316/0021-57
Insc. Est. : 18.100.100.143-605
- DR/PI** - R. Santa Luzia, 3160 - Ilhota
64001-800 - Teresina - PI
CNPJ: 34.038.316/0022-38
Insc. Est. : 19.301.813-6
- DR/PR** - R. Bom Jesus do Iguapé, 2865 - Boqueirão
81650 - 030 - Curitiba - PR
CNPJ: 34.028.316/0020-76
Insc. Est. : 10.120.9-72D
- DR/RJ** - R. Leopoldo Bulhões, 530 Fundos - Benfica
20911-300 - Rio de Janeiro - RJ
CNPJ: 34.028.316/0002-94
Insc. Est. : 20.053.094-1
- DR/RN** - R. Cel. Norton Chaves, 1859 - Lagoa Nova
59075-200 - Natal - RN
CNPJ: 34.028.316/0025-80
Insc. Est. : 20.053.094-1

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DR/RS - Av. Sertório, 4.222 - Vila Sesi
91040-620 - Porto Alegre - RS
CNPJ: 34.028.316/0026-61
Insc. Est. : 969.004.443

DR/SC - Av. Leoberto Leal, 975 - Barreiros
88110-000 - São José - SC
CNPJ: 34.028.316/0028-3
Insc. Est. : 250.254-700

DR/SE - R. Acre, 1084 - Bairro Siqueira Campos
49095-010 - Aracaju - SE
CNPJ: 34.028.316/0032-00
Insc. Est. : 27.051.097-4

DR/SPM - Av. Bandeirantes do Sul, 311 - Vila Mariana
Km 1,5 da Via Dutra
CNPJ: 34.028.316/0031-29
Insc. Est. : 11.238.885.311-9

DR/SPI - R. Benedito Eleutério, 5 - 79 - Vila Falção
17050-370 - Bauru - SP
CNPJ: 34.028.316/
Insc. Est.

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Locais de Entrega Interna

Obs: Após o recebimento pelo Almojarifado os equipamentos serão destinados à GPLAT, DESIT, GESIT's e GETEC's.

LOCAL	ENDEREÇO	BAIRRO	CIDADE	UF
AC	SBN Q. 1 Conj. 3 Bloco A - 2º Subsolo		Brasília	DF
AL	R. do Sol, 57 - sala 213 - 2º Andar	Centro	Maceió	AL
AM	Praça Antônio Bittencourt, 90		Manaus	AM
BA	Av. Paulo VI, 190 - 5º Andar	Pitaba	Salvador	BA
BSB	SBN Q. 1 Conj. 3 Bloco A - 2º Subsolo		Brasília	DF
CE	R. Sem. Alencar, 38 - Sala 307	Centro	Fortaleza	CE
ES	Av. Leitão da Silva, 2730	Santa Luzia	Vitória	ES
GT	Praça Cívica, 11 - 2º Andar	Centro	Goiânia	GO
MA	Praça João Lisboa, 292 - Sala 306	Centro	São Luís	MA
MG	Av. Afonso Pena, 1270 - 1º Andar	Centro	Belo Horizonte	MG
MS	Av. Vasconcelos Fernandes, 164		Campo Grande	MS
MT	Av. Dom Orlando Chaves, 1250	Cristo Rei	Várzea Grande	MT
NO	Av. Costa e Silva, 2137		Porto Velho	RO
PA	Av. Presidente Vargas, 498 - 4º Andar		Belém	PA
PB	Praça Pedro Américo, 70	Centro	João Pessoa	PB
PE	Av. Guararapes, 250 - Sala 305	Centro	Recife	PE
PI	Av. Antônio Freire, 1407	Centro	Teresina	PI
PR	R. XV de Novembro, 700 - 1º Andar		Curitiba	PR
RJ	Av. Pres. Vargas, 3.077 - 4º Andar	Cidade Nova	Rio de Janeiro	RJ
RN	Av. Engº Hildebrando de Góis, 221	Ribeira	Natal	RN
RS	R. Siqueira Campos, 1100 - Sala 314		Porto Alegre	RS
SC	Praça XV de Novembro, 242	Centro	Florianópolis	SC
SE	Rua Laranjeiras, 229	Centro	Aracaju	SE
SPM	R. Mergenthaler, 592 - BL 2 - 7º Andar	V. Leopoldina	São Paulo	SP
SPI	Pça. D. Pedro II, 4-55 - 3º Andar	Centro	Bauru	SP

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ANEXO III

RELAÇÃO DE REDE CREDENCIADA DE ASSISTÊNCIA TÉCNICA / ESTABELECIMENTOS IBM BRASIL



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RELAÇÃO DOS ESTABELECIMENTOS DA IBM BRASIL

➤ BELÉM

ENDEREÇO: Av Governador Jose Malcher, 815 - Térreo, loja 14
Edifício Palladium Center - Bairro: Nazaré
Belém - Pará
CEP:66055-260
TEL: (91) 216-5099
Contato: Jones dos Reis Andrade



➤ MINAS GERAIS

ENDEREÇO: Av. Alvares Cabral, 1741 - 2o andar
Bairro:Santo Agostinho
BELO HORIZONTE - Minas Gerais
CEP:30170-001
TEL: (31) 339-5000
Contato: Pedro Eustáquio Leite

ENDEREÇO: Praça Primeiro de Maio, 09
Bairro Centro Norte - Timóteo - MG
CEP:35180-000
TEL: (31) 849-1033
Contato: Pedro Eustáquio Leite

➤ BRASÍLIA

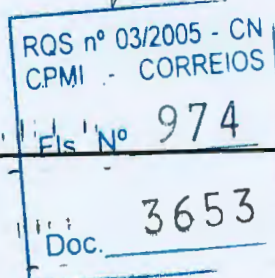
ENDEREÇO: SCN - QUADRA 4 - BLOCO B - Torre A - SALAS 201 e 701
CENTRO EMPRESARIAL VARIG - BRASÍLIA - DF
CEP:70710-500
TEL: (61) 329-2800
Contato: Jairo Rodrigues Pereira

➤ CAMPINAS

ENDEREÇO: Rodovia SP-101
Trecho Campinas-Monte Mor Km 9 s/No
Hortolândia - São Paulo
CEP:13185-900
TEL: (19) 887-7000
Contato: Irineu Godoy

➤ PARANÁ

ENDEREÇO: Av. Mal Deodoro, 717 - 9º e 10º andar
CURITIBA - Paraná
CEP:80020-320
TEL: (41) 320-4800
Contato: José Milanez



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➤ **SANTA CATARINA**

ENDEREÇO: Rua Adolfo Melo, 35
1º andar, Salas 101/102 - Centro
FLORIANÓPOLIS - Santa Catarina
CEP:88015-090
TEL: (48) 224-9353
Contato: João Batista Nóbrega

➤ **CEARÁ**

ENDEREÇO: Av. Heráclito Graça, 406
FORTALEZA - Ceará
CEP:60140-060
TEL: (85) 211-5322
Contato: Luis Carlos Passold

➤ **GOIÁS**

ENDEREÇO: Av. República do Líbano 1875, 1º andar
Edifício Vera Lúcia - Setor Oeste
Goiânia - Goiás
CEP:74115-030
TEL: (62) 225-9766
Contato: Edno Ferreira dos Santos

➤ **AMAZONAS**

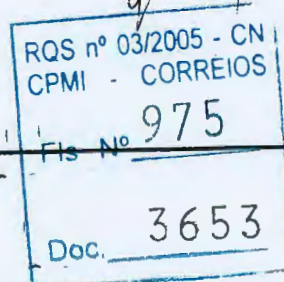
ENDEREÇO: Rua Donizete Gondim, 845
Térreo - 2º./3º. andar
MANAUS - Amazonas
CEP:69068-000

TEL: (92) 613-2122
Contato: Mauro de Oliveira Reis

➤ **RIO DE JANEIRO**

ENDEREÇO: Av. Pasteur, 138/146
Botafogo - Rio de Janeiro - RJ
CEP:22296-900 (Exclusivo do prédio)
22290-240 (Av. Pasteur)
TEL: (21) 546-5252
Contato: Sandro Howard

ENDEREÇO: Av Presidente Vargas 824/844, andares 3º, 5º, 6º e 13º
Centro - Rio de Janeiro/RJ
CEP:20071-001
TEL: (21) 849-2000
Contato: Sandro Howard



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➤ **RIO GRANDE DO SUL**

ENDEREÇO: Rua Washington Luiz 820 - 4º, 5º andares e sala 603
PORTO ALEGRE - Rio Grande do Sul
CEP:90010-460
TEL: (51) 216-5800 (central)
Contato: Almir Romboli Tavares

➤ **PERNAMBUCO**

ENDEREÇO: Av. Agamenon Magalhães, 1160 - 2º andar
Bairro: Gragas - Recife - Pernambuco
CEP:52030-210
TEL: (81) 216-5233
Contato: Francisco Edmilson Costa

➤ **BAHIA**

ENDEREÇO: Av. Antônio Carlos Magalhães, 3840/1º Andar
Módulo A - Edifício Capemi - Pituba - Salvador - BA
CEP:41820-000
TEL: (71) 352-3355
Contato: Clécio de Lima Freire

➤ **SÃO PAULO**

ENDEREÇO: Rua Tutóia, 1157
São Paulo - SP
CEP:04007-900
TEL: (011) 3050-3122
Contato: Ricardo Zimmermann

➤ **ESPÍRITO SANTO**

ENDEREÇO: Av. Nossa Senhora da Penha, 1255 - salas 101 e 102
Bairro Santa Lúcia - CEP 29055-131
Vitória - Espírito Santo
TEL: (027) 325-0699
Contato: Lauro Ribas Vianna

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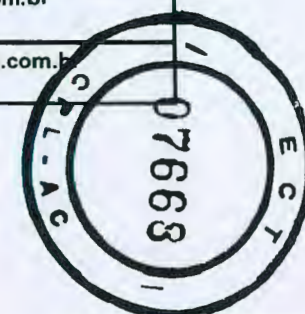
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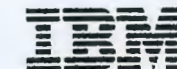
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NFant	Ender	Bairro	Cidade	UF	CEP	Fone	Ger	Internet
ACAO PR	AV SENADOR SOUZA NAVES 143-3?	CRISTO REI	CURITIBA	PR	80050-040	(041) 264-4633	NUBIA CRISTINA DA SILVA	acaopr@avalon.sul.com.br / nubia@avalon.sul.com.br
ACAO RS	RUA EUDORO BERLINK 667	AUXILIADORA	PORTO ALEGRE	RS	90450-030	(051) 333-0000	RONALDO C. PEREIRA	acaoinfo@via-rs.com.br / ronaldo@acao.com.br
ACAO SC	RUA GENERAL VALGAS NEVES, 146	ATIRADORES	JOINVILE	SC	89201-540	(047) 422-5282	LILIAN G. VEGA	lilian.vega@compushop.com.br
ALFATEK	RUA ALVARO CHAVES, 320	FLORESTA	PORTO ALEGRE	RS	90320-040	(051) 222-3355	JOÃO BATISTA FERREIRA DA SILVA	alfatek@zazcom.br/loja@zaz.com.br
ARIA	AV.RIO BRANCO,840 7 ANDAR 702	SAO PELEGRINO	CAXIAS DO SUL	RS	95010-060	(054) 226-3033	ARLI SILVEIRA DE OLI	aria@nutecnet.com.br
ASD	RUA CONDE DE IRAJA, 296	TORRE	RECIFE	PE	50710-310	(081) 445-5400	ANDRE LUIS DOS SANTOS	andre_luiz@asdinformatica.com.br / asd@truenet....
ASSISTE	RUA 148, 222 QUADRA 65 LOTE 26	SETOR MARISTA	GOIANIA	GO	74170-110	(062) 215-4455	WALTER RODRIGUES	assiste@netgo.com.br
ASSISTEC	RUA JOAO RAMALHO, 825- CJ 14	CENTRO	SAO VICENTE	SP	11310-050	(013) 468-9025	EDUARDO FERNANDES	assistecinf@svc.sol.com.br
ASSISTENCE	AV. CELSO GARCIA CID, 2120	JD AEROPORTO	LONDRINA	PR	86039-630	(043) 321-3082	JORGE L BRANTEGANI	assistance@inbrapenet.com.br
ASTEC	RUA MIN SALGADO FILHO, 60	FAROL	MACEIO	AL	57050-140	(082) 326-6074	JOSE GENESIO	asd@sunnet.com.br
AT	AV. CONS. AGUIAR 1360 LOJA 30	BOA VIAGEM	RECIFE	PE	51011-030	(081) 466-1513	SERGIO DA SILVA LEAL	atmicro@hotlink.com.br
AUDIO DATA	RUA: FRANCISCA COSTA CUNHA D TITA, 617 1ANDAR	SETOR AEROPORTO	GOIANIA	GO	74075-300	(062) 225-0169	ISALTINO JOSE ANDRADE JUNIOR	audiodat@international.com.br
AXCEL	AV MARCOLINO M CABRAL, 1593	CENTRO	TUBARAO	SC	88705-001	(048) 626-0276	REGINALDO S LARROIDE	axcel@matrix.com.br
AXELL	RUA ASTORGA, 40	ILHA DO RETIRO	RECIFE	PE	50750-350	(081) 445-2111	SENIO G DA SILVA JR	axell@elogica.com.br
AXELL- PA	TV 3 DE MAIO, 1474	SAO BRAS	BELEM	PA	66063-390	(091) 249-7722	MAURO KAWAGUCHI	axell@amazonline.com.br
AZ MS	AV MATO GROSSO, 2170	VILA SAO ELIAS	CAMPO GRANDE	MS	79020-201	(067) 725-2766	MARLON F GONCALVES	fmarlon@azi.com.br
BETTA SERV	RUA FLORIANO PEIXOTO, 1112 FUN	CENTRO	FRANCA	SP	14400-760	(016) 723-6555	MUNIR BUCHALLA	betta.frc@netsite.com.br
BEVORELI	ROD TANCREDO NEVES, 2500	JD BELVEDERE	VOLTA REDONDA	RJ	27253-090	(024) 348-1100	LIGIANE JACONNE	at@bevoreli.com.br
BIG SMALL	AV JOSE RODRIGUES PRADO, 312 A	SANTA ROSA	CUIABA	MT	78040-000	(065) 626-3482	GILSON A BARBOSA	bigsmall@zaz.com.br
BRASCIN	RUA GAMA CERQUEIRA, 486	CAMBUCI	SAO PAULO	SP	01539-010	(011) 3277-5600	RICARDO CEBAN THOME	tecnica@brascin.com.br

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BUG BUSTER	RUA BAGE, 294	VILA MARIANA	SAO PAULO	SP	04012-140	(011) 572-0044	LEONARDO STROEBEL	bugbusters@ibm.net
BULHOES	RUA JOAO PINHEIROS, 1161	CENTRO	UBERABA	MG	38017-000	(034) 312-0038	EVALDO SOUZA CHAGAS	bulhoes@enetec.com.br
C&C	AV. MOEMA, 170	MOEMA	SÃO PAULO	SP	04077-020	(011) 5051-6302	VALDIR ZILIO	valdir@ibm.net , vanessa@cc.com.br
CAMPELLO	RUA AREADO, 126	CARLOS PRATES	BELO HORIZONTE	MG	30170-530	(031) 413-4700	WILSON GUIRALDELLI	campello@campello.com.br / etecnico@campe...
CANAL D	RUA COMEND MACEDO, 275 LJ 1/2	CENTRO	CURITIBA	PR	80060-030	(041) 264-2121	AIRTON LUIS F. SAMPAIO	airton@canald.com.br / assistencia@canald.com.br
CDT	SRTVS Q701-ED.CHAT.BL.2 SL.25	ASA SUL	BRASILIA	DF	70340-000	(061) 322-0438	ORLANDO P. OLIVEIRA	cdt@tba.com.br
CENTRALDAT	AV BRASIL OESTE, 1434	CENTRO	PASSO FUNDO	RS	99025-004	(054) 312-3100	CARLOS A.R.AGUIRRE	centraldata@annex.com.br
CHIPTEK	AV MARECHAL CAMARA,186-2 AND.	CENTRO	RIO DE JANEIRO	RJ	20020-800	(021) 210-2113	PAULO MONTEIRO	paulo.monteiro@chiptek.co m.br / ajael.santos@chiptek.com.br
CIA INFORM	AL. FRANCISCO SERRANO, 36	CENTRO	MACAPA	AP	68900-100	(096) 222-7717	DAMASCENO CARVALHO	ciainfo@nutecnet.com.br
COMPOCLINI	AV. PARANA, 1268 10.ANDAR	CENTRO	FOZ DO IGUAU	PR	85852-000	(045) 523-2660	MARCIO HENRIQUE CAST	compoclinic@foznet.com.br
COMPONENTE	RUA GUAJAJARAS, 602	CENTRO	BELO HORIZONTE	MG	30180-100	(031) 272-1255	CLAUDIO LUSTOSA	assistec@componente.com. br
COMPUHELP	ALAMEDA ARAGUAIA 671	ALPHAVILLE	BARUERI	SP	06455-000	(011) 7295-6955.	JULIO FERNANDES FILH	compuhelp@compuhelp. com.br
COMPUTEC	RUA BOA MORTE, 1984	CENTRO	PIRACICABA	SP	13400-140	(019) 434-1012	MARCOS MAVIERI	computec@netyou.com.br
COMPUTECNI	RUA : FAUSTOLO, 820	VILA ROMANA	SÃO PAULO	SP	05041-000	(011) 3872-6544.	NEY / SILVIO	computecnica@plugnet.com. br
CONTEC	RUA AMÉRICO BRASILIENSE, 1005	CH STO ANTONIO	SAO PAULO	SP	04715-001	(011) 5182-8964.	MARCELO E DA COSTA	contec@amcham.com.br
CONTEL RS	RUA DUQUE DE CAXIAS 2239	CENTRO	SANTA MARIA	RS	97015-190	(055) 223-1934	CLAUDIO R LOBATO	contelsm@zaz.com.br
COOPERTEC	RUA PADRE RAPOSO, 99	MOOCA	SAO PAULO	SP	03118-000	(011) 6694-2800.	JOAO LUIS DAMIA	coopert@ibm.net
CPP	AV BARAO DE VALIM, 171	CAMPO BELO	SAO PAULO	SP	04613-030	(011) 240-3699	LIANG CHAO LIN	cppnet@ibm.net

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CVD	RUA TRINTA E TRES, 129	VL.STA. CECILIA	VOLTA REDONDA	RJ	27260-010	(024) 348-2414	VICENTE M.MOLITERNO	cvdinfo@attglobal.net
DATAGREEN	AV PARANA, 518 SALA 03	CENTRO	MARINGA	PR	87013-070	(044) 226-1011	PAULO ROBERTO SILVA	datagreen@wnet.com.br
DIGILOG	RUA AUGUSTO PERRONI 458	BUTANTA	SAO PAULO	SP	05539-020	(011) 3721-7199	ARTHUR KASUO	digilog@mandic.com.br
DIGITAL	RUA 13 DE MAIO, 473	CENTRO	SAO LUIZ	MA	65010-600	(098) 235-3770	GEORGE COELHO	digital@elo.com.br
DMI	RUA FLORIDA, 971	BROOKLIN NOVO	SAO PAULO	SP	04565-000	(011) 5561-1330.	JOSE MORENO BATLE	jose.gaya@dm.com.br , atecnica@dm.com.br
DUAL	RUBIÃO JUNIOR, 2379	BOA VISTA	SAO JOSE RIO PRETO	SP	15010-510	(017) 227-2766	SERGIO RAGASSI CASAR	dualsjrp@nuteccnet.com.br
ELECTRA	RUA 29 DE JULHO, 132	CENTRO	CONCORDIA	SC	89700-000	(049) 442-1490	CLADEMIR BALBINOT	electrain@netcon.com.br
EMIRON	R RAPHAEL VAZ E SILVA, 3466	LIBERDADE	PORTO VELHO	RO	78904-120	(069) 223-2019	FLORINDO MARCELO LOP	lopesgerencia@idem /lopes@enter-net.com.br
EQUIPA SP	AV LIBERDADE 809	LIBERDADE	SAO PAULO	SP	01503-001	(011) 270-7566	SIDNEY J.OLIVEIRA / TANIA	atecnica@equipa.com.br
F&J	RUA EPIACABA, 297	VILA ARAPUA	SAO PAULO	SP	04257-170	(011) 6947-7355.	SILVIO JARA	silvio@fj.com.br
FACTORY	PRACA 10. DE MAIO - 200 - SL12	CENTRO	TIMOTEO	MG	35180-000	(031) 848-1105	BERNARDUS WELLING	factory@gtc.africanet.com.br
FENIX BAUR	RUA MONSENHOR CLARO, 9/76	JD MESQUITA	BAURU	SP	17040-360	(014) 224-1621	VALDECIR PASCOAL ORT	fenix@bru.sol.com.br
FIX COMPUT	AV.MARECHAL CAMARA, 350 SL.905	CASTELO	RIO DE JANEIRO	RJ	20020-080	(021) 220-7030	GLAUCO MUZZI DA SILV	fixcomputer@netyet.com.br
FULL SERVICE - TRIDENT	RUA: REGINO ARAGÃO, 201	IPIRANGA	SÃO PAULO	SP	04285-020	(011) 6163-0102	MARCIO QUAIATO PEREZ	marcio@compushop.com.br
FULL SERVICE LTDA.	AV. CASEMIRO DE ABREU, 299	RIO BRANCO	PORTO ALEGRE	RS	90420001	(051) 330-6699	ANDERSON SALAZAR	anderson@full.com.br/evandro. cardoso@compushop.com.br
GENESYS	RUA DR GURGEL 1034	VL.STA.HELENA	PRESIDENTE PRUDENTE	SP	19015-140	(018) 222-8671	ALEXANDRE PRODOCIMI	genesys@prudenet.com.br

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HELPCENT ER	RUA ARY SIQUEIRA, 45	ENSEADA DO SUA	VITORIA	ES	29055-040	(027) 345-0185	VANDERLEI	vander@tropical.com.br
HOW	RUA DOS BURITIS, 257	JABAQUARA	SAO PAULO	SP	04321-001	(011) 5011-9266.	EDUARDO MARCONI	how@how.com.br
IBIDATA	RUA CEL. ANTONIO INACIO, 118	CENTRO	MONTENEGRO	RS	95780-000	(051) 632-2801	FERNANDO J.W.FERNAND	ibidata@nutecnet.com.br
IBMAP	RUA CEL PEDRO BENEDET,190 SL03	CENTRO	CRICIUMA	SC	88801-250	(048) 433-4532	ALEIR JOSÉ ANTUNES	ibmap@engeplus.com.br
INFOCOMP AN	RUA COELHO DE REZENDE,77/N	CENTRO	TERESINA	PI	64000-370	(086) 221-8587	BANDEIRA	info@mnnet.com.br
INFOHELP	RUA SANTO ANTONIO, 270	CENTRO	JUIZ DE FORA	MG	36015-000	(032) 215-0460	IURI BATISTA DE LIMA	infohelp@artnet.com.br
INFOLAB	R. DR. EURÍCO DE AGUIAR, 864	SANTA LÚCIA	VITORIA	ES	29055-280	(027) 200-3111	ELILSON ELIAS MARTINS	elilson@infolab.com.br / gilciara@infolab.com.br
INFORTRON	RUA PEDRO JOSE SENGGER, 563	ARVORE GRANDE	SOROCABA	SP	18015-000	(015) 227-4848	RICARDO R C LOPES	infortro@splicenet.com.br
INFOSIX	RUA PRES MARQUES, 1287	SANTA HELENA	CUIABA	MT	78045-100	(065) 621-2040	MAURICIO DOS SANTOS GAMA	infosix@zaz.com.br
INTEC	RUA JOAO CARVALHO, 800 S 703	ALDEOTA	FORTALEZA	CE	60140-140	(085) 261-7967	MARCESIO MENDES BORGES	marcesio@ivia.com.br / coelho@secrel.com.br
KLP	PACÍFICO MASCARENHAS, 62	SANTA EFIGÊNIA	BELO HORIZONTE	MG	30260-010	(031) 241-5009	BENEDITO A COTA	kpl@brcom.com.br
LWM	RUA DA MOOCA, 872	MOOCA	SAO PAULO	SP	03104-000	(011) 3277-1371	WILLIAN DE ALM.LIMA	suporte@lwm.com.br
MARC	RUA MARQUES POVOA, 201	B OSWALDO	UBERLANDIA	MG	38401-124	(034) 236-7239	MARCO ANTONIO FERNAN	marc@triang.com.br
MEGACHIP	RUA DOS MUNDURUCUS, 1985-A	BATISTA CAMPOS	BELEM	PA	66025-660	(091) 242-6346	WANDER A P PALMEIRA	mega@interconnect.com.br
MF INFORMA	RUA ANTONIO GARCIA, 4-59	ALTOS DA CIDADE	BAURU	SP	17043-050	(014) 223-8842	MOACIR ELIAS PAIVA	mf.info@adaptanet.com.br
MIC & MAC	RUA ARABUTÁ, 386	NAVEGANTES	PORTO ALEGRE	RS	90240-470	(051) 337-4999	ROGÉRIO PEIXOTO	rogerio@micmac.com.br
MICRO ASSI	R.JOSE DOMINGOS DE VASCONC.195	VILA ADY ANNA	SAO JOSE DOS CAMPOS	SP	12243-840	(012) 341-7190	CARLOS A. CRAVO	anderson@rationale.com.br

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MICRO DATA	AV GETULIO VARGAS 2082	BOSQUE	RIO BRANCO	AC	69908-650	(068) 223-1791	ANA CRISTINA ARAUJO	ana@mdnet.com.br
MICROBARRA	RUA XV DE NOVEMBRO, 889	CENTRO	SAO JOAQUIM DA BARRA	SP	14600-000	(016) 818-1900	LUIZ A A DE CARVALHO	microbarrasj@netsite.com.br
MICROCITY	ALAMEDA DO INGA, 650	VALE DO SERENO	NOVA LIMA	MG	34000-000	(031) 286-4200	MARCOS J.RAJAO COSTA	helton@microcity.com.br / cristina@microcity....
MICROSYS	R: DOUTOR ZUQUIM, 1720 CJ: 41	SANTANA	SAO PAULO	SP	02035-022	(011) 6950-2657.	ALBERTO BOARINI	microsys@microsys.com.br
MICROWARE	RUA NORONHA TORREZAO, 416	SANTA ROSA	NITEROI	RJ	24240-183	(021) 612-2600	SERGIO COSTA SANTOS	mwtecnico@microware.com.br
MMARCELINO	RODOVIA BR 316 KM 5	GRANDE BELEM	ANANIDEUA	PA	67020-010	(091) 235-4100	JOSE SALES	mmdt@supridad.com.br
MSM SP	RUA FAUSTINO AUGUSTO CESAR, 49	AEROPORTO	SAO PAULO	SP	04402-120	(011) 5562-2295.	ANTONIO RAYA	raya@nutecnet.com.br
MULTISIS	AV. SANTOS DUMONT, 1740 SLL 101	ALDEOTA	FORTALEZA	CE	60150-160	(085) 466-8000	ALEXANDRE MOTA ALBUQUERQUE	alexandre@lanlink.com.br
NATAL RN	RUA ULISSES CALDAS, 105	CENTRO	NATAL	RN	59025-000	(084) 211-6684	PAULO RAMALHO	natalregistradora@digicom.br
NCP INFORM	AV DOS CARINAS, 170	MOEMA	SAO PAULO	SP	04086-010	(011) 5561-1143.	ALEX PAIVA	logist@ncp.com.br
NETSUL INFORMATICA LTDA	RUA MARCELO GAMA, 1286	AUXILIADORA	PORTO ALEGRE	RS	90540-041	(051) 325-1544	VAGNER SCHULZ	netsul@netsul.com.br
NIT	AV. 07 DE SETEMBRO, 1097	LIBERDADE	NOVO HAMBURGO	RS	93332-470	(051) 587-8222	WILSON WESTHELLE	wilson@novainfo.com.br
OPD	RUA CARMO TALIBERTI, 694	CENTRO	MOCOCA	SP	13730-000	(019) 656-4939	PAULO S ALTOMANI	opd@dglnet.com.br
OPTEC	RUA PIRES DA MOTA, 1029	ACLIACAO	SAO PAULO	SP	01529-001	(011) 3277-5105	GERSON TRUIJO DE ANDRADE	optec@mandic.com.br
PAULO	RUA TEN JOAO FRANCISCO, 633	CENTRO	BOTUCATU	SP	18609-620	(014) 822-4313	PAULO R BENETON	beneton@botunet.com.br
PC RISK	RUA VOLUNTARIOS DA PATRIA,1436	CENTRO	PELOTAS	RS	96015-730	(0532) 27-3367.	TERCIO IRANY TEDESCO	pcrisc@zaz.com.br
PC SERVER	AV INDEPENDENCIA, 3146	JD SUMARE	RIBEIRAO PRETO	SP	14025-390	(016) 623-8185	MARCOS A PEROZA	peroza@highnet.com.br
PCTEC	AV. PACAEMBU, 1418	PACAEMBU	SAO PAULO	SP	01234-000	(011) 3662-5155.	ALBERTO A.TEIXEIRA	pctec@uol.com.br
PCTEC	RUA GENERAL OSORIO 2059	CAMBUI	CAMPINAS	SP	13010-112	(019) 252-3077	HILDA MARIA COSTA	pctec.camp@uol.com.br

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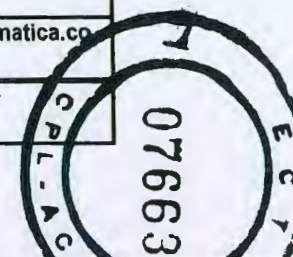


PCTEC PR	RUA BRIGDEIRO FRANCO, 3323	REBOUÇAS	CURITIBA	PR	80250-030	(041) 333-0190	SEVERINO R CARDOSO	pctec@netpar.com.br
PLANAC	AV ELISEU DE ALMEIDA, 688	BUTANTA	SAO PAULO	SP	05533-000	(011) 3723-2300	NIVALDO FIGUEIREDO DE SOUSA	jkovic@planac.com.br
PLANTEL	AV TANCREDO NEVES, 1672 4 ANDAR	PITUBA	SALVADOR	BA	41820-020	(071) 341-3636	ULTÍMIO DANZA JÚNIOR	rose@plantel.com.br
POWER NET	RUA OLEGARIO MACIEL, 460/209	BARRA	RIO DE JANEIRO	RJ	22621-200	(021) 493-6006	CARLOS SOLARI	powernet.ibm@ibm.net
PRO TECH	RUA MARANHÃO, 1428 A	CENTRO	BELO HORIZONTE	MG	30150-331	(031) 225-8688	JUSCELINO S PEDRALHO	protech@joinnet.com.br
PROATIVA	R. GOIAS, 427	CENTRO	UBERLANDIA	MG	38400-064	(034) 219-4436	DINO SANI	anderson.ribeiro@proativainfo.com.br / dino@...
PROGRESS	RUA GABRIEL FERREIRA, 362 SUL	CENTRO	TERESINA	PI	64000-150	(086) 221-7008	EDSON PEREIRA LIMA	miguel.progress@ibm.net
PRONTEC	RUA SÃO PAULO, 759	PITUBA	SALVADOR	BA	41.830-180	(071) 346-5555	JOSEMAR DA PAZ SOUZA	gerencia@prontec.com.br/tecnico@prontec.com.br
PROSIS	RUA PARANA, 65	CENTRO	IJUI	RS	98700-000	(055) 332-7273	HUMBERTO GARAI	prosis@juinet.com.br
PULSAR SP	RUA JACQUEY 136	RUDGE RAMOS	SAO BERNARDO CAMPO	SP	09740-620	(011) 457-3355	CRISTIAN KERMANAR	qualidade@pulsar.com.br
QUALIFIX	RUA HELOIZA PAMPLONA, 785	FUNDAÇÃO	SÃO CAETANO DO SUL	SP	09520-320	(011) 4225-9000	ALBERTO ADISSY JUNIOR	alberto@qualifix.com.br
QUALITEXTO	RUA SALDANHA MARINHO, 244	CENTRO	FLORIANOPOLIS	SC	88010-450	(048) 224-0720	ZILMAR DE SOUZA	quali@fitnet.com.br
QUALITY IN	RUA BORBA, 1111	CACHOEIRINHA	MANAUS	AM	69065-030	(092) 663-2603	MOISES ABTIBOL MACHA	quality@internext.com.br / quality@intevia.com.br
QUANTOR RJ	RUA DO MATOSO 225	RIO COMPRIDO	RIO DE JANEIRO	RJ	20270-131	(021) 502-0785	MARCOS PAULO	quantor@quantor.com.br/mpaulo@quantor.com.br
RCE	AV. MAXIMIANO DE FIGUEREDO, 154	CENTRO	JOAO PESSOA	PB	58013-470	(083) 222-5154	EDILSON FELINTO DA S	rce@zaitek.com.br
REDE	RUA FORTUNATO FARAONE, 148	GIRASSOL	AMERICANA	SP	13465-660	(019) 460-7323	ALEXANDRE BOSSATO	redecomp@dginet.com.br
REGIAO SUL	AV PRES KENEDY 3663 SALA 37/38	GUAIRA	CURITIBA	PR	80610-010	(041) 345-5054	SERGIO VILLA	regsul@cwb.palm.com.br
RHEALEZA INFORMÁTICA	AV. SETE DE SETEMBRO, 4698	BATEL	CURITIBA	PR	80240-000	(041) 242-4530	LUCIANA M. C. SILVA	rhealeza@softone.com.br/comercial@rhealeza.com.br
RIVITEC	AV INDEPENDENCIA, 1286	HIGIENOPOLIS	RIBEIRAO PRETO	SP	14025-230	(016) 610-5969	OSWALDO	rivitec@netsite.com.br
SCHERER	TRAVESSA DO CARMO, 72	CIDADE BAIXA	PORTO ALEGRE	RS	90050-210	(051) 228-8501	EVANDRO F. CARDOSO	scherer@schererinformatica.com.br
SEPROL	RUA: DELAMAR JOSÉ DA SILVA, 252	KOBRASOL	SÃO JOSÉ	SC	88102-100	(048) 259-8321	ANDREI GARCIA	seprol@beenet.com.br

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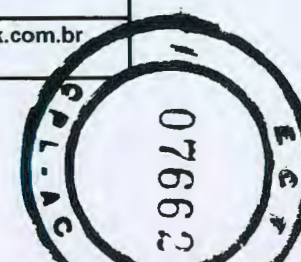
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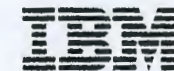
SERVICOMPO	RUA ANTONIO CAMARDO, 324	TATUAPE	SAO PAULO	SP	03309-000	(011) 6942-7138.	RONALDO CASAES	servicompo@servicompo.com.br
SERVITEC	RUA PARA, 264 FUNDOS	CENTRO	CAMBE	PR	86180-000	(043) 334-1211	VILMAR JOAO GORNI	compute@sercomtel.com.br
SHALOM	RUA NILO VIEIRA, 308	CENTRO	DUQUE DE CAXIAS	RJ	25020-270	(021) 671-4131	PAULO LUIZ DA SILVA	matriz@shalom.com.br
SIBRA	RUA CAP AUGUSTO SALES PUPO, 9	JD CHAPADAO	CAMPINAS	SP	13073-140	(019) 241-4744	ARTHUR B SOUZA NETO	sibra@correionet.com.br
SIDERAL	RUA BARBOSA LIMA, 211	CENTRO	JUIZ DE FORA	MG	36010-540	(032) 215-3702	OSCAR H LEWEMSTIN	sideral@nutecnet.com.br
SIM RJ	RUA CLARA DE BARROS 87 A	RIACHUELO	RIO DE JANEIRO	RJ	20961-070	(021) 501-9663	JOSE AUGUSTO SUSINI	eduardo.susini@sim.com.br
SINCO	PRACA SANTA TEREZINHA, 162/164	FABRICIO	UBERABA	MG	38065-130	(034) 312-7524	FERNANDO HENRIQUE	sinco@ldc.com.br
SISTEMA	RUA RIO DE JANEIRO, 514	CENTRO	POCOS DE CALDAS	MG	37701-011	(035) 722-1444	JOSE GERALDO P.FILHO	sistema@pocos-net.com.br
SNN	SCLN 309-BL.D-LJ.26-SUBSOLO	ASA NORTE	BRASILIA	DF	70755-540	(061) 274-0980	RICARDO RIBEIRO	comercial@snnibm.com
SOLIN	RUA TERRA NOVA	SION	BELO HORIZONTE	MG	30315-470	(031) 221-5544	VALERIO MADEIRA COELHO	tecnica@solin.com.br
SOLUCAO	RUA GUILHERMINO REZENDE, 321	SALGADO FILHO	ARACAJU	SE	49020-270	(079) 213-1001	KLEBERSON C PINTO	solucao@infonet.com.br
SOS	RUA ALEGRIA CASTRO NEVES, 200	STO AGOSTINHO	SALVADOR	BA	40255-240	(071) 381-5915	LAURINDO SOARES	tecnica@soscompu.com.br
SPAN SP	RUA RIO DE JANEIRO 595	CENTRO	OURINHOS	SP	19900-000	(014) 323-2040	ROGERIO NOBILE	spancenter@spancenter.com.br
SPE DATA	RUA DOS INVALIDOS, 212-SL 601	CENTRO	RIO DE JANEIRO	RJ	20231-020	(021) 297-0088	PAULO BADIN	speinfo@ibm.net
ST&C	RUA DOS JEQUITIBAS, 393 - SALA 10	CID. JARDIM ELDORADO	CONTAGEM	MG	32310-390	(031) 292-6277	MARCO ANTONI DUARTE BICALHO	stc@gold.com.br / jmaria@stcmg.com.br
SUPRIDATTA	RUA PRES KENNEDY, 114	CENTRO	CASCAVEL	PR	85801-030	(045) 225-4401	ADALBERTO T TAVARES	supridat@supridatta.com.br
TALS	RUA ADJANIRO CARDON, 387	JD. CARVALHO	PONTA GROSSA	PR	84015-580	(042) 225-2310	MAURICIO LOPES	tals@centerline.com.br
TCA/TAQUAR	RUA TRISTAO MONTEIRO, 1520	CENTRO	TAQUARA	RS	95600-000	(051) 542-6400	ANTONIO OLIVIERI	tca@tca.com.br / olivier@tca.com.br
TECMASTER	AV CAP SALOMAO 2221	JD MOSTEIRO	RIBEIRAO PRETO	SP	14085-440	(016) 624-9114	GERSON A SIQUEIRA	tecmaster@netsite.com.br
TECNOCOMP	R.DOMINGOS BERTAGLIA 076	JORDANOPOLIS	SAO BERNARDO CAMPO	SP	09750-660	(011) 458-2855	SIDNEI MOLINA	sidnei.molina@tecnocomp.com.br
TECNOPOWE R	RUA VASCO DA GAMA, 214	DIQUE DO TORORO	SALVADOR	BA	40240-090	(071) 381-5171	ANTONIO CESAR SOUZA DOS SANTOS	tecnopow@magiclink.com.br

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TECNOSYS	AV FRANCISCO SALES, 695	FLORESTA	BELO HORIZONTE	MG	30150-221	(031) 226-2521	FERNANDO C PIMENTA	tecnosys@gold.com.br
TEN SISTEM	RUA SAO BENTO, 9 - SL.601	CENTRO	RIO DE JANEIRO	RJ	20090-010	(021) 516-0438	MARCELO WAJNSZTOK	marcelow@ten.com.br
TOPDOWN	RUA CORONEL FLORES, 376	SAO PELEGRINO	CAXIAS DO SUL	RS	95034-060	(054) 223-3369.	LUIZ ANTONIO KUYAVA	kuyava@nutecnet.com.br
TYNEX	RUA: CHILON, 83 / 85	VILA OLIMPIA	SAO PAULO	SP	04552-030	(011) 820-3700	ALEXANDRE FOCHI	pbjtynx@ibm.net , airton.tynex@ibm.net , tynex@nutecnet.com.br
UNIPER	RUA FILOMENA NUNES, 162	OLARIA	RIO DE JANEIRO	RJ	21021-380	(021) 560-1139	WALTER ILYDIO S.FILH	uniper@virtual.com.br
VOGA	SRTN Q.701-CJ.C-ALA B-SL.827	ASA NORTE	BRASILIA	DF	70710-200	(061) 327-1130	JOAO CARLOS M ALVES	joao.carlos@voga.com.br
VTI	R BARAO DE ARACATI, 2150	ALDEOTA	FORTALEZA	CE	60115-082	(085) 244-5290	ALFREDO SOEIRO	asstec@vti.com.br / vti@vti.com.br
WBM	Av. Amazonas, 576	S o Geraldo	Porto Alegre	RS	90240-541	(051) 325-1300	Claudio Simonaio	wbm@wbm.com.br
ZENTEC	RUA OUVIDOR PELEJA, 30 CJ.02	VILA MARIANA	SAO PAULO	SP	04128-000	(011) 578-1959	WILTON AUGUSTO	zentec@uol.com.br

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ANEXO IV

PROSPECTOS TÉCNICOS

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Netfinity 7100



the tools matter

Model 866611Y

Key Model Specifications

Processor Speed (MHz)		Number of Processors (std/max)	
Level 2 cache (per processor)		Memory (std/max type) (MB)	
Max internal hard disk(s) capacity		Media Device(s) (speed/type)	
Slots x bays total (avail)		Form factor	

For this Model

- [Features & Benefits](#)
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- [Other Models](#)

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Features & Benefits

Comparing apples to apple pie - Giving you more for the price, the Netfinity 7100 integrates value-added features and X-architecture innovations such as: Advanced System Manager processor for comprehensive control; Predictive Failure Analysis and Light-Path Diagnostics for easy monitoring and maintenance; power management for high availability; 10/100 Ethernet network readiness; and integrated dual-channel Ultra LVD SCSI controller for fast, robust expansion.

Scale-up, expand grow - Choose one to four-way SMP. Expand memory up to 16GB, with memory. SCSI controller supports up to 252GB internal and 2TB external storage. Six PCI slots enable powerful networking expansion. Optional ServeRAID SCSI adapters and tape libraries deliver comprehensive data security and backup solutions.

Enhanced mechanicals - Your choice of 8U rack or tower. The optional NetBAY3 provides convenient, elegant storage of additional network components for your tower. Both form factors offer the new converged tray for easy, modular interchange of hard disk drives and the dual-hot-plug backplane for a choice of half-high or slim-line drives.

More than hardware - Software includes industry-leading Lotus Domino, Netfinity Director, Netfinity Manager systems management software and ServerGuide for easy installation and configuration. Plus you get IBM Server Start Up Support and a very competitive three-year limited warranty.

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Architecture

Form factor:	Tower (6x14)
Orientations allowed:	Horizontal
Bus type/architecture:	PCI
Slots x bays total (free):	6(6) x 14(12)
Expansion bus type:	PCI



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Multimedia

Media device type:	CD-ROM
Media speed:	40Xmax-17Xmin
Media interface type:	EIDE
Media data transfer rate:	2550KBps, 6000KBps
Media average access time:	90ms
Media transport type:	Front tray loading
Recordable:	
Removable:	

Audio features:
Multimedia features:



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Expansion Options

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Slots total (free) and type:	6(6) PCI fullsize
3.5" bays	11(10) SL
- accessible (free) and height:	
- not accessible (free) and height:	0(0)
5.25" bays	3(2) HH
- accessible (free) and height:	
- not accessible (free) and height:	0(0)
Plug and play support:	Yes
Parallel ports (type):	1 (ECP/EPP/IEEE 1284)
Serial ports (type):	2 (9-pin 16550A compatible), 2 (USB)
Expansion ports:	Display, Ethernet, Keyboard, Mouse

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Graphics Subsystem

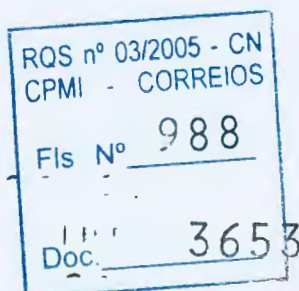
Graphics Chip Set Model & Mfr.:	S3 Trio3D
Graphics Data Width:	16-bit
Graphics Type:	SVGA
Default Memory Address:	
Video RAM Std (MB):	4MB
Video RAM Max (MB):	4MB
Video RAM Type:	SGRAM
Graphics Bus Interface:	PCI
Resolution Max (Video RAM Std), NI:	1600x1200 65536 colors
Resolution Max (Video RAM Max), NI:	1600x1200 65536 colors
Colors Max (Video RAM Std):	16777216
Colors Max (Video RAM Max):	16777216

Graphics features:

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Hard Disk

Hard Disk 1:



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Number of installed hard disks: 0
Hard disk size¹: Open Bay
Hard disk controller: Integrated Dual Channel Wide Ultra2 SCSI
Hard disk type: Open bay
Total possible device types: --
Max internal hard disk capacity: 254.8GB
Average seek time: --
Average latency: --
RAID levels supported:
Hot swappable drive bays: 10/10
Cache size: --
Number of platters:
Platter RPM:
Burst transfer rate:
Sustained data trans rate (low; high): --
Additional storage features:
Optional hard disk available:



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Memory

Memory (RAM) std/max: 256MB / 16384MB
RAM speed: 100MHz
Optional RAM configuration:
RAM type: SDRAM
RAM slots total (available): 16 RDIMM (12 RDIMM)

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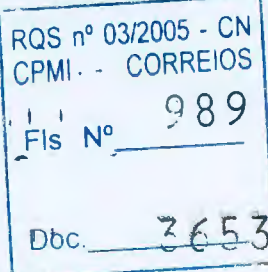
Networking

Network interface: Ethernet-Integrated
Network speed: 10Mbps, 100Mbps
Network features: LANClient Control Manager supported, RJ-45 connector (for 10Base-T/100Base-TX)

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Power Management⁵

Power supply: 500(2x250)Watts
Power supply type: 100-127VAC (50/60Hz), AC 200-240V (50/60Hz)
Power supply additional: 2x250 watt (redundant power supplies)
Heat emissions: --
Sound emissions: --
Cooling system: 4 fans
UPS: Optional
Power management features⁴: Auto restart



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 Top**System Management**

Adapter:	Advanced System Management PCI Adapter
Software:	Netfinity Manager Capacity Manager Cluster Manager RAID Manager Update Connector

Features:

 **Top****Processor**

Processor (CPU) ² :	Pentium III Xeon
Processor internal clock speed ² :	550MHz
Front Side Bus:	100MHz
Processor manufacturer:	Intel
Math co-processor:	Built-in
L1 internal CPU cache:	32KB
L2 external CPU cache std:	512KB
L2 external CPU cache type:	Full speed ECC
Upgradable processor:	Yes
Processor upgrade options:	Faster Pentium III Xeon processors (if available f
Processor upgrade method:	Add processor option
BIOS type:	Flash
Number of processors std/max:	1/4
SMP capable (multiple processors):	Yes
Multi-processor bus (slots/speed):	—
L3 cache:	

 Top**Security**

AssetCare features:	Desktop Management Interface (DMI) 2.0 Wired for Management (WfM)
Security features:	Boot sequence control Mechanical locks Power on password Privileged access password Unattended startup
VPD support:	CPU Board, Hot swap disk backplane identifier, card identifier, Power backplane identifier, Powe identifier

 Top**Software**

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Tested operating systems:

IBM OS/2 Warp Server for e-business, Linux Turt
Linux SuSE 6.1, Linux Caldera 2.3, Microsoft Win
Server, Microsoft Windows NT 4.0 Server, Novell
4.2, Novell NetWare 5.0, Red Hat Linux 6.1, SCO
7.1

Operating system provided:

Optional

Communication/networking applications:

ServerGuide (Netfinity Manager); Update Connec

Device drivers/utilities:

Multimedia applications:

Productivity applications:

Other applications provided:

Lotus Domino Application Server with 5 clients

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Standard Features

Pointing device type:

Mouse (2 button)

Standard diskette size:

3.5" 1.44MB

Keyboard type standard:

Basic 101 key (rubber dome)

I20 Compliant:

Yes

Product approvals/certifications⁴:

BSMI CNS13438 Class A (Taiwan); C-Tick Mark (/ 3548 Class A); CB Certificate/Report; CE MARK (Class A)(EN60950)(EN50082-1); CISPR-22 Class / C22.2 No. 950; FCC Class A - Part 15; ICES-003 C (Canada); IEC-950 CB Report; ISO 9241-3; MPS 1 019; TUV-GS - ZH/618; TUV-GS (EN 60950/IEC-95 UL-1950; VCCI Class A

 Top
Warranty³Limited Warranty period and type: **Three year parts and labor Onsite Repair**
 Top
Weight & Dimensions⁶

Weight:

—

Travel weight:

—

Height:

15.7 inches

Height with stand:

—

Width:

19 inches

Width with stand:

—

Depth:

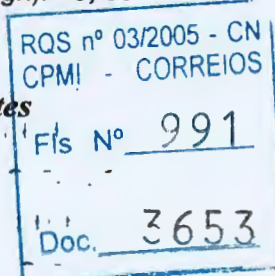
28 inches

Operating Temperature (C) (low; high):

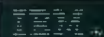
10; 32

Relative Humidity (%) (low; high):

8; 80

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Technical Details

Characteristics

Compatability

Model 28L3673

Key Model Specifications

Key Characteristics



Warranty

Weights & Dimensions

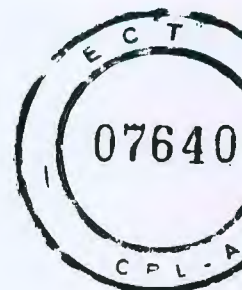
▲ Top

Characteristics



000114

9.



Type:	Mouse
Technology:	--
Number of keys:	2
Ergonomics:	--
Interface:	PS/2
Keyboard - numeric pad:	--
Keyboard - pointing device:	--
Keyboard - connector:	6-pin mini-DIN
Pointing device resolution:	400dpi
Other Information:	-Stealth black color -6 foot straight cable, VW-1 type, shielded and flexible, color to match mouse -Color coded connector to match IBM system -Gold plated connector pins -IBM blue logo printed on mouse -500km travel life -3 million actuation switch life

Top

Compatibility

Restrictions: Does not meet ESD CB-2-0001-024 standard

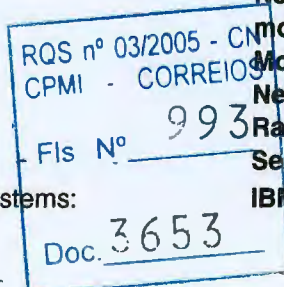
Hardware prerequisites:

System Units

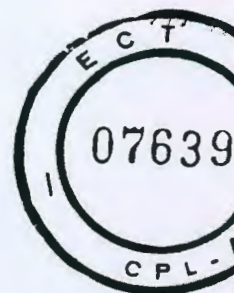
_ IBM Systems:

PC 300, PC 300GL, PC 300PL, PC 300XL, ThinkPad 240, ThinkPad 310, ThinkPad 365, ThinkPad 380, ThinkPad 385, ThinkPad 390, ThinkPad 560, ThinkPad 570, ThinkPad 600, ThinkPad 760, ThinkPad 765, ThinkPad 770, ThinkPad i Series, ThinkPad A20, ThinkPad T20, Netfinity 1000, Netfinity 3000, Netfinity 3500 M10, Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 5500, Netfinity 5500 Rack Mounted models, Netfinity 5500 M10, Netfinity 5500 M10 Rack Mounted models, Netfinity 5500 M20, Netfinity 5500 M20 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7000 M10 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500R Rack Mounted models, Aptiva S Series (2172, 2174)

_ Non-IBM systems: IBM-compatible computers with a



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Operating system requirements: --

Adapters: --

Mounting kit etc.: --

Supported software:

PS/2 (mini-din) style mouse port

Microsoft Windows NT, Microsoft Windows 3.1, Microsoft Windows 95, Microsoft Windows 98, IBM OS/2 3.0 or later, DOS 5.0 or later

Product approvals/certifications⁴:

BCIQ, C-Tick, CE, CSA No. 950, EMI (Korea), FCC Class B (US), GS (Germany), ICES-003 Class B (Canada), IEC-801.2-4, IEC-950/EN 60950 Second Edition, MOC, NMB-003 Class B (Canada), NOM 019, UL-1950 Third Edition, VCCI No

Energy Star Compliant:

No



Top

Warranty³

Limited Warranty period and type:

One year Customer Carry-in Exchange



Top

Weight & Dimensions⁶

Weight: .3 lbs

Travel weight: --

Height: 1.44 inches

Width: 2.44 inches

Depth: 4.5 inches

Operating Temperature (C) (low; high): 5; 40

Relative Humidity (%) (low; high): 8; 80

Ship Information

Box 1

Weight: --

Height: --

Width: --

Depth: --

Box 2

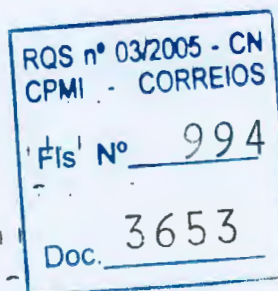
Weight: --

Height: --

Width: --

Depth: --

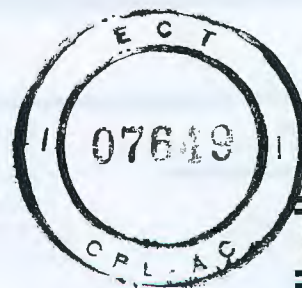
Special ship information:



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O premiado sistema UNIX



IBM

AIX Versão 4.3

Destaques

Escalabilidade robusta com execução simultânea de aplicativos de 32 e 64 bits

Compatibilidade binária com a maioria dos aplicativos existentes para AIX®

Marca UNIX® 98; pronto para o Ano 2000, Euro e para Tivoli®

Níveis de segurança C2 e E3/F-C2

Bonus Pack com softwares adicionais

Gerenciador de sistemas baseado na Web

Recurso Fast Connect para serviço de Arquivos e Impressão de alta velocidade

Inclui Java™ Development Kit (JDK) com Compilador Just-In-Time (JIT)

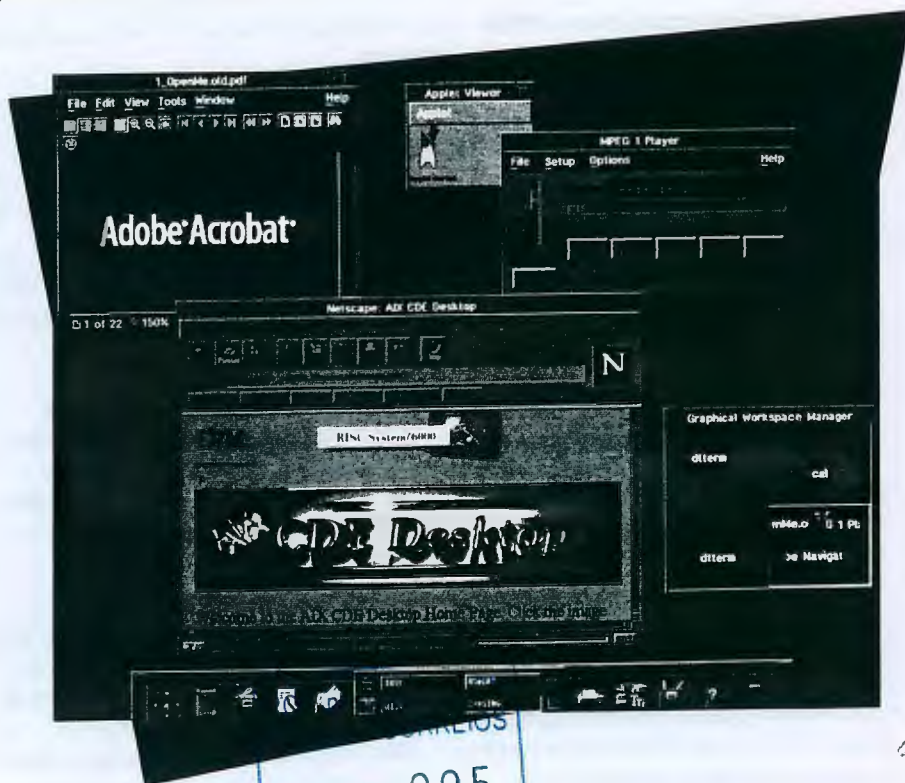
O futuro do UNIX – Projeto Monterey

Descrição do produto

AIX 4.3, o premiado sistema operacional UNIX da IBM, foi aprimorado para oferecer ainda mais escalabilidade, segurança, conectividade, performance, interoperabilidade e facilidade de uso.

O AIX 4.3 é um ambiente operacional integrado que suporta sistemas RS/6000® de 32 e 64 bits, cobrindo toda a sua faixa de escalabilidade e oferecendo ao mesmo tempo recursos de software otimizados para ambos os ambientes. Nos sistemas de 64 bits, o AIX 4.3 oferece interoperabilidade e coexistência total entre os aplicativos de 32 e 64 bits com

processos que podem ser executados simultaneamente ou em cooperação, compartilhando o acesso a arquivos, memória e outros serviços do sistema. A inclusão do Java como parte do sistema operacional permite que o AIX esteja pronto para aplicações Java sejam elas aplicações para clientes ou para servidores. E o melhor de tudo é que a compatibilidade binária do AIX 4.3 ajuda a garantir a disponibilidade contínua dos aplicativos em todos os releases do AIX Versão 4.



Fis. Nº 995
3653
-Doc.

000106

This SSA capability is referred to as spatial reuse. Such functionality is not possible with arbitrated bus technology found in SCSI-based products.

High availability

IBM SSA technology features significant availability advantages over SCSI-based technology. If a cable failure occurs on the loop, the SSA adapter automatically continues accessing disks through an alternate path. If a disk failure occurs, the hot-swappable drives can be removed and replaced without disrupting the communication between the adapter and other disks on the loop.

To further increase availability, the 7133 Advanced Models monitor and provide detailed information on the status of power, cooling, and disk drives.

With the advanced SSA Optical Extender, distances up to 10 km are supported between 7133 Advanced

Models and advanced SSA 160 MB/sec adapters. In addition, distances up to 2.4 km are supported between other SSA devices.

Investment protection

The 7133 Serial Disk System helps protect investments in existing equipment while providing a clear path for growth. Existing SCSI-based applications should migrate easily, because SSA is compatible with the SCSI command set. The 7133 Serial Disk System is a key building block in the IBM Seascope* architecture, a blueprint for innovative storage solutions designed for a connected world.

To facilitate server consolidation, IBM supports the relocation of existing rack-mounted 7133 Advanced Model D40s into the IBM Versatile Storage Server*. The Versatile Storage Server consolidates disk storage into a single powerful system—delivering many levels of advanced function.

Tell me more

For more information, contact your IBM representative or IBM Business Partner. Or visit the IBM Storage home page at www.ibm.com/storage.



www.ibm.com/storage

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References in this publication to IBM products, programs, or services do not imply that IBM intends to make them available in all countries in which IBM operates.

IBM 7133 Serial Disk System Advanced Models D40 and T40 at a glance

Models	Rack-mountable D40	Desktop T40
4.5 GB disk drives	18.0 to 72.0 GB	18.0 to 72.0 GB
9.1 GB disk drives	36.4 to 145.6 GB	36.4 to 145.6 GB
18.2 GB disk drives	72.8 to 291.2 GB	72.8 to 291.2 GB
System capacity (per adapter)	Up to 96 drives (48/loop)	Up to 96 drives (48/loop)

Physical specifications

Dimensions	6.7" H x 17.5" W x 29.0" D 171mm x 444mm x 737mm	24.0" H x 8.3" W x 33.9" D 610mm x 210mm x 861mm
Weight (entry configuration)	83.0 lb (37.7 kg)	135.0 lb (61.2 kg)
Weight (max configuration)	118.0 lb (53.5 kg)	168.0 lb (76.2 kg)

Operating environment

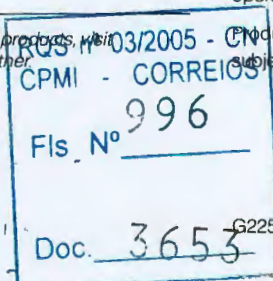
Temperature	50° to 104° F (10° to 40° C)	50° to 104° F (10° to 40° C)
Relative humidity	8 to 80%	8 to 80%
Maximum wet bulb	80.6° F (27.0° C)	80.6° F (27.0° C)
Power requirements	20 to 400 watts	20 to 400 watts
Warranty	One year limited	One year limited

Supported systems¹

UNIX-based: Selected IBM, Hewlett-Packard, Sun Microsystems, and Digital servers
Intel**-based: Selected IBM, Hewlett-Packard, and Compaq PC servers

¹ Availability dates for server support varies by product. For a current listing of supported products, visit www.ibm.com/storage/opensdk, or contact your IBM representative or IBM Business Partner.

Product data is accurate as of initial publication and is subject to change without notice.



G225-6798-01

000105

Características

Benefícios

Escalabilidade do sistema	• 128 discos por <i>volume group</i>, 512 <i>logical volumes</i> por <i>volume group</i> • Suporte para até 130.048 partições físicas por <i>volume group</i> (supera o limite de 1.016 partições LVM) • 32.768 threads por processo, 32.768 arquivos abertos por processo • Pilha TCP/IP, serviços de diretório e subsistema de entrada e saída de dados com melhor performance
Suporte para 64 bits	• Suporta a execução simultânea de aplicativos de 32 e 64 bits em hardware de 64 bits • Implementa LP64 padrão de mercado (inteiros de 32 bits, tipos <i>long</i> e <i>pointer</i> de 64 bits)
Compatibilidade binária	• Ajuda a garantir a disponibilidade contínua dos aplicativos em todos os releases do AIX Versão 4
Gerenciamento do sistema baseado na Web	• Gerencia o AIX a partir de qualquer browser com suporte para Java 1.1 • Os TaskGuides simplificam tarefas complexas e as que são executadas com pouca frequência
Java Development Kit (JDK) V1.1.6	• Inclui uma linha completa de ferramentas de desenvolvimento, como interpretadores de fonte e de tempo de execução, com compilador Just-In-Time (JIT) 3.0, compilador de classes Just-In-Time (JIT) 3.0, <i>debugger</i> a nível de fonte, gerador de documentos HTML, bibliotecas de tempo de execução para links de multimídia Java e um conjunto de APIs de classes Java (RMI e segurança Java) • Compila código Java em tempo real para aumentar seu desempenho • Aceita várias versões de Java, aumentando a flexibilidade no desenvolvimento de aplicações
Internet Protocol Versão 6 (IPv6)	• Aumenta o endereçamento, segurança e integridade do IP através de roteamento redundante, redirecionamento dinâmico, "tunneling" e suporte para gateway. Suporta os recursos de gateway do IPv6 • Fornece autenticação e segurança IPsec para IPv4 e IPv6 (Não está disponível nos servidores RS/SP™ ou S70/S70 Advanced conectados a um sistema SP)
Internet Protocol Versão 4 (IPv4)	• Inclui atualizações funcionais de DHCP para performance e concorrência de processos, escalabilidade, redes CIDR e Sub-redes Virtuais • Aumenta a proteção por senhas com comandos de TCP/IP seguros (<i>rsh</i>, <i>rcp</i>, <i>rlogin</i>, <i>telnet</i>, <i>ftp</i>) • Suporte para Internet Key Exchange (IKE) e Merit GateD V6.0
Sistema de diretórios LDAP da eNetwork™	• Suporta milhões de entradas com tempo de resposta máximo inferior a um segundo • Utiliza DB2 V2.1 (servidor), escalável e testado pelo mercado (vem incluso com o diretório), como repositório para os dados dos diretórios • Inclui LDAP Versão 3 para sistemas clientes, que é compatível com os padrões e oferece ferramentas para linhas de comando e um kit de ferramentas de desenvolvimento • Oferece SSL (Secure Sockets Layer) Versão 3 para criptografia e autenticação de dados usando certificados de chaves públicas X.509v3
Documentação baseada em HTML	• Documentação do sistema com fácil acesso através de um browser da Web, fornecida em CDs separados
X11R6	• Aprimora o Xwindows com bibliotecas de 64 bits "thread-safe" para clientes, para o desenvolvimento de aplicações gráficas
Vídeo 3D	• Suporte para OpenGL 1.2 com melhor performance e novas extensões que incluem fusão de cores, repetição espelhada de textura e disposição de vários traçados (pode ser necessária uma placa de vídeo especial) • O <i>graphigs</i> foi otimizado para melhorar o throughput e a renderização • O Virtual Frame Buffer (VFB) do AIX suporta o desenvolvimento de aplicações Web para fazer renderização de gráficos 3D sem a necessidade de uma placa de vídeo 3D

Pronto para Internet e e-business

A tecnologia AIX 4.3 permite que os sistemas sejam utilizados como robustos servidores de Internet. O subsistema de rede do AIX 4.3 incorpora melhorias na pilha TCP/IP, serviços de diretório e subsistema de I/O que aumentam a capacidade e escalabilidade do servidor para os ambientes de Internet. Muitos destes benefícios no desempenho são automáticos quando é feita a migração para o AIX 4.3, mas há ainda mais opções de aprimoramento do desempenho disponíveis para os desenvolvedores de aplicativos.

Gerenciamento de sistemas

O AIX 4.3 usa um gerenciador de sistemas inovador baseado na Web que permite o gerenciamento dos sistemas AIX pela Internet a partir de "qualquer lugar". Isto é feito por meio de uma interface gráfica intuitiva, orientada a objetos e fácil de usar. Operando tanto no modo aplicação em AIX 4.3 com Java 1.1 quanto no modo applet em plataformas que suportam Java 1.1, os sistemas RS/6000 podem ser gerenciados a partir de outro RS/6000 ou de clientes com conexão à Web.

O gerenciador de sistemas baseado na Web contém TaskGuides que simplificam as operações desconhecidas ou complexas e fornecem aplicativos para todas as principais tarefas de gerenciamento de sistemas AIX. Um dos aplicativos TaskGuide é o Configuration Assistant, que aparece automaticamente após um usuário completar a instalação básica do sistema operacional. Sua interface intuitiva dirige o usuário por tarefas como a definição da hora, data e senha do diretório raiz, e também pelo gerenciamento do espaço de paginação e da configuração do TCP/IP.

*High-performance IBM 7133 Serial Disk System
for UNIX and Windows NT servers*



IBM

IBM 7133 Serial Disk System Advanced Models D40 and T40

Highlights

Provides outstanding disk storage performance with advanced SSA bandwidth of 160 MB/sec

Features high-performance 18.2 GB, 9.1 GB, and 4.5 GB user-replaceable IBM Ultrastar* disk drives

Provides high capacity—up to 291 GB per tower or drawer and 1.7 TB per host adapter

Enables disk sharing through simultaneous attachment of multiple UNIX and Windows NT** hosts to the IBM 7133 Serial Disk System**

Provides high availability with redundant data paths, redundant cooling units, and two power supplies

Facilitates remote mirroring (up to 10 km connection distances) with the Advanced SSA Optical Extender

Simplifies storage management when used with the IBM StorWatch* Serial Storage Expert

IBM 7133 Serial Disk System Advanced Models D40 and T40

The IBM 7133 Serial Disk System Advanced Models D40 and T40 provide highly available storage for UNIX and Windows NT servers. By implementing a powerful industry-standard serial technology, the 7133 Advanced Models D40 and T40 provide outstanding performance, availability, and attachability.

The rack-mountable 7133 Advanced Model D40 drawer is designed for integration into a supported 19-inch rack. The 7133 Advanced Model T40 is a free-standing desk-side tower unit.

Both 7133 Advanced Models can be populated with 18.2 GB, 9.1 GB, and 4.5 GB IBM Ultrastar disk drives with auto-docking carriers. Drive capacities can be intermixed, providing the flexibility to build storage environments ranging in capacity from gigabytes to terabytes. The 7133 Advanced Models can be intermixed in the same loop with other models of the 7133 (Models 010, 020, 500, 600) as well as with the 7131-405.

SSA multi-host attachment

Capable of connecting and sharing storage with multiple UNIX and Windows NT hosts, the 7133 Serial Disk System is ideally suited for clustered server environments. Servers can

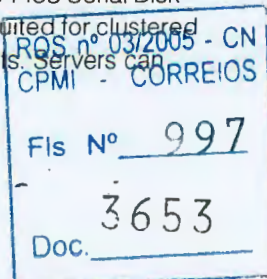
benefit from IBM Serial Storage Architecture (SSA) technology via appropriate SSA adapters or attachments.

High performance

The 7133 Advanced Models provide outstanding performance for multiple, concurrent, full-duplex I/O operations. Unlike SCSI bus configurations, SSA devices such as the 7133 Serial Disk System are configured in loops. Multiple concurrent operations can occur in separate sections of these loops, resulting in high overall throughput and superior utilization of the 160 MB/sec bandwidth of the 7133 Advanced Models.



IBM 7133 Serial Disk System Advanced Models D40 and T40



000104

4.

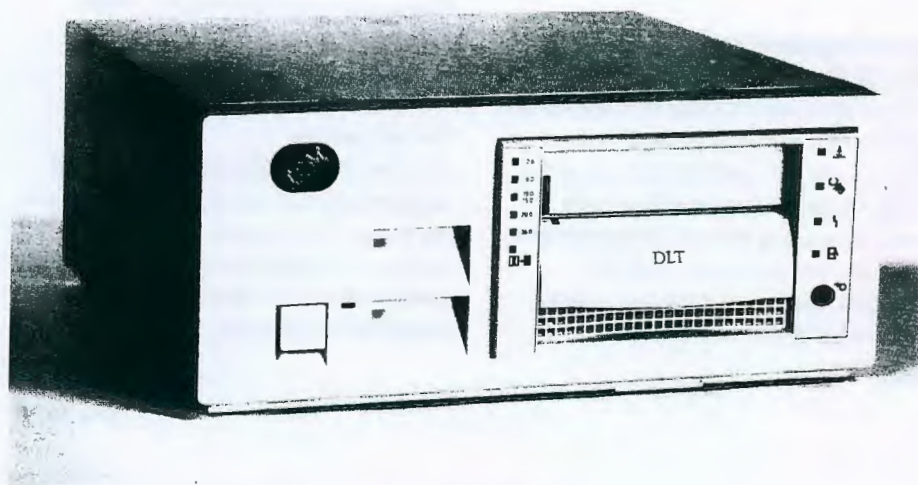
*A fast, dependable, and affordable disk-to-tape backup solution
for data archive and retrieval in the RS/6000 environment*



7205 35 GB External Digital Linear Tape Drive Model 311

Highlights

- Increased tape capacity up to 35 GB of native storage per cartridge (70 GB with 2:1 compression)
- Improved data transfer rate up to 5 MB/sec uncompressed (10 MB/sec with 2:1 compression)
- Flexible read/write compatibility with previous Digital Linear Tape (DLT) technologies
- SCSI-II differential fast/wide attachment (68-pin) to connect to IBM RS/6000™ systems
- External, self-powered packaging
- Cost-effective solution for save/restore and archiving functions



7205 35 GB External Digital Tape Drive Model 311

Overview

With the growing reliance on client/server computing, organizations of all sizes are turning to server-based databases to store their mission-critical data. Because these databases are often the most important information resource in their enterprise, organizations need storage solutions that can provide high performance, large capacity, data integrity, and reliability for important business applications.

In addition, the increased use of data storage to provide better customer service and improved business solutions requires fast, dependable, and affordable disk-to-tape backup operations and large data archive and retrieval facilities. To help

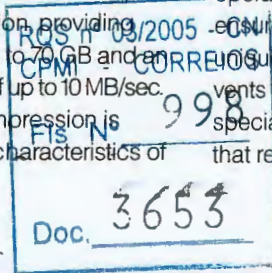
address these demanding data backup, restore, and archive application requirements, you can turn to the IBM 7205 35 GB External Digital Tape Drive Model 311.

The IBM 7205 Model 311 is an external, stand-alone, SCSI-attached, DLT drive that attaches to the IBM RS/6000 family of workstations and servers. The 7205 Model 311 features a native transfer rate of up to 5 MB/sec, with a native cartridge capacity of 35 GB. The 7205 Model 311 also supports 2:1 data compression, providing an effective capacity of up to 70 GB and an effective data transfer rate of up to 10 MB/sec. The actual degree of compression is highly dependent on the characteristics of

the data being compressed, such as block size and data format.

Digital Linear Tape technology

The DLT 7000 technology from Quantum in the 7205 Model 311 is the next generation of DLT technology, providing significant advantages in performance and capacity compared to previous versions, such as the DLT 4000. To help provide accurate operations, a patented tape leader ensures consistent tape motion, while a unique tape/reel locking mechanism prevents tape slack. The tape itself features a special high-grade metal particle formula that reduces tape and head wear and



000103

IBM 7205 35 GB External Digital Linear Tape Drive Model 311

Characteristics

Tape drive type	1/2-inch DLT 7000
Capacity (native)	35 GB
Capacity (compressed)	70 GB
Media	1/2-inch DLT tape-IV
Data transfer rate (native)	5 MB/sec
Data transfer rate (compressed)	10 MB/sec
SCSI interface	SCSI-II differential
Supported systems	RS/6000 models using the SCSI-II differential interface
Supported operating systems	AIX Version 4.1.5, 4.2.0, or later

Dimensions

Height	4.8 in (122.3 mm)
Width	11.0 in (280.0 mm)
Depth	11.5 in (290.0 mm)
Weight	15.0 lbs (6.63 kg)

Operating environment

Temperature	60°-90° F (16°-32° C)
Relative humidity	20% to 80%
Wet bulb maximum	73.4° F (23.0° C)
Power requirements	.135 kVA (61 watts)
Warranty	One year limited

employs a 208-track serial serpentine variable block recording format. The 7205 Model 311 is fully backward-compatible with previous DLT formats.

An integrated software solution

The 7205 Model 311 includes its own device driver that is used by save/restore utilities provided with the AIX® operating system. You can simplify your use of the 7205 Model 311 by managing it with industry-leading tape management and software solutions such as IBM's ADSTAR Distributed Storage Manager (ADSM) or those from other software providers.

Media

You can order media for the 7205 Model 311 from IBM Media or Supplies Distribution or from authorized dealers. To order IBM media and supplies in the United States, call 1-888-IBM-MEDIA (1-888-426-6334).

Tell me more

For more information, contact your IBM representative or your IBM Business Partner. In the United States or Canada, you can also call IBM Direct: 1-800-IBM-CALL (1-800-426-2255). Internet: www.storage.ibm.com



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G225-6727-00

Especificações técnicas do RS/6000 Enterprise Server Modelo S70 Advanced

Configuração padrão:

Microprocessador:	4 proc. PowerPC RS64-II de 262MHz	Disco rígido interno:	Dois Ultra SCSI de 4,5GB ou um de 9,1GB ("Hot-Swap")
Cache L1:	64KB para dados / 64KB para instruções	Baias de dispositivos:	Duas (uma disponível)
Cache L2:	8MB por processador	Slots de expansão:	Quatorze PCI (onze disponíveis)
Memória RAM:	1GB	Largura dos bar. PCI:	32 e 64 bits
Largura do barramento de memória:	Dual de 512 bits	Slots de memória:	Vinte
Portas:	Uma paralela, duas seriais, uma para teclado e uma para mouse		

Características pad.: CD-ROM 32X (máx.); Processador de serviços; Unidade de disquete de 3,5" e 1,44MB; Duas placas Ultra SCSI PCI

Sist. operacional AIX[†]: Versão 4.3.2 (licença para um ou dois usuários padrão)^{††}

Expansão do sistema

Configura. SMP:	Até duas placas adicionais de 4 processadores	Baias p/ discos int.:	Até 48 ("Hot-Swap")
Memória:	Até 32GB	Armazenamento em discos internos:	Até 436,8GB
Slots PCI internos:	Até 56 por sistema	Armazenamento em discos externos:	Até 38TB SCSI; até 22,7TB SSA
Baias para dispositivos int.:	Até oito por sistema		

Dimensões do sistema Gabinete CEC: 157,7 cm (A) x 56,7 cm (L) x 104,1 cm (P); 400Kg^{†††}
 Rack de I/O: 157,8 cm (A) x 65,0 cm (L) x 101,9 cm (P); 130Kg[§]

Garantia: Um ano (garantia limitada)

[†]Pré-instalado opcionalmente ^{††}Licenças para usuários adicionais disponíveis ^{†††}CEC totalmente carregado com 12 processadores e 32GB de memória

[§]O peso irá variar quando discos, placas e outros periféricos forem instalados.

Cada gaveta de I/O adicional fornece duas baias de dispositivo, quatorze slots para placas PCI e doze baias de disco "Hot-Swap". Com o máximo de quatro gavetas, esta configuração de I/O bastante flexível pode fornecer um total de oito baias de dispositivo, 48 baias de disco "Hot-Swap" e 56 slots PCI por sistema.

Além disso, o S70 Advanced oferece fontes de alimentação e ventiladores "Hot-Swap" e redundantes dentro da gaveta de I/O, assim como na unidade CEC. Se ocorrer alguma falha nesses componentes, o sistema está projetado para prosseguir com a operação, fazer uma chamada de serviço para pedir uma peça de reposição e suportar a substituição do componente defeituoso sem precisar desligar a máquina.

Os quatorze slots PCI de 32 bits (cinco dos quais também são de 64 bits) em cada gaveta se conectam ao hub de I/O à taxa agregada de 500MB/segundo, contribuindo para reduzir gargalos típicos dos dispositivos de I/O e melhorar a performance.

Oferecendo excepcional confiabilidade, a memória SDRAM ECC e o cache L2 ECC de 8MB fornecem detecção de

erros de um único bit e de bit duplo, e correção de erros de um único bit.

Caso seja realmente necessário parar o sistema, o S70 Advanced dispõe de funções de correção de erros e falhas, como controle de verificação da máquina, recuperação de reinicialização, isolamento de defeitos em dispositivos PCI e coleta de erros no processador de serviços para ajudar na rápida recuperação.

Além da capacidade "Hot-Swap", o S70 Advanced também dispõe de diagnósticos simultâneos on-line que permitem aos técnicos de manutenção corrigir potenciais defeitos e falhas no sistema sem interrupção das suas operações. Há também uma opção de reinicialização automática do sistema após um erro irreversível de software, falha de hardware ou parada induzida por condições ambientais.

Mas provavelmente o mais avançado recurso de disponibilidade do S70 Advanced é seu processador de serviços. Este processador de serviços oferece funções integradas avançadas de monitoração e alerta das condições ambientais do sistema, como a voltagem AC/DC, velocidade dos ventiladores e sensor de temperatura. Fornece avisos

antecipados de desligamento e tem recursos para alertas e análise do registro de erros.

Se for detectada uma potencial falha de componente, o processador de serviços pode discar automaticamente, sem intervenção do operador, para uma central de serviços para que se tomem medidas preventivas de manutenção, num esforço para evitar uma parada do sistema. Funções de diagnóstico e manutenção remotos, incluindo espelhamento da console a partir de um local remoto, permitem que um técnico se conecte ao sistema por linha discada para que possa reinicializá-lo e restaurá-lo o mais rápido possível após uma falha ou corrigir um potencial defeito antes que ele se manifeste.

Os modelos RS/6000 J30/40/50 e R30/40/50 instalados atualmente podem ser atualizados para o S70 Advanced, proporcionando suporte para aplicações de 32 e 64 bits (a maioria das aplicações de 32 bits rodam inalteradas no S70 Advanced). Esta capacidade lhe permitirá atualizar o hardware independentemente do software.

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Recursos e dispositivos suportados

O S70 Advanced suporta vários recursos e dispositivos opcionais, como:

- Placas de comunicação para ATM 155Mbps, ISDN, Token-Ring, Ethernet® 10/100 Mbps, Gigabit Ethernet, FDDI, X.25, SDLC, conexão a ESCON S/390, placa FCAL e ambientes assíncronos
- Placa para Conexão a Sistemas SP
- Monitores coloridos de diversos tamanhos e resoluções
- Terminais ASCII, X terminals e IBM Network Stations
- Impressoras IBM e de outras marcas, plotadoras e modems

Pronto para o Ano 2000

Quando utilizado de acordo com a documentação a ele associada, o RS/6000 Enterprise Server S70 Advanced é capaz de processar corretamente os dados de data entre os séculos XX e XXI, contanto que todos os demais produtos utilizados com ele troquem dados sobre a data de maneira adequada.

Serviço e suporte

O sistema RS/6000 Enterprise Server S70 Advanced tem o respaldo internacional do serviço e suporte IBM. Atrás de cada sistema vendido está nosso compromisso em obter o mais alto índice possível de satisfação do cliente.

Para obter mais informações

- Entre em contato com o seu representante de marketing ou Parceiro de Negócios IBM.
- Para saber mais sobre o RS/6000, visite o site do RS/6000 no endereço www.rs6000.ibm.com



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As fotografias mostram os modelos de engenharia e projeto. Alterações podem ser incorporadas nos modelos de produção.

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RS-03P-99

*Confiabilidade e escalabilidade para
ajudar sua empresa a crescer*



IBM

RS/6000 Enterprise Server S70 Advanced

Destaques

Sensacional sistema SMP (multi-processamento simétrico) de 64 bits que suporta aplicações de 32 e 64 bits simultaneamente

Poderosas configurações de 4, 8 ou 12 processadores de 64 bits

Excepcional confiabilidade com componentes de alta qualidade, memória ECC, fontes de alimentação, ventiladores redundantes e processador de serviços integrado

Desempenho e crescimento significativos através dos novos processadores e de até 32GB de memória do sistema

Grande capacidade de expansão com até 56 slots PCI

Upgrades disponíveis para modelos RS/6000® S70, R30/40/50 e J30/40/50

Excepcional sistema operacional AIX® com escalabilidade, disponibilidade e recursos de gerenciamento de sistemas

Servidor de e-business escalável com multiprocessamento simétrico (SMP)

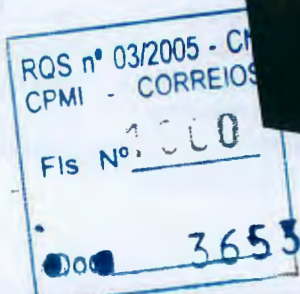
Descrição do produto

O IBM RS/6000 Enterprise Server S70 Advanced é um sistema SMP de 64 bits que oferece performance, escalabilidade e confiabilidade para as aplicações críticas de e-business. Este sistema se destaca em aplicações de OLTP (OnLine Transaction Processing), Enterprise Resource Planning (ERP) e Supply Chain Management (SCM).

Além disso, o S70 Advanced amplia significativamente a linha de produtos RS/6000 SMP para Business Intelligence, consolidação de servidores e para uso como servidor de grandes bases de dados.

O S70 Advanced oferece a capacidade e a escalabilidade para conectar aplicações de missão crítica à sua intranet corporativa, permitindo a exploração das tecnologias emergentes de e-business.

Com o S70 Advanced, você pode gerenciar a evolução de sua empresa na direção da computação de 64 bits, enquanto continua a suportar suas aplicações de 32 bits existentes. O sistema roda tanto aplicações de 32 quanto de 64 bits simultaneamente. A maioria das aplicações de 32 bits existentes rodam inalteradas devido à compatibilidade binária do AIX.



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Características

Benefícios

Processadores PowerPC® RS64-II e arquitetura do sistema de 64 bits	• Aumenta significativamente os níveis de performance para aplicações comerciais que requerem SMP • Melhora o uso da memória física para aplicações que precisam de acesso mais rápido a grandes quantidades de dados
Suporte para aplicações de 32 e 64 bits	• Permite que os clientes migrem para as aplicações de 64 bits em seu próprio ritmo
Cache L2 ECC de 8 MB por procesador	• Proporciona maior performance e confiabilidade
Até 32GB de memória SDRAM ECC	• Permite um desempenho maior e a exploração do endereçamento de 64 bits • Oferece mais confiabilidade para aplicações de missão crítica
Baias de disco "Hot-Swap"	• Possibilitam a troca ou adição de discos sem desligar o sistema
Subsistemas de alimentação e resfriamento "Hot-Swap" e redundantes	• Proporcionam maior disponibilidade em todo o sistema • Permitem manutenção simultânea, se necessário
Suporte para discos RAID SSA externos	• Aumenta a performance dos discos para até 160MB/segundo, ideal para aplicações com uso intensivo de transações • Oferece discos de maior capacidade do que os SCSI tradicionais • Contribui para melhor diagnóstico e manutenção
Processador de serviços integrado	• Monitora continuamente as operações do sistema e toma medidas preventivas ou corretivas para rápida resolução de problemas e alta disponibilidade • Possibilita diagnóstico e manutenção remotos
Conversões de modelo do S70, J/R 30, 40 e 50	• Oferecem possibilidade de atualização para que você possa contar com maior capacidade de processamento e dispositivos de entrada e saída de mais capacidade, preservando ao mesmo tempo seu investimento em armazenamento em disco, software e conhecimentos de seu pessoal
Até 56 slots para placas PCI	• Proporcionam opções de expansão para uma capacidade significativamente maior • Suportam muitas das placas mais comuns, oferecendo maior disponibilidade por custos mais baixos
Sistema operacional AIX 4.3	• Suporta a execução simultânea de aplicações de 32 e 64 bits nos sistemas RS/6000 de 64 bits em toda a sua escalabilidade • Compatível com UNIX® 98 do Open Group, pronto para o Euro, Ano 2000 e para Tivoli™ • Inclui Java™ Development Kit (JDK) V 1.1.6 com compilador Just-In-Time (JIT) 3.0 fazendo parte do sistema operacional, para que a compilação do Java seja feita em tempo real e sua performance seja melhor

O S70 Advanced também pode ser ligado ao RS/6000 SP como servidor conectado a um RS/6000 SP. Utilizando uma placa projetada especialmente (vendida separadamente) que se encaixa na gaveta de I/O do S70 Advanced, o sistema é capaz de se conectar diretamente à arquitetura do SP Switch. Ele é, portanto, ideal para lidar com transações que envolvem grandes bases de dados, permitindo ao mesmo tempo que outros nós SP atuem como servidores de aplicações. O S70 Advanced é gerenciado e controlado da mesma forma que um nó comum do SP, através do software Parallel Systems Support Programs (PSSP) de gerenciamento de sistemas, exclusivo do SP.

O Modelo S70 Advanced é composto por duas unidades que ficam posicionadas lado a lado. A primeira unidade é o complexo eletrônico central (CEC) e contém os processadores RS64-II de 262MHz e 64 bits, mais a memória do sistema. A segunda unidade é um rack de 19" padrão para dispositivos de I/O. Até três racks de I/O a mais podem ser adicionados a um sistema.

O CEC também contém um switch de alta velocidade para múltiplos caminhos, controladora de memória e duas portas de memória de alta velocidade, com largura de banda coletiva total de até 5,6GB/segundo para suportar até as aplicações mais exigentes. A memória de 1GB SDRAM ECC padrão pode ser expandida até 32GB. Com a adição de

cartões para 4 processadores, a configuração SMP padrão pode ser ampliada para uma configuração com 8 ou 12 processadores em SMP.

Cada rack de I/O acomoda até duas gavetas (máximo de quatro por sistema) que oferecem espaço adicional para subsistemas de armazenamento e comunicação. A gaveta de I/O básica contém um mínimo de 9,0GB de capacidade de armazenamento em disco Ultra SCSI, CD-ROM 32X (máx.), unidade de disquete de 3,5" e 1,44MB, duas placas Ultra SCSI PCI e um processador de serviços, além de onze slots disponíveis para placas PCI, uma baia de dispositivo e dez baias para discos "Hot-Swap" disponíveis.

A máquina base para o seu crescimento



IBM

IBM RS/6000 Enterprise Server Modelo S80

estaques

Oferece excelente performance para e-business, Business Intelligence, ERP e outras aplicações corporativas críticas.

Fornecer um caminho claro de evolução a partir do RS/6000 Enterprise Server Modelo S70 Advanced

Oferece a confiabilidade necessária no atual ambiente corporativo, que exige funcionamento ininterrupto

Suporta uma ampla variedade de opcionais de comunicação padrões de mercado, proporcionando flexibilidade para redes

O switch se conecta ao poderoso sistema IBM RS/6000® SP™ e permite seu uso como excepcional servidor de bancos de dados para ERP e Business Intelligence

Utiliza AIX®, reconhecido como o melhor sistema operacional UNIX®1 em ambientes comerciais

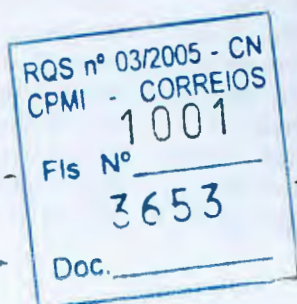
Projetado para performance

O IBM RS/6000 Enterprise Server Modelo S80 é o mais novo membro da popular família S de servidores empresariais de 64 bits da IBM. Ele mantém o projeto de sucesso dos modelos S70 e S70 Advanced, dobrando o número de processadores para 24 e a memória para 64GB. Além disso, o servidor S80 é a primeira plataforma RS/6000 a oferecer os microprocessadores RS64 III, baseados na avançada tecnologia de cobre da IBM. O resultado são processadores mais rápidos e confiáveis.

O sistema S80 oferece mais potência para as aplicações comerciais graças à sua excepcional largura de banda de memória e à largura de banda externa de I/O, que aumentam o throughput e ajudam a eliminar gargalos em potencial. Além disso, novos aprimoramentos de performance no AIX 4.3.3 se beneficiam do projeto de tecnologia de ponta do S80.

Faça seus negócios crescerem

O S/80 também oferece a escalabilidade necessária para você lidar tranquilamente com o crescimento dos seus negócios e para estender suas aplicações comerciais críticas até a Web.



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Características	Benefícios
Processadores PowerPC RS64 III	• Expande em muito os níveis de performance para aplicações comerciais que requerem SMP • A tecnologia de cobre proporciona maior velocidade de processamento e mais confiabilidade
Arquitetura do sistema de 64 bits	• Melhora o uso da memória física para aplicações que precisam de acesso mais rápido a grandes quantidades de dados
Suporte simultâneo para aplicativos de 32 e 64 bits	• Permite que os clientes migrem para os aplicativos de 64 bits em seu próprio ritmo • Protege o investimento feito em software e ao mesmo tempo permite que o hardware acompanhe os avanços tecnológicos
Cache L2 ECC de 8MB por processador	• Proporciona maior performance e mais confiabilidade
Até 64GB de memória SDRAM	• Permite um desempenho maior e a exploração do endereçamento de 64 bits, que poderá vir a ser usado em aplicações de grandes bancos de dados • Proporciona opções de expansão para uma capacidade significativamente maior
Baixas de disco "Hot-Swap"	• Oferecem maior disponibilidade, pois possibilitam a troca ou adição de discos sem desligar o sistema
Fonte de alimentação "Hot-Swap" redundante e subsistemas de resfriamento	• Oferece maior disponibilidade do sistema
Suporte para discos SSA RAID externos	• Aumenta a performance dos discos para até 160MB/s, ideal para aplicações com uso intensivo de transações • Oferece discos de maior capacidade do que os SCSI tradicionais • Proporciona alta confiabilidade para ambientes críticos
Processador de serviços incorporado	• Monitora continuamente as operações do sistema e toma medidas preventivas ou corretivas para rápida resolução de problemas, garantindo alta disponibilidade • Permite que o diagnóstico e a manutenção sejam executados remotamente
Conversão de modelos a partir do S70 Advanced	• Oferece possibilidade de atualização para que você possa contar com maior poder de processamento e dispositivos de entrada e saída de mais capacidade, preservando ao mesmo tempo seu investimento financeiro em armazenamento em disco, software e conhecimentos de seu pessoal
Até 56 slots para placas PCI	• Proporcionam opções de expansão para uma capacidade significativamente maior • Suportam muitas das placas mais comuns, oferecendo maior disponibilidade por custos mais baixos
Sistema operacional AIX 4.3	• Pronto para o Ano 2000², compatível com XPG4, UNIX 95 e UNIX 98 da The Open Group • Oferece um ambiente de compatibilidade binária do AIX, contribuindo para que os aplicativos permaneçam disponíveis em todos os releases do AIX Versão 4 • O AIX 4.3 integra o IBM AIX Developer Kit, Java™ Technology Edition com Compilador IBM Just in Time (JIT) como parte do sistema operacional básico, portanto o Java é carregado automaticamente para suportar aplicativos cliente e servidor de Java

Os processadores e a memória são envolvidos por um encapsulamento ("books") que protege os componentes eletrônicos sensíveis. Com o crescimento da demanda sobre o sistema, novos books podem simplesmente ser adicionados e instalados no sistema conforme a necessidade.

A combinação do sistema S80 com o AIX 4.3 ajuda a lidar facilmente com os inesperados de demanda. A nova função Workload Manager (gerenciador de cargas de trabalho) do AIX 4.3 faz a distribuição automática dos recursos do sistema em função das prioridades estabelecidas à medida que a carga de trabalho vai mudando. Isto permite que os aplicativos críticos respondam bem,

mesmo se vários aplicativos estiverem sendo executados em um único servidor S80.

Proteção para o seu equipamento

O sistema S80 ajuda-o a aproveitar e proteger seu patrimônio atual de informática. Por exemplo, você pode gerenciar a evolução de sua empresa na direção da computação de 64 bits, enquanto continua a suportar seus aplicativos de 32 bits existentes. O sistema pode executar aplicativos de 32 e 64 bits simultaneamente, e a maioria dos aplicativos de 32 bits rodam inalterados devido à compatibilidade binária do AIX. Isto permite que o hardware seja atualizado independentemente dos

aplicativos, que é o procedimento recomendado para garantir a continuidade dos seus negócios.

A plataforma S80 protege o patrimônio de hardware também. O S80 é montado em duas unidades lado a lado: uma unidade contém os processadores e a memória; a outra é um rack padrão de 19" para dispositivos de entrada e saída (I/O), contendo um disco Ultra SCSI de 9,1GB de alta performance, CD-ROM 32X (máx.), unidade de disquete de 3,5" e 1,44MB, duas placas PCI Ultra SCSI, um processador de serviços e ainda mais 11 slots PCI disponíveis, uma baía de dispositivo disponível e 11 baias de disco "Hot-Swap" disponíveis. Até três gavetas de I/O adicionais para

Especificações técnicas do RS/6000 Enterprise Server Modelo S80

Configuração padrão

Microprocessador:	6 processadores PowerPC RISC III de 450MHz	Largura dos barramentos PCI:	32
Disco rígido interno:	Ultra SCSI de 9,1GB ("Hot-Swap")	Largura do barram. de memória:	4 barramentos de 512 bits
Cache L1:	128KB para dados/128KB para instruções	Slots de memória:	16
Baias para dispositivos:	2 (1 disponível)	Portas:	11, 2 seriais, 1 para teclado e 1 para mouse
Cache L2:	8MB por processador	Recursos padrão:	CD-ROM 32X (máx.), processador de 3,5" e 1,44MB, 2 placas PC
Slots de expansão:	14 PCI (11 disponíveis)		
Memória:	2GB (mínimo)		
Sistema operacional AIX*:	Versão 4.3.3 (licença para servidor com um ou dois usuários acompanha o sistema)		

Expansão do sistema

Configurações SMP:	Até 3 cartões adicionais para 6 processadores	Slots PCI internos:	Até 56 por sistema
Baias para discos internos:	Até 48 ("Hot-Swap")	Armazen. em discos externos:	Até 45TB SSA
Memória:	Até 64GB	Baias para dispositivos internos:	Até 6 por sistema
Armazenamento em discos internos:	Até 873,6GB		

Dimensões do sistema

Cabinete CEC:	157,7 cm (A) x 56,7 cm (L) x 104,1 cm (P); 400Kg**
Rack de I/O:	157,8 cm (A) x 65,0 cm (L) x 101,9 cm (P); 130Kg***

Garantia:	1 ano (limitada)
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*Pré-instalado opcionalmente. Licenças para usuários adicionais disponíveis.

**CEC totalmente carregado com 24 processadores e 64GB de memória

***O peso irá variar quando discos, placas e outros periféricos forem instalados.

montagem em rack podem ser acrescentadas ao sistema, e a atualização do servidor S70 Advanced para o sistema S80 é fácil, já que os discos e conexões de rede existentes permanecem.

On-line o tempo todo

Para ajudar a garantir que os aplicativos estratégicos permaneçam disponíveis ininterruptamente, o sistema S80 dispõe de memória principal e cache ECC (Error Checking and Correcting), que podem detectar e corrigir a maioria dos erros de memória. Caso ocorra uma parada, o servidor S80 tem funções de correção de erros e falhas para ajudar a agilizar a recuperação do sistema, como controle de verificação do sistema, recuperação de reinicialização, isolamento de defeitos em dispositivos PCI e coleta de erros no processador de serviços.

Além disso, o sistema S80 também executa diagnósticos simultâneos on-line que permitem aos técnicos de manutenção corrigir muitos problemas potenciais sem interrupção das suas operações. Há também uma opção de reinicialização automática do sistema após um erro irrecuperável de software, falha de hardware ou parada induzida por condições ambientais.

Talvez o mais avançado recurso de disponibilidade da plataforma S80 seja sua capacidade de ligar para a IBM com segurança na ocorrência de um problema. O processador de serviços incorporado, ativado se você desejar, pode discar automaticamente para uma central de serviços se detectar falha em um componente, às vezes até mesmo antes que o problema se torne aparente aos usuários ou administradores do sistema.

A manutenção e diagnóstico remotos – incluindo espelhamento do console a partir de um local remoto – permitem que um técnico de serviços estabeleça uma conexão segura por linha discada e corrija um defeito em potencial antes que ele se manifeste, ou reinicie o sistema e corrija um defeito assim que possível após uma parada. Para oferecer ainda mais confiabilidade, a plataforma S80 também suporta o software de clustering IBM HACMP, a melhor solução de clustering em ambiente UNIX¹.

Recursos e dispositivos suportados

O Modelo S80 suporta vários recursos e dispositivos opcionais, como: placas de comunicação para ATM 155Mbps, ISDN (RDSI), Token-Ring, Ethernet[®] 10/100Mbps, Gigabit Ethernet, ESCON[®], FCAL, FDDI, X.25, SDLC e ambientes assíncronos.

O resultado...

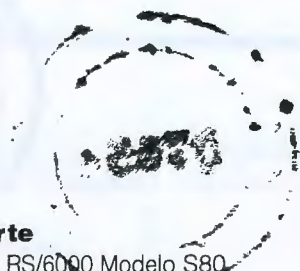
Com sua poderosa combinação de performance, opcionais para crescimento escalável, proteção ao investimento, confiabilidade e flexibilidade, a plataforma S80 oferece uma solução completa para ambientes de computação de missão crítica de hoje e amanhã. Trata-se de uma solução estratégica para empresas de médio e grande porte.

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Serviço e suporte

O Enterprise Server RS/6000 Modelo S80 tem o respaldo internacional do serviço e suporte IBM. Atrás de cada sistema vendido está nosso compromisso em obter o mais alto índice possível de satisfação do cliente.

Para obter mais informações

Para saber mais sobre o RS/6000 Modelo S80, entre em contato com seu representante de marketing ou Parceiro de Negócios IBM, ou visite nosso Web site: www.rs6000.ibm.com

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Suécia	46-20-220203
Suíça	41-155-1225

América do Norte

Canadá e EUA	1-800-IBM-CALL
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As fotografias mostram os modelos de engenharia e projeto. Alterações podem ser incorporadas nos modelos de produção.

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¹ 1998-1999 Operating System Function Review, D.H. Brown Associates, Inc. novembro de 1998.

² As licenças da Versão 4 atual podem requerer uma Correção Temporária do Programa para se tornarem prontas para o Ano 2000. Consulte o Banco de Dados de Compatibilidade dos Produtos com o Ano 2000 (Year 2000 Product Readiness Database) da IBM, no endereço www.ibm.com/y2k

Potente servidor SMP de 64 bits e até 4 processadores



Servidor IBM RS/6000 44P Modelo 270

Destaques

Excelente desempenho em um sistema multiprocessado simétrico (SMP) com até quatro processadores

Potente e acessível servidor de 64 bits para e-business e grupos de trabalho

Desempenho no processamento de aplicativos e-business com até 8GB de memória

Melhor desempenho com os novos microprocessadores de ponta POWER3-II da IBM

Processador de serviço embutido para alta disponibilidade do sistema

Equipado com o premiado Sistema Operacional AIX®

Seu dinheiro vale mais

O servidor RS/6000 44P Modelo 270 combina alto desempenho com capacidade de expansão e confiabilidade para ajudar você a incrementar os seus negócios. É uma solução de excelente relação custo-benefício como servidor de e-business, técnico ou de grupo de trabalho, ou como plataforma para desenvolvimento e teste de aplicativos SMP de 64 bits.

Duas vezes mais potente

O 44P modelo 270 foi criado para usuários que precisam de alto desempenho e multiprocessamento simétrico (SMP). Ele aumenta as vantagens do RS/6000 43P Modelo 260 incorporando a tecnologia de chip de cobre de última geração da IBM. Os processadores POWER3-II de 375 MHz oferecem um significativo aumento de desempenho, com 3 vezes mais capacidade de processamento em ponto flutuante e mais de 2 vezes a capacidade de processamento de transações em relação ao RS/6000 Modelo 260.



Recurso/vantagem

Processador POWER3-II / 4MB Cache L2

- Oferece maior velocidade de processamento e maior confiabilidade graças à tecnologia de cobre
- Aumenta de modo significativo o desempenho dos aplicativos comerciais e de ponto flutuante

Arquitetura de 64 bits

- Melhora o uso da memória física para os aplicativos que requerem acesso mais rápido a grandes volumes de dados

Suporte para aplicativos de 32 bits e 64 bits simultaneamente

- Permite a migração para aplicativos de 64 bits conforme a sua necessidade

Processador de serviço embutido

- Projetado para monitorar as operações do sistema e tomar medidas preventivas ou corretivas para a rápida resolução de problemas e alta disponibilidade do sistema
- Permite que o diagnóstico e a manutenção sejam feitos a distância

Disco Ultra2 SCSI de alto desempenho

- Oferece velocidades de transferência de dados de até 80MB/seg

Disco SSA RAID

- Fornece maior capacidade de disco com unidades ligadas externamente
- Oferece capacidade de transferência de até 160MB/seg
- Ajuda a melhorar a disponibilidade de dados e a confiabilidade do dispositivo

Sistema operacional AIX

- Suporta a execução simultânea de aplicativos de 32 e 64 bits em sistemas RS/6000 de 64 bits
- Oferece um ambiente de compatibilidade binária que ajuda a garantir a contínua disponibilidade do aplicativo durante os lançamentos do AIX Versão 4
- Mantém a conformidade da marca para as especificações XPG4, UNIX® 95 e UNIX 98 da The Open Group. Pronto para o ano 2000, Euro e Tivoli®
- Possui um grande número de aplicativos multiusuários

Não apenas os processadores são mais potentes como como você também pode ter o dobro do que era oferecido pelo RS/6000 Modelo 260. O Modelo 270 pode ser expandido para um sistema SMP de até quatro processadores e a expansão pode ser feita simplesmente através do encaixe de uma nova placa com processador.

A combinação de múltiplos processadores POWER3-II e até 8GB de memória faz do servidor RS/6000 Modelo 270 uma excelente escolha para exigentes aplicativos de e-business, e-commerce, business intelligence, e gerenciamento das relações com o cliente.

Os processadores de 64 bits do Modelo 270 também ajudam você a gerenciar a evolução da sua empresa para a computação de 64 bits, ao

mesmo tempo em que continua a suportar os aplicativos de 32 bits existentes. O sistema pode rodar aplicativos de 32 e 64 bits simultaneamente e a maioria dos aplicativos de 32 bits existentes pode rodar inalterada, alavancando e protegendo suas informações atuais.

Online o tempo todo

O servidor Modelo 270 oferece avançada confiabilidade nas suas operações mais críticas, com um processador de serviço embutido que é projetado para monitorar continuamente o sistema. Ele pode tomar medidas corretivas para manter rodando os aplicativos críticos. Caso você deseje habilitar essa opção, o processador de serviço pode discar automaticamente para um centro de serviço ao detectar falha de algum

componente, em geral antes que o problema fique evidente para os usuários e administradores do sistema.

Há recursos adicionais incluídos para confiabilidade. O Modelo 270 apresenta memória ECC que pode detectar e corrigir vários erros. Um painel LED de fácil leitura mantém você informado das condições do sistema. E o diagnóstico simultâneo permite que você resolva as potenciais disfunções sem precisar paralisar o sistema.

Para a maioria dos aplicativos extremamente críticos, o Modelo 270 oferece a opção de clustering de alta disponibilidade, usando o software de HACMP® da IBM, líder do setor.

Uma visão rápida do RS/6000 44P Modelo 270



Configuração mínima

Microprocessador:	375 MHz POWER3-II
Cache Nível 1 (L1):	64KB dados/32KB instruções
Cache Nível 2 (L2):	4MB
RAM (memória):	512 256MB
Largura barramento memória:	128 bits
Drive de disco interno:	9,1 GB Ultra SCSI
Baias de disco/media:	Cinco (duas disponíveis)
Slots de expansão:	Cinco PCI
Largura barramento PCI:	32 e 64 bits

Recursos padrão

Portas integradas: Tablet, teclado, mouse, Ethernet Thick e Thin, Ultra SCSI interno, Ultra2 SCSI externo, duas seriais, uma paralela e áudio estéreo
Drive CD-ROM, processador de serviço, painel operador LED, drive disquete 1,44MB 3,5 polegadas

Sistema operacional AIX

Versão 4.3.3 (licença para o número ilimitado de usuarios)

Expansão do sistema

Processador:	2, 3 ou 4 processadores
AM:	Até 8GB
DASD interno:	Até 54,6GB
Armazenagem externa:	IBM 2104 Expandable Storage Plus (Ultra2 SCSI), IBM 7133 Serial Disk System (SSA)

Exigências de força

Fonte de alimentação Universal 110/220V

Dimensões do sistema

23,6" alt. x 8,7" larg x 28,1" prof (600 mm x 222 mm x 713 mm): 81 lb (37 kg)

Garantia

No local durante um ano (limitada), sem nenhum custo adicional

Compacto, mas eficiente

O servidor Modelo 270 apresenta um design compacto com excelente capacidade de expansão. Ele oferece cinco baias de disco/media, permitindo até 54,6GB de armazenamento de disco interno, e produtos como o IBM 2104 Expandable Storage Plus (Ultra2 SCSI) e o IBM 7133 Serial Disk System (SSA) oferecem terabytes de armazenamento altamente confiável. A Ethernet integrada, o Ultra SCSI interno e o Ultra2 SCSI externo deixam todos os cinco slots PCI disponíveis para seu uso.

O desempenho e a capacidade de expansão fazem do Modelo 270 a escolha ideal para um servidor

departamental ou um servidor de e-business que pode ajudar a incrementar seus negócios na Internet com segurança. E, como um dos servidores SMP de menor custo da IBM, o Modelo 270 é uma excelente escolha como um servidor técnico SMP entry-level com 64 bits, ou como um sistema de desenvolvimento.

A vantagem do AIX

O sistema operacional UNIX para o Modelo 270 é o premiado AIX² da IBM (Versão 4.3.3 ou mais recente), que fornece valor real em termos de confiabilidade, disponibilidade e segurança. O AIX está ajustado para o desempenho de e-business, sendo

amplamente reconhecido por sua tecnologia de ponta no gerenciamento de sistemas e redes.

O AIX 4.3.3 oferece tecnologia JavaTM, desempenho de Web, além de ser uma excelente escolha para gerenciar instalações grandes e complexas. Ele oferece ferramentas de gerenciamento a distância baseadas na Web que permitem que você controle o sistema a partir de qualquer browser compatível com Java, e inclui o Tivoli Management Agent, que monitora recursos críticos, tais como o adaptador e a disponibilidade da rede, a condição do sistema de arquivos e carga de trabalho do processador.



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Para mais informações

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- www.rs6000.ibm.com
- www1.ibmmlink.ibm.com

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Nicarágua	505-278-5777
Panamá	507-263-9977
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¹ *Competitive Analysis of Reliability, Availability, Serviceability and Cluster Features and Functions*, D.H. Brown Associates, Inc. Setembro de 1998

² *1998-99 Operating System Function Review*, D.H. Brown Associates, Inc. Novembro de 1998

O servidor uniprocessado de 64 bits que está ao alcance do seu bolso



Servidor IBM RS/6000 44P Modelo 170

Destaques

Poderoso e acessível servidor de e-business ou workgroup de 64 bits

Aumento da capacidade (memória, disco interno, slots PCI) em relação ao RS/6000® Modelo 150

Seis slots padrão PCI e seis baias, oferecendo excelente capacidade de expansão

Duas opções de clock do processador para atender às necessidades de desempenho

Gabinete minitorre compacto que ocupa pouco espaço

Melhor desempenho com os novos microprocessadores de ponta POWER3-II da IBM

Processador de serviço embutido para alta disponibilidade do sistema

Equipado com o premiado Sistema Operacional AIX®

De olho no futuro

O servidor RS/6000 44P Modelo 170 é ideal para empresas que precisam de um sistema compacto, acessível e confiável para computação comercial e e-business. Ele foi projetado para oferecer o poder computacional e a capacidade de expansão para atender às suas necessidades de negócios no presente e no futuro.

Compromisso com a excelência

O modelo 170 estende a linha IBM de servidores poderosos e acessíveis com a tecnologia de ponta dos microprocessadores POWER3-II de cobre e 64 bits. A opção com o processador de 333 MHz combina a capacidade de processamento de 64 bits com um cache L2 de 1MB, oferecendo excelente desempenho por um preço acessível.



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Recurso/Vantagem

Microprocessador POWER3-II

- Oferece maior velocidade de processamento e maior confiabilidade graças à tecnologia de cobre
- Aumenta de modo significativo o desempenho das aplicações

Arquitetura de 64 bits

- Melhora o uso da memória física para os aplicativos que requerem acesso mais rápido a grandes volumes de dados

Processador de serviço embutido

- Projetado para monitorar as operações do sistema e tomar medidas preventivas ou corretivas para a rápida resolução de problemas e alta disponibilidade do sistema
- Permite que o diagnóstico e a manutenção sejam feitos à distância

Disco Ultra2 SCSI de alto desempenho

- Oferece velocidades de transferência de dados de até 80MB/seg

Disco SSA RAID

- Fornece maior capacidade de armazenamento com unidades externas
- Oferece capacidade de transferência de até 160MB/seg
- Ajuda a melhorar a disponibilidade de dados e a confiabilidade do dispositivo

Suporte para execução de aplicativos de 32 bits e 64 bits simultaneamente

- Permite a migração para aplicativos de 64 bits conforme a sua necessidade

Sistema operacional AIX

- Suporta a execução simultânea de aplicativos de 32 e 64 bits em sistemas RS/6000 de 64 bits
- Oferece um ambiente de compatibilidade binária que ajuda a garantir a contínua disponibilidade do aplicativo durante os lançamentos do AIX Versão 4
- Mantém a conformidade da marca para as especificações XPG4, UNIX® 95 e UNIX 98 da The Open Group. Pronto para o ano 2000, Euro e Tivoli®
- Possui um grande número de aplicações disponíveis

Com maior velocidade do clock e 4MB de cache L2, o processador de 400 MHz oferece um desempenho comercial significativamente melhor. E o desenho do Modelo 170 protege seu investimento, permitindo que você comece no 333 MHz e depois expanda para o 400 MHz simplesmente encaixando uma nova placa processadora.

Esses estão entre os mais poderosos processadores que a IBM já ofereceu. Com o processador de 400 MHz instalado, o Modelo 170 garante aproximadamente cinco vezes o desempenho de ponto flutuante e mais de duas vezes o desempenho de processamento de transações do 43P Modelo 150.

Combinado aos potentes microprocessadores há um novo controlador de memória para o barramento de 100 MHz que melhora ainda mais o desempenho. Com até o dobro de memória do Modelo 150 e até 72,8GB de armazenamento interno, o Modelo 170 pode facilmente atender às necessidades de uma pequena empresa ou de um servidor de Web.

A avançada tecnologia do Modelo 170 oferece inúmeras vantagens reais para sua empresa. Ele garante flexibilidade na construção de soluções de negócios, com mais de 13.000 aplicativos de AIX disponíveis em áreas como e-business, e-commerce e ERP. E, uma vez que o Modelo 170 pode rodar aplicativos de 32 e 64 bits ao mesmo tempo, ele pode ajudá-lo a gerenciar sua transição para o processamento de 64 bits.

Está lá quando você precisa dele

O Modelo 170 oferece confiabilidade empresarial em um servidor entry-level com um processador de serviço embutido que é projetado para monitorar continuamente as operações. Ele pode tomar medidas corretivas para manter rodando os aplicativos críticos.

Caso você deseje habilitar essa opção, o processador de serviço pode discar automaticamente para um centro de serviço ao detectar falha de algum componente, em geral antes que o problema fique evidente para os usuários e administradores do sistema.

Uma visão rápida do RS/6000 44P Modelo 170

Configuração mínima

Microprocessador:	333 MHz POWER3-II
Cache Nível 1 (L1):	64KB dados/32KB instruções
Cache Nível 2 (L2):	1MB
RAM (memória):	256MB
Largura barramento memória:	128 bits
Drive de disco interno:	9,1 GB Ultra SCSI
Baixas disco/media:	Seis (três disponíveis)
Slots de expansão:	Seis PCI
Largura PCI bus:	32 e 64 bits



Recursos padrão

Portas integradas: Tablet, teclado, mouse Ethernet Thin/Thick, Ultra SCSI interno, Ultra2 SCSI externo, duas seriais, paralela e áudio estéreo
Suporte vertical, Drive CD-ROM, painel operador LED, drive disquete 1,44MB 3,5 polegadas

Sistema operacional AIX

Versão 4.3.3 (licença para número de usuários ilimitado)

Expansão do sistema

Microprocessador:	400 MHz POWER3-II
Cache L2:	4MB
RAM:	Até 2GB
DASD interno:	Até 72,8GB
Armazenagem externa:	IBM 2104 Expandable Storage Plus (Ultra2 SCSI), IBM 7133 Serial Disk System (SSA)

Exigências de força

Fonte de alimentação Universal 110/220V

Dimensões do sistema

19,25" alt. x 7,9" larg x 20,25" prof (490 mm x 200 mm x 515 mm): 39 lb. (17,7 kg)

Garantia

No local durante um ano (limitada), sem nenhum custo adicional

O Modelo 170 apresenta memória para verificação e correção de erros (ECC) que pode detectar e corrigir vários erros. Um painel LED de fácil leitura mantém você informado sobre as condições do sistema. E o diagnóstico simultâneo permite que você examine potenciais problemas sem que seja preciso paralisar o sistema.

Para a maior parte dos aplicativos críticos, o Modelo 170 oferece a opção de criar um ambiente de alta disponibilidade usando o software HACMP¹ da IBM, líder do setor.

Gabinet pequeno, grande desempenho

O e-business encontra-se em fase de crescimento, e por isso o Modelo 170 oferece resistência e capacidade de expansão em um gabinete minitorre compacto. A Ethernet integrada e os controladores Ultra SCSI interno e Ultra2 SCSI externo deixam seis slots PCI padrão da indústria à disposição para seu uso. A armazenagem de disco interno varia de 9,1GB a 72,8GB, e produtos como o IBM 2104 Expandable Storage Plus (Ultra2 SCSI) e o IBM 7133 Serial Disk System (SSA) oferecem terabytes de armazenamento interno altamente confiável.

A vantagem do AIX

O sistema operacional UNIX para o Modelo 170 é o premiado AIX² da IBM (Versão 4.3.3 ou mais recente), que fornece valor real em termos de confiabilidade, disponibilidade e segurança. O AIX está ajustado para o desempenho de e-business, sendo amplamente reconhecido por sua tecnologia de ponta no gerenciamento de sistemas e redes.

O AIX 4.3.3 oferece tecnologia JavaTM, desempenho de Web e escalabilidade, além de ser uma excelente escolha para gerenciar instalações grandes e complexas. Ele oferece ferramentas de gerenciamento a distância vinculadas à Web que permitem que você controle o sistema a partir de qualquer browser compatível com Java, e inclui o Tivoli Agent Management, que monitora os principais recursos como adaptador e disponibilidade de rede, condição do sistema de arquivo, e carga de trabalho do processador.



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Para mais informações

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- www.rs6000.ibm.com
- www.1.ibm.link.ibm.com

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Nicarágua	505-278-5777
Panamá	507-263-9977
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Peru	349-0040
Uruguai	0 800 A IBM, ramal 2894 (2 426)
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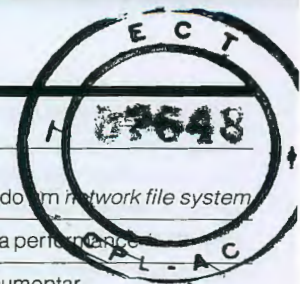
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¹ *Competitive Analysis of Reliability, Availability, Serviceability and Cluster Features and Functions*, D.H. Brown Associates, Inc. Setembro de 1998

² *1998-99 Operating System Function Review*, D.H. Brown Associates, Inc. Novembro de 1998



Características	Benefícios
AutoFS, CacheFS da suite ONC+	• O AutoFS oferece montagem automática de <i>network file systems</i> • O CacheFS fornece acesso mais rápido aos arquivos quando se estiver usando um <i>network file system</i>
I/O Direto	• Permite I/O com uma maior largura de banda para aplicações que exigem alta performance
I/O de arquivos sem cópias do sistema à rede	• Desenvolvedores podem utilizar chamadas para reduzir os ciclos da CPU e aumentar a capacidade do servidor
Aprimoramentos na performance do Telnet	• Desempenho do Telnet melhor do que em versões anteriores do AIX
Suporte para vários idiomas	• O Unicode, que visa a atender aos requisitos dos idiomas no mundo inteiro, inclui suporte para o Euro, a nova moeda da Comunidade Européia • A opção de migração de um único byte para o Euro está disponível com o suporte para a página de código 1252 da Microsoft® • A página de código 943 suporta interoperabilidade com clientes Microsoft Windows® no Japão • A capacidade de busca em DBCS (Double Byte Character Set ou conjunto de caracteres de byte duplo) permite pesquisa em documentos em japonês, coreano, chinês e chinês tradicional
Segurança	• Amplo suporte para recursos de segurança: gerenciamento de usuários/senhas, controles de autorização, auditoria extensível da segurança, limites para recursos, segurança de rede, verificação de integridade e normas de filtragem na segurança do IP • Suporte para criptografia (varia de acordo com a geografia e o componente), incluindo Triple DES e opções de 128, 56 e 40 bits • Certificações: certificado para AIX 4.3.0 no nível de segurança E3/F-C2, de acordo com os ITSEC, critérios europeus de avaliação da segurança da tecnologia da informação; um subconjunto operacional do AIX 4.3.1 está certificado no nível de segurança C2 de acordo com os TCSEC, critérios americanos de avaliação da segurança de um computador confiável; o AIX 4.3.1 recebeu a certificação para VPN (Virtual Private Network) da ICSA (International Computer Security Association); o AIX 4.3.1 com B1/EST-X V2.0.1 da Groupe Bull está sob avaliação no nível de segurança EAL4/F-B1 (Common Criteria V2.0)
Liderança em padrões	• Com marca UNIX 98 e X/Open XPG4 • Implementa threads do IEEE POSIX 1003.1-1996 (1003.1c), incluindo suporte para thread do M:N
Bonus Pack do AIX	• Oferece aos usuários opções e ofertas que incluem ferramentas para a Internet e de interoperabilidade, utilitários, softwares "as is", e aplicativos para avaliação e posterior aquisição, inclusos com o AIX 4.3 sem custo adicional quando a mídia for selecionada. Atualizado aproximadamente quatro vezes por ano (disponível mediante pagamento de despesas referentes à mídia e manuseio para todos os proprietários de licenças do AIX 4.3)

*Alguns conteúdos requerem o nível de modificação mais recente do AIX 4.3. Os conteúdos podem ser alterados sem prévio aviso. A criptografia pode estar sujeita a restrições de importação/exportação, as quais limitam sua disponibilidade.

Os usuários do AIX 4.3 têm acesso mais fácil às informações do sistema, pois a maioria das bibliotecas do AIX e do RS/6000 estão convertidas para HTML e podem ser visualizadas com browsers que suportem HTML 3.2. Os administradores de sistemas podem ver a documentação, navegar por hiperlinks e pesquisar a partir de qualquer sistema que tenha um browser com suporte para formulários.

Servidor PC de Arquivos e Impressão

AIX Fast Connect é um recurso opcional para proporcionar ao AIX 4.3.2 maior performance na utilização como servidor de arquivos e impressão. Ele suporta clientes Microsoft Windows 95, 98 e NT, e OS/2. O Fast Connect utiliza os serviços do AIX para obter maior eficiência, escalabilidade e confiabilidade, e o seu

desempenho está entre os mais altos dentre os servidores de arquivos e de impressão comercialmente disponíveis para a plataforma AIX. Ele pode ser executado em todos os sistemas RS/6000, incluindo o RS/6000 SP.

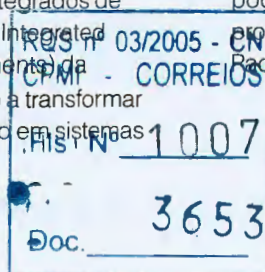
Ferramentas de desenvolvimento

Para os desenvolvedores de aplicativos, o AIX suporta todo um complemento de ferramentas de desenvolvimento, incluindo o IBM VisualAge® C++ e VisualAge for Java, disponíveis no Bonus Pack do AIX 4.3. Estas ferramentas oferecem os melhores Ambientes Integrados de Desenvolvimento (IDE, Integrated Development Environments) da categoria para ajudá-lo a transformar rapidamente seu projeto em sistemas produtivos.

Liderança em padrões

Além de oferecer interfaces e aplicativos familiares, o AIX 4.3 resolve os problemas de idiomas das empresas globais oferecendo ampla internacionalização com suporte para idiomas nativos e conjuntos de caracteres, com base nas especificações Unicode 2.0, largamente suportadas.

Para suportar os padrões de gerenciamento de sistemas em desenvolvimento, uma versão do Tivoli® Management Agent pré-carregada opcionalmente pode deixar o AIX pronto para Tivoli. Esse programa também vem incluso no Bonus Pack do AIX 4.3.



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5

O AIX 4.3 é líder em compatibilidade com os padrões dos sistemas operacionais. Ele traz as marcas UNIX 98 e X/Open XPG4. O AIX 4.3 também é compatível com POSIX® (Portable Operating System Interface for Computer Environments), IEEE 1003.4-1996 (1003.1c).

AIX 4.3, um link para o futuro...

O AIX 4.3 é a base para os aprimoramentos da IBM e para a integração das mais avançadas tecnologias que serão utilizadas no futuro. Em outubro de 1998, o Projeto Monterey foi anunciado como uma nova e sensacional iniciativa envolvendo IBM, Intel, SCO e Sequent. Este projeto resultará em uma única linha de produtos UNIX que irá explorar o poder da IBM e as arquiteturas IA-32 e IA-64 da Intel. Isto irá proporcionar aos clientes um ambiente UNIX forte e pronto para utilização nas grandes corporações, com recursos comuns às plataformas dos microprocessadores RISC da IBM, e de 32 e 64 bits da Intel.

O AIX Versão 4.3.2 é "EuroReady"

Quando utilizado de acordo com a documentação a ele associada, é capaz de processar dados monetários corretamente na denominação do Euro, respeitando suas convenções de formatação (incluindo o símbolo do Euro). Para isso, parte-se do pressuposto que todos os outros produtos (ou seja, hardware, software, firmware, etc.) usados com o AIX Versão 4.3.2 também sejam compatíveis com o Euro.

O AIX 4.3 está pronto para o Ano 2000*

Quando utilizado de acordo com a documentação a ele associada, é capaz de processar corretamente os dados de data entre os séculos XX e XXI, contanto que todos os demais produtos utilizados com ele troquem dados sobre a data de maneira adequada.

A IBM publica informações sobre a compatibilidade em suas plataformas com o Ano 2000 e o Euro e mantém sua lista atual de aplicativos prontos para o Ano 2000 no site www.ibm.com/IBM/year2000. Informações específicas sobre a questão do Ano 2000 no RS/6000 podem ser encontradas no site www.rs6000.ibm.com/solutions/y2k.

Respaldo da IBM

O AIX 4.3 proporciona um ambiente para os sistemas RS/6000 com novas tecnologias para as suas crescentes necessidades comerciais, de computação e de rede, e com a estabilidade exigida nas aplicações de missão crítica. Assim como todos os produtos RS/6000, o AIX conta com o respaldo do suporte internacional da IBM.

Para obter mais informações

- Entre em contato com o seu representante de marketing ou Parceiro de Negócios IBM
- Para saber mais sobre o AIX 4.3, visite o site do RS/6000 na Internet, no endereço www.ibm.com/AIX
- Para saber mais sobre o Projeto Monterey, visite o site www.ibm.com/Servers/monterey.

** Alguns releases do AIX podem precisar de atualizações para que se tornem prontos para o Ano 2000.*



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As fotografias mostram os modelos de engenharia e projeto. Alterações podem ser incorporadas nos modelos de produção.

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As informações a respeito de produtos de outros fabricantes foram obtidas dos fornecedores de tais produtos. Perguntas sobre os recursos dos produtos de outros fabricantes devem ser endereçadas aos respectivos fornecedores.

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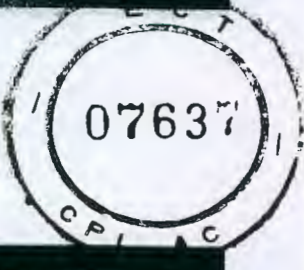



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Netfinity 5100





Model 865821Y

Key Model Specifications

Processor Speed (MHz)		Number of Processors (std/max)	
Level 2 cache (per processor)		Memory (std/max type) (MB)	
Max internal hard disk(s) capacity		Media Device(s) (speed/type)	
Slots x bays total (avail)		Form factor	

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- ▶ [Features & Benefits](#)
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Features & Benefits

Worldwide

DPLE

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Easy to Manage - The integrated Advanced System Management processor works with Director and Netfinity Manager to provide superior local and remote control-even when p down. And for high reliability and easy maintenance, the Netfinity 5100 offers Predictive Analysis, Light Path Diagnostics and redundant and hot-plug components.

Easy to use - Loaded with industry-leading features, this gusty server offers the new 13 front-side bus on Intel Pentium III processors to speed data to the processor for faster s performance; and the new integrated dual-channel Ultra160 LVD SCSI controller offers 1 industry-standard I/O for high-speed connection of devices to the system.

Scalability keeps pace with hard-working businesses - Deploy the 5100 with confidence-growing business. Get easy expansion with support for up to 4GB of ECC SDRAM mem optional, internal DLT tape drive. Internal storage capacity starts with six slim-high bays for up to 218.4GB).

Added Value: IBM-style - The tools for success: ServerGuide automated system setup e Server Start Up Support. Competitive three-year onsite limited warranty. Technology en support for long-distance management and maintenance capability. Plus valuable softw Lotus Domino and Norton AntiVirus (OEM version).

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Technical Details

Architecture
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Graphics Subsystems
Hard Disk
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System Management

Power Management
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Architecture

Form factor:	Tower (5x10)
Orientations allowed:	Horizontal
Bus type/architecture:	PCI
Slots x bays total (free):	5(5) x 10(8)
Expansion bus type:	PCI

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Multimedia

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4.



Media device type: **CD-ROM**
 Media speed: **40Xmax-17Xmin**
 Media interface type: **EIDE**
 Media data transfer rate: **4800KBps, 2550KBps**
 Media average access time: **90ms**
 Media transport type: **Front tray loading**
 Recordable:
 Removable:

Audio features:
 Multimedia features:



Top

Expansion Options

Slots total (free) and type: **2(2) PCI, 3(3) PCI fullsize**
 3.5" bays **7(6) SL**
 - accessible (free) and height:
 - not accessible (free) and height: **0(0)**
 5.25" bays **3(2) HH**
 - accessible (free) and height:
 - not accessible (free) and height: **0(0)**
 Plug and play support: **Yes**
 Parallel ports (type): **1 (SPP/ECP/EPP/IEEE 1284)**
 Serial ports (type): **2(9-pin 16550A NS compatible), 2 (USB)**
 Expansion ports: **Display, Ethernet, Keyboard, Mouse**

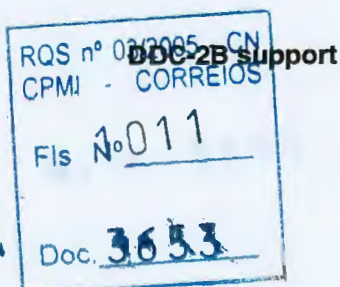


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Graphics Subsystem

Graphics Chip Set Model & Mfr.: **S3 Savage4**
 Graphics Data Width: **16-bit**
 Graphics Type: **SVGA**
 Default Memory Address: **-**
 Video RAM Std (MB): **8MB**
 Video RAM Max (MB): **8MB**
 Video RAM Type: **SDRAM**
 Graphics Bus Interface: **PCI**
 Resolution Max (Video RAM Std), **1600x1200 65536 colors**
 NI:
 Resolution Max (Video RAM Max), **1600x1200 65536 colors**
 NI:
 Colors Max (Video RAM Std): **16777216**
 Colors Max (Video RAM Max): **16777216**

Graphics features:



Top

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Hard Disk**Hard Disk 1:**

Number of installed hard disks:	0
Hard disk size ¹ :	Open Bay
Hard disk controller:	Dual Channel Ultra 160 SCSI (Adaptec AIC-7899)(P on planar)
Hard disk type:	Open bay
Total possible device types:	--
Max internal hard disk capacity:	218.4GB
Average seek time:	--
Average latency:	--
RAID levels supported:	--
Hot swappable drive bays:	6/6
Cache size:	--
Number of platters:	
Platter RPM:	
Burst transfer rate:	
Sustained data trans rate (low; high):	--
Additional storage features:	
Optional hard disk available:	

**Top****Memory**

Memory (RAM) std/max:	128MB / 4096MB
RAM speed:	133MHz
Optional RAM configuration:	168-pin DIMMs
RAM type:	SDRAM ECC
RAM slots total (available):	4 DIMM (3 DIMM)

Top**Networking**

Network interface:	Ethernet-Integrated
Network speed:	10Mbps, 100Mbps
Network features:	Full duplex, RJ-45 connector

Top**Power Management⁵**

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Power supply:	250Watts
Power supply type:	110 or 220 volt universal auto sensing
Power supply additional:	250 watt (redundant power supply)
Heat emissions:	--
Sound emissions:	68dB
Cooling system:	3 fans (hot swap redundant fan)
UPS:	Optional
Power management features ⁴ :	Auto restart



Top

System Management

Adapter:	Advanced System Management Processor
Software:	Netfinity Manager Predictive Failure Analysis
Features:	--



Top

Processor

Processor (CPU) ² :	Pentium III
Processor internal clock speed ² :	733MHz
Front Side Bus:	133MHz
Processor manufacturer:	Intel
Math co-processor:	Built-in
L1 internal CPU cache:	--
L2 external CPU cache std:	256KB
L2 external CPU cache type:	Full speed ECC
Upgradable processor:	Yes
Processor upgrade options:	Faster Pentium III processors (if available from li
Processor upgrade method:	Replace processor cartridge in Intel Slot1 connec
BIOS type:	Flash
Number of processors std/max:	1/2
SMP capable (multiple processors):	Yes
Multi-processor bus (slots/speed):	--
L3 cache:	



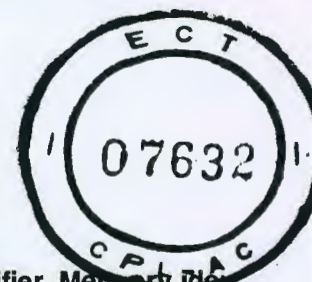
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Security



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E.



AssetCare features:

--

Security features:

Boot sequence control
Mechanical locks
Power on password
Privileged access password
Unattended startup

VPD support:

Hot swap disk backplane identifier, Memory module
Processor card identifier, Power supply identifier
Board identifier

Top

Software

Tested operating systems:

Linux Caldera 2.3, Microsoft Windows 2000 Server,
Microsoft Windows NT 4.0 Server, Novell NetWare
Novell NetWare 5.1, Red Hat Linux 6.1, SCO Unix
TurboLinux 3.6

Operating system provided:

Optional

Communication/networking
applications:

MoST Connect; Remote Connect

Device drivers/utilities:

ServerGuide (Netfinity Manager)

Multimedia applications:

--

Productivity applications:

Lotus Domino Application Server with 5 clients

Other applications provided:

--

Top

Standard Features

Pointing device type:

Enhanced Mouse (2 button)

Standard diskette size:

3.5" 1.44MB

Keyboard type standard:

Basic 101 key (rubber dome)

I20 Compliant:

Yes

Product approvals/certifications⁴:

AS/NZS 3548 Class A; BSMI CNS13438 Class A (C-Tick Mark (AS/NZS 3548 Class A); CB Certification (CEE (GB4943-1995) (China); CE MARK (EN55022 A)(EN60950)(EN50082-1); CISPR-22 Class A; CSA 950; FCC Class A - Part 15; GOST (GOST R 5037.29216-91 R.2)(GOST R 50839-95R.4) (Russia); IEC Class A; IEC-950; ISO 9241-3; MPS 1.4; NOM 018 (EN60950)(ISO 9241-3)(ISO 9241-8)(EKC1/59-98)(EKC1/59-98); UL-1950; VCCI Class A

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Warranty³

Limited Warranty period and type: **Three year parts and labor Onsite Repair**

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Weight & Dimensions⁶

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Weight: **82.7 lbs**
Travel weight: **--**
Height: **16.8 inches**
Height with stand: **--**
Width: **8.6 inches**
Width with stand: **--**
Depth: **26 inches**
Operating Temperature (C) (low; high): **10; 32**
Relative Humidity (%) (low; high): **8; 80**



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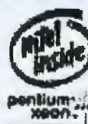
[certification](#)

Worldwide

Netfinity 7100



the tools matter



Model 866621Y

Key Model Specifications

Processor Speed (MHz)		Number of Processors (std/max)	
Level 2 cache (per processor)		Memory (std/max/type) (MB)	
Max internal hard disk(s) capacity		Media Device(s) (speed/type)	
Slots x bays total (avail)		Form factor	

For this Model

- Features & Benefits
- Accessories & Upgrades
- Technical Details
- Other Models

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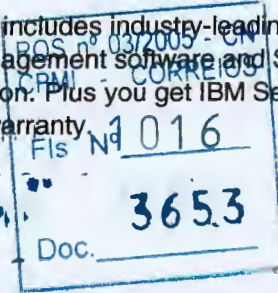
Features & Benefits

Comparing apples to apple pie - Giving you more for the price, the Netfinity 7100 integrates value-added features and X-architecture innovations such as: Advanced System Management processor for comprehensive control; Predictive Failure Analysis and Light-Path Diagnosis for easy monitoring and maintenance; power management for high availability; 10/100 Ethernet network readiness; and integrated dual-channel Ultra LVD SCSI controller for fast, robust expansion.

Scale-up, expand grow - Choose one to four-way SMP. Expand memory up to 16GB, with memory. SCSI controller supports up to 252GB internal and 2TB external storage. Six PCI enable powerful networking expansion. Optional ServeRAID SCSI adapters and tape libraries deliver comprehensive data security and backup solutions.

Enhanced mechanicals - Your choice of 8U rack or tower. The optional NetBAY3 provides convenient, elegant storage of additional network components for your tower. Both form factors the new converged tray for easy, modular interchange of hard disk drives and the dual-hot-plug backplane for a choice of half-high or slim-line drives.

More than hardware - Software includes industry-leading Lotus Domino, Netfinity Director, Netfinity Manager systems management software and ServerGuide for easy installation and configuration. Plus you get IBM Server Start Up Support and a very competitive three-year limited warranty.



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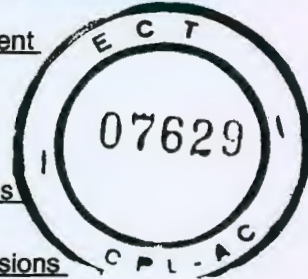


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Architecture

Form factor:	Tower (6x14)
Orientations allowed:	Horizontal
Bus type/architecture:	PCI
Slots x bays total (free):	6(6) x 14(12)
Expansion bus type:	PCI



Top

Multimedia

Media device type:	CD-ROM
Media speed:	40Xmax-17Xmin
Media interface type:	EIDE
Media data transfer rate:	2550KBps, 6000KBps
Media average access time:	90ms
Media transport type:	Front tray loading
Recordable:	
Removable:	

Audio features:
 Multimedia features:



Top

Expansion Options



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Slots total (free) and type:	6(6) PCI fullsize
3.5" bays	11(10) SL
- accessible (free) and height:	
- not accessible (free) and height:	
5.25" bays	3(2) HH
- accessible (free) and height:	
- not accessible (free) and height:	0(0)
Plug and play support:	
Parallel ports (type):	1 (ECP/EPP/IEEE 1284)
Serial ports (type):	2 (9-pin 16550A compatible), 2 (USB)
Expansion ports:	Display, Ethernet, Keyboard, Mouse

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Graphics Subsystem

Graphics Chip Set Model & Mfr.:	S3 Trio3D
Graphics Data Width:	16-bit
Graphics Type:	SVGA
Default Memory Address:	
Video RAM Std (MB):	4MB
Video RAM Max (MB):	4MB
Video RAM Type:	SGRAM
Graphics Bus Interface:	PCI
Resolution Max (Video RAM Std), NI:	1600x1200 65536 colors
Resolution Max (Video RAM Max), NI:	1600x1200 65536 colors
Colors Max (Video RAM Std):	16777216
Colors Max (Video RAM Max):	16777216

Graphics features:

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Hard Disk

Hard Disk 1:



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E-

Number of installed hard disks:	0
Hard disk size ¹ :	Open Bay
Hard disk controller:	Integrated Dual Channel Wide Ultra2 SCSI
Hard disk type:	Open bay
Total possible device types:	--
Max internal hard disk capacity:	254.8GB
Average seek time:	--
Average latency:	--
RAID levels supported:	--
Hot swappable drive bays:	10/10
Cache size:	--
Number of platters:	--
Platter RPM:	--
Burst transfer rate:	--
Sustained data trans rate (low; high):	--
Additional storage features:	--
Optional hard disk available:	--



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Memory

Memory (RAM) std/max:	256MB / 16384MB
RAM speed:	100MHz
Optional RAM configuration:	
RAM type:	SDRAM
RAM slots total (available):	16 RDIMM (12 RDIMM)

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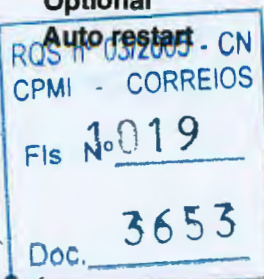
Networking

Network interface:	Ethernet-Integrated
Network speed:	10Mbps, 100Mbps
Network features:	LANClient Control Manager supported, RJ-45 connector (for 10Base-T/100Base-TX)

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Power Management⁵

Power supply:	500(2x250)Watts
Power supply type:	100-127VAC (50/60Hz), AC 200-240V (50/60Hz)
Power supply additional:	2x250 watt (redundant power supplies)
Heat emissions:	--
Sound emissions:	--
Cooling system:	4 fans
UPS:	Optional
Power management features ⁴ :	Auto restart



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System Management

Adapter:	Advanced System Management PCI Adapter
Software:	Netfinity Manager Capacity Manager Cluster Manager RAID Manager Update Connector
Features:	



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Processor

Processor (CPU) ² :	Pentium III Xeon
Processor internal clock speed ² :	550MHz
Front Side Bus:	100MHz
Processor manufacturer:	Intel
Math co-processor:	Built-in
L1 internal CPU cache:	32KB
L2 external CPU cache std:	1MB
L2 external CPU cache type:	Full speed ECC
Upgradable processor:	Yes
Processor upgrade options:	Faster Pentium III Xeon processors (if available f
Processor upgrade method:	Add processor option
BIOS type:	Flash
Number of processors std/max:	1/4
SMP capable (multiple processors):	Yes
Multi-processor bus (slots/speed):	-
L3 cache:	



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Security

AssetCare features:	Desktop Management Interface (DMI) 2.0 Wired for Management (WfM)
Security features:	Boot sequence control Mechanical locks Power on password Privileged access password Unattended startup
VPD support:	CPU Board, Hot swap disk backplane identifier, card identifier, Power backplane identifier, Pow identifier



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Software

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4.

Tested operating systems:

IBM OS/2 Warp Server for e-business, Linux Turt
Linux SuSE 6.1, Linux Caldera 2.3, Microsoft Win
Server, Microsoft Windows NT 4.0 Server, Novell
4.2, Novell NetWare 5.0, Red Hat Linux 6.1, 6.0, 5.0,
7.1

Operating system provided:

Optional

Communication/networking
applications:

Device drivers/utilities:

ServerGuide (Netfinity Manager); Update Connec

Multimedia applications:

Productivity applications:

Lotus Domino Application Server with 5 clients

Other applications provided:



Top

Standard Features

Pointing device type:

Mouse (2 button)

Standard diskette size:

3.5" 1.44MB

Keyboard type standard:

Basic 101 key (rubber dome)

I20 Compliant:

Yes

Product approvals/certifications⁴:

BSMI CNS13438 Class A (Taiwan); C-Tick Mark (/ 3548 Class A); CB Certificate/Report; CE MARK (Class A)(EN60950)(EN50082-1); CISPR-22 Class / C22.2 No. 950; FCC Class A - Part 15; ICES-003 C (Canada); IEC-950 CB Report; ISO 9241-3; MPS 1 019; TUV-GS - ZH/618; TUV-GS (EN 60950/IEC-95 UL-1950; VCCI Class A



Top

Warranty³

Limited Warranty period and type: Three year parts and labor Onsite Repair



Top

Weight & Dimensions⁶

Weight:

--

Travel weight:

--

Height:

15.7 inches

Height with stand:

--

Width:

19 inches

Width with stand:

--

Depth:

28 inches

Operating Temperature (C) (low; high):

10; 32

Relative Humidity (%) (low; high):

8; 80

Legal Notices and Footnotes

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Preferred Keyboard - Overview

Applicable Countries

Worldwide

Product Information

- Product **Publications** page.



General Information

The IBM Preferred Keyboard continues IBM's tradition of durably designed keyboards with just the right feel. Solid construction houses 104 quiet keys, including three Windows keys. The detachable palm rest, adjustable tilt, and two-meter cable provide flexibility and comfort. The keyboard is featured in pearl white and stealth black in many major languages.

Warranty: 1 year limited Customer Carry-In Exchange

This product replaces:

*

This product was replaced by:

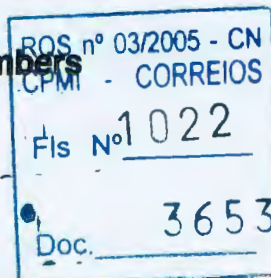
*

Packaging:

One box containing...

- Keyboard (unique version for each language)
- Palm rest
- Mini-DIN to DIN adapter for AT ports
- User's Guide

Marketing and FRU Part Numbers
Black Keyboard



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Geo: Language	Marketing Part Number	FRU Part Number
US: U.S. English	28L3621	02K0861
LA, CA: French/Canadian	28L3622	02K0863
Spanish/Latin American	28L3623	02K0867
Portuguese/Brazilian	28L3624	02K0869
EMEA: Danish	28L3631	02K0875
Dutch	28L3636	02K0876
French	28L3625	02K0877
German	28L3626	02K0878
Italian	28L3627	02K0883
Norwegian	28L3633	02K0884
Spanish	28L3628	02K0891
Swedish/Finnish	28L3634	02K0892
Swiss	28L3635	02K0893
U.K. English	28L3629	02K0896
U.S. ISO.	28L3637	02K0898
AP: Japanese	28L3637	02K0899



White Keyboard

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Geo: Language	Marketing Part Number	FRU Part Number
US: U.S. English	28L3584	02K0806
LA, CA: French/Canadian	28L3585	02K0808
Spanish/Latin American	28L3586	02K0812
Portuguese/Brazilian	28L3587	02K0814
EMEA:		
Arabic	28L3588	02K0815
Belgium/U.K.	28L3590	02K0817
Danish	28L3593	02K0820
Dutch	28L3594	02K0821
French	28L3595	02K0822
German	28L3696	02K0823
Greek	28L3597	02K0824
Hebrew	28L3598	02K0825
Icelandic	28L3600	02K0827
Italian	28L3601	02K0828
Norwegian	28L3602	02K0829
Polish	28L3603	02K0830
Portuguese	28L3604	02K0831
Russian Cyrillic	28L3606	33L1191
Slovak	28L3608	02K0835
Spanish	28L3609	02K0836
Swedish/Finnish	28L3610	02K0837
Swiss	28L3611	02K0838
Turkish 179	28L3612	02K0839
Turkish 440	28L3613	02K0840
U.K. English	28L3614	02K0841
U.S. ISO.	28L3616	02K0843
AP:		
Japanese	28L3617	02K0844
Taiwan	28L3618	02K0845
Thai	28L3620	02K0847

**Additional Part Numbers****Part number(s) for ordering multiple quantities:**

None

Associated FRU Part Number(s):

World Wide: Mini-Din to Din Adapter FRU part number-> 25H6643.

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Product Dates

Asia Pacific, Canada, Latin America, United States...

Announce Date-> 12/15/1998

Planned Availability Date-> 1/15/1999

Withdrawal Date-> Not Applicable

Effective Withdrawal Date-> Not Applicable



Europe/Middle East/Africa...

Announce Date-> 9/22/1998

Planned Availability Date-> 10/02/1998

Withdrawal Date-> Not Applicable

Effective Withdrawal Date-> Not Applicable

Technical Specifications

Performance Specifications as known at time of announcement:

Ergonomics: The detachable palm rest, adjustable tilt, and two-meter cable provide flexibility and comfort.

Interface type: PS/2 connector (includes PS/2 to PC-AT adapter)

Number of keys: 104 quiet keys, including three Windows keys.

Technology: Standard

Electrical Specifications: - 5 V, 200mA

Physical, Environmental, and Compatibility Specifications as known at time of announcement:

Weight: 2.8 lbs (kg) <-without palm rest

Height: 1.5 inches (37 mm)

Width: 19.9 inches (454 mm)

Depth: 6.4 inches (162 mm)

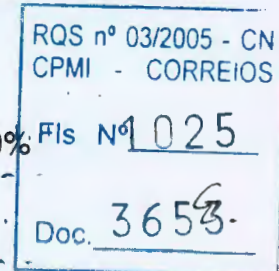
Operating Temperature:

- low of 10 degrees Celcius to a high of 40 degrees Celcius
- low of 50 degrees Farenheit to a high of 104 degrees Farenheit

Relative Operating Humidity: low of 8% to a high of 80%

Agency Approvals:

- FCC Part 15, Class B
- UL 1950 (E164844)



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- CSA C22.2 #0950-M89 (LR94275)
- Canada ICES-003 Class B; Canada NMB-003, Class B)
- CE (IEC 950, IEC 801-2, Level 3)
- TUV-GS ZH1/618 (R9552884)
- VCCI
- C-Tick
- MOC
- BCIQ
- PC98



ENERGY STAR-Compliant: *. The ENERGY STAR emblem does not represent EPA endorsement of any product or service.

Hardware Requirements for IBM systems and Non-IBM systems:

The Preferred Keyboard is supported on IBM or IBM-compatible desktop PCs with a PS/2 (mini-din) style mouse or PC-AT (DIN) keyboard ports.

Hardware Requirements for Non-IBM systems:

No information available

Supported Operating Systems:

Compatible with any operating system that works with standard PS/2 style mouse and keyboard drivers.

Limitations: Some configurations may not be supported.

Supported Software: Not Applicable

Other: None

Document Note(s):

1. The symbol * is used to denote that the information is currently unavailable for this product.
2. All dates are represented in the US English format of mm/dd/yyyy (where mm=month, dd=day, yyyy=year).
3. FRU stands for Field Replacement Unit. It is the part number used for ordering service/replacement parts.
4. Effective Withdrawal means that on the given date IBM will have withdrawn the products from marketing. After that date, the product can not be obtained directly from IBM.

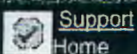
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40/80GB DLT Internal SCSI Tape Drive - Overview

Applicable Countries

Worldwide

Product Information

- Product **Publications** page .



General Information

The new 40/80GB DLT Internal SCSI Tape Drive provides the high-capacity, high-performance backup solution required by today's high-end servers. With a native capacity of 40GB per cartridge, and the ability to store up to 80GB per cartridge using its onboard hardware data compression, the 40/80GB DLT drive provides plenty of backup capacity for today's storage intensive applications. The 40/80GB DLT drive offers a 6 MB/sec native transfer rate that can be increased up to 10 MB/sec when using its hardware data compression feature. Greater reliability is achieved through improvements to the mechanical and electrical design of this drive. When you add up all the benefits, the IBM 40/80GB DLT Internal Tape Drive offers an excellent choice for high-end server customers looking for a state-of-the-art backup/restore device.

Warranty

3 year limited Customer Carry-In Exchange

This product replaces

00K7900 - 35/70GB DLT Internal Tape Drive

This product was replaced by

Not Applicable.

Packaging

One box containing...

- Base drive
- Multilingual user manual
- Trial version backup/restore software CDs
- Data cartridge
- Four M3 x 0.5 x 6-mm screws

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Fls Nº 1027
Doc. 3653

Product Marketing and FRU Part Number(s)

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Part numbers applicable to: World Wide

- Marketing part number: 00N7990
- FRU part number: 09N0729

**Additional Part Numbers****Part number(s) for ordering multiple quantities**

None

Product Dates**World Wide**

- Announce Date: 6/22/1999
- Planned Availability Date: 7/30/1999
- Withdrawal Date: Not Applicable
- Effective Withdrawal Date: Not Applicable

Technical Specifications**Performance Specifications as known at time of announcement**

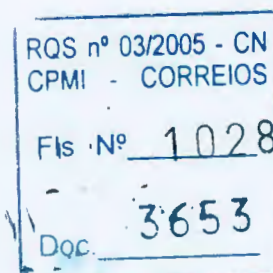
- Up to 40GB native capacity and up to 80GB with hardware data compression. Actual storage capacity will vary based on many factors and will often be less than the maximum possible.
- 5.25-inch FH form factor
- SCSI LVDS/SE interface
- Improved reliability
- Downward-compatible to IBM 35/70GB Internal DLT Tape Drive
- 6 MB/sec native transfer rate; up to 10 MB/sec with hardware data compression. Actual speeds will vary based on many factors and will often be slower than the maximum possible.

Physical, Environmental, and Compatibility Specifications as known at time of announcement**Weight**

- 6.44 lbs
- 2.9 kg

Height

- 3.4 inches
- 86.3 mm



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E.

Width

- 5.84 inches
- 148.3 mm

Depth

- 9.6 inches
- 243.8 mm

Operating Temperature

- between 10 degrees Celcius and 40 degrees Celcius
- between 50 degrees Farenheit and 104 degrees Farenheit

Relative Humidity

- **Operating:** between 20% and 80% (non-condensing)

Agency Approvals

- UL
- CUL
- TUV
- CE
- FCC - Class B
- VCCI
- C-tick

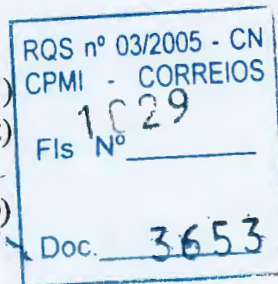
ENERGY STAR-Compliant

No. The ENERGY STAR emblem does not represent EPA endorsement of any product or service.

Hardware Requirements for IBM systems

The IBM 40/80GB DLT Tape Drive is supported on all models of the following IBM platforms:

- Netfinity 5500 (8660)
- Netfinity 5500 M10 (8661)
- Netfinity 5500 M20 (8662)
- Netfinity 7000 (8651)
- Netfinity 7000 M10 (8680)



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E.

- Netfinity 8500R

The drive is also supported on these IBM items:

- DLT Enclosure (3503-B0X)
- NetMEDIA Expansion Unit (3551-001)



Hardware Requirements for Non-IBM systems

Not applicable

Software Requirements

Trial versions of Seagate Backup Exec and CA ArcServeIT backup/restore applications are provided with the option.

Compatibility

The IBM 40/80GB Internal DLT tape drive is downward-compatible to the IBM 35/70GB Internal DLT tape drive. Look at the ServerProven Web page for updated information as it becomes available.

Limitations

Some configurations may not be supported.

Supported Software

Not Applicable

Other

None

Document Note(s):

- The symbol * is used to denote that the information is currently unavailable for this product.
- All dates are represented in the US English format of mm/dd/yyyy (where mm=month, dd=day, yyyy=year).
- FRU stands for Field Replacement Unit. It is the part number used for ordering service/replacement parts.
- Effective Withdrawal means that on the given date IBM will have withdrawn the products from marketing. After that date, the product can not be obtained directly from IBM.

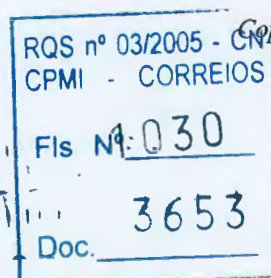
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12/24GB DDS/3 4mm Internal SCSI Tape Drive - Overview

Applicable Countries

Worldwide

Product Information

- [Warranty](#)
- [Publications](#)
- [Files](#)
- [Installation/Usage](#)
- [Photos](#)
- [Jumper Settings](#)

General Information

The IBM 12/24GB DDS/3 4-mm Internal Tape Drive can store up to 12GB in native capacity, and up to 24GB via hardware data compression, on an industry standard 125-meter DDS/3 data cartridge. The tape drive is downward read/write compatible to the IBM 4/10GB DDS/2 drive and to DDS and DDS-DC formats that makes it the perfect growth path for customers who have made the 4-mm DAT technology standard. Can be configured as either 3.5-inch or 5.25-inch HH form factor. The IBM 12/24GB DDS3 4mm Internal Tape Drive will ship as a "white" drive. The drive is a half-height form factor narrow SCSI tape drive. The option will include black 3.5" and 5.25" bezels. The FRU is a white 3.5" format drive.

Warranty

1 year limited Customer Carry-In Exchange

This product replaces

74G8632 - 4/10GB Internal 3.5" 4mm SCSI DAT Tape Backup Unit

This product was replaced by

*

Packaging

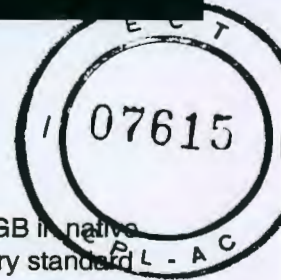
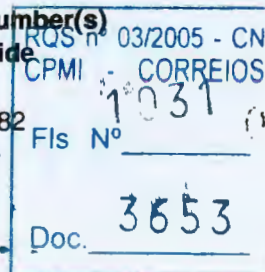
One box containing...

- 12/24 GB DDS-3 4mm Internal Tape Drive
- One data cartridge
- One cleaning cartridge
- Four M3x0.5x6mm mounting screws
- One SCSI converter for attaching a 50-pin device to a 68-pin cable
- One 3.5-inch bezel

Product Marketing and FRU Part Number(s)

Part numbers applicable to: World Wide

- Marketing part number: 01K1282
- FRU part number: 02K1150



**Additional Part Numbers****Part number(s) for ordering multiple quantities**

None

Associated Product(s)

4mm 125meter DDS3 Certified Tape Cartridge-12GB

- Marketing part number: 59H3465

4mm Universal Cleaning Cartridge

- Marketing part number: 59H3090

Product Dates**World Wide**

- Announce Date: 9/16/1997
- Planned Availability Date: 9/19/1997
- Withdrawal Date: Not Applicable
- Effective Withdrawal Date: Not Applicable

Technical Specifications**Performance Specifications as known at time of announcement
Interface**

- SCSI 50 Pin (8 bit, open ended)

Storage capacity

- Native: 12GB
- Compressed: 24GB

Backup Rates

- Native: 1.1 Mb per second
- Compressed: 2.2 Mb per second



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	+12v DC	+5v DC
Voltage Tolerance	+/- 10%	+/- 7%
Operational Current Draw	250 mA	600 mA
Standby Current	50 mA	550 mA
Peak Current Draw	600 mA Max	800 mA Max
Ripple (Peak to Peak)	< 100 mV	< 100 mV
Maximum Power Dissipation	< 3.3 Watts	< 2.2 Watts
Standby Power	< 3.3 Watts	< 2.2 Watts

Physical, Environmental, and Compatibility Specifications as known at time of announcement

	Operational	Non-Operational
Temperature	+5 to +45 Degrees C(+41 to +113 Degrees F)	-40 to +60 Degrees C(to +140 Degrees F)
Relative Humidity	20% to 80% Non-Condensing	5% to 95% Non-Condensing
Maximum Wet Bulb Temperature	26 Degrees C (78.8 Degrees F)	No Condensation
Altitude	-330 to +15000 Feet	-985 to +15000 Feet

Hardware Requirements for IBM systems Supported Servers: Netfinity 7000, 7000-M10 Netfinity 5500, 5500-M10 (Bay 3,4 only) Netfinity 3500 (Bay 2 only. No RAID controller support)

- Netfinity 3000 (Bay 2,3 only)
- Netfinity 1000

Hardware Requirements for Non-IBM systems

Not applicable

Limitations

Some configurations may not be supported.

Supported Software

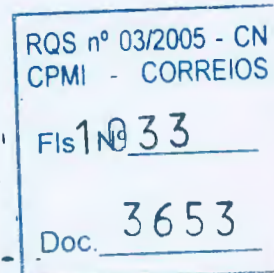
This tape drive has been tested with the following server backup and restore software:

Software for Windows NT:

- Cheyenne ARCserve V-6.0 for Windows NT
- Seagate Backup Exec V-6.0 Rev 90 for Windows NT
- Microsoft NT 3.51 (native tape support)
- Microsoft NT 4.0 (native tape support)

Software for Windows 95:

- Seagate Backup Exec V-2.0 for Windows 95
- Seagate DTA V-2.05 for Windows 95



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Software for NetWare:

- Cheyenne ARCserve V-6.0 for NetWare
- Seagate Backup Exec V-7.01b for NetWare

Software for OS/2:

- IBM ADSM/2 for OS/2
- Seagate Sytos Premium V-2.2 for OS/2

Software for SCO:

- Legato Networker V-5.0 for SCO

Document Note(s):

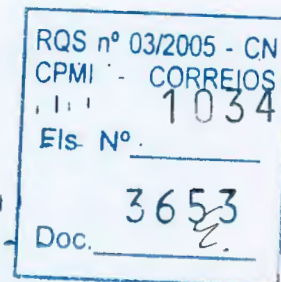
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External Storage Expansion

Options by IBM

Server Option 3551001

Key Model Specifications

Server option	Model Name



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Features & Benefits

Two 5.25" full-high extended length bays - For support of two full-high devices or four half-high devices

Array or data mirroring - Support with optional adapter card or appropriate software

Two independent power supplies - For maximum flexibility

Dual independent SCSI channels - Support with optional adapter card

Systems management - Support with optional adapter card

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Compatibility

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Restrictions:

Supported software:

—
Seagate Backup Exec V6.11 or higher for Microsoft Windows NT, Seagate Backup Exec V7.11 or higher for Novell Netware, Seagate Sytos Premium V2.1 or higher for IBM OS/2, Cheyenne Arcserve V6.x for Microsoft Windows NT, Cheyenne Arcserve V6.x for Novell Netware, IBM ADSM/2, Native tape applet under NT 4.0

**Hardware prerequisites
IBM systems:**

Netfinity 3500 M10, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 5500, Netfinity 5500 Rack Mounted models, Netfinity 5500 M10, Netfinity 5500 M10 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7000, Netfinity 7000 Rack Mounted models, Netfinity 7000 M10 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500R Rack Mounted models, PC Server 325 Pentium II models, PC Server 325 Rack Mounted Pentium II models, PC Server 330 Pentium II models

Non-IBM systems:

Server system, SCSI Adapter, External SCSI cable with VHDCI connector, Country-specific or custom rack power cables (2).

Operating system requirements:

Adapters:

Mounting Kit etc.:

—
—
Depending on configuration, one or more of the following cables are required: -4.3M External .8mm SCSI cable, -2M External .8mm SCSI cable, -1M External .8mm SCSI cable

Product Approvals

Product approval/certifications4:

Energy Star Compliant:

No



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Technical Information

System Option:

Form Factor:

Orientations Allowed:

Supported Architecture:

Security Features:

Safety Features:

Cluster Compatible:

Expansion Enclosure



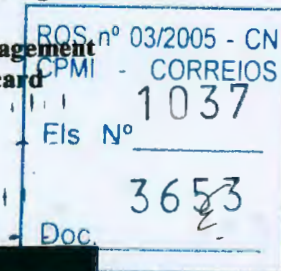
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Power Supply (Watts): 65
 Power Supply Additional:
 Power Supply Type: 85-270 volt AC (47/63Hz) (2)
 Energy Consumption Efficiency (Watts) - (Applicable to Energy Saving Law - Japan)
 Cooling System: 2 fans
 RAID levels supported:
 Max. internal hard disk capacity: --
 Max. total storage: --
 Rack Mounting Information:
 Rack Mounting Size:
 Rack Cabinet Type:
 Rack Space (u) (vertical space, u=1.75"):
 Rack - Server Capacity (multi)
 Max. Number of Servers in Rack:
 Slots, Total(Avail.) Type:
 3.5" Bays
 - Accessible Tot(Avail) height: 0(0)
 - Not Accessible Tot(Avail) height: 0(0)
 5.25" Bays
 - Accessible Tot(Avail) height: 2(2) FH
 - Not Accessible Tot(Avail) height: 0(0)
 Hot Swappable Drive Bays Std./Opt.:
 Number of Parallel Ports (Type):
 Number of Serial Ports (Type):
 Expansion Ports: VHDCI connector
 Plug and Play support:
 PCMCIA Support:



-The power connectors on the NetMEDIA Storage Expansion Unit EL are the standard IEC 320-C13 (10 amps) connectors.
-Suitable for two full-high devices or four half-high devices
-Two independent power supplies
-External .8mm VHDCI connector
-Internal Single-Ended Fast Wide SCSI-2 operation
-Support for both Single-Ended SCSI or Low Voltage Differential SCSI controllers
-Upgradeable to dual independent SCSI channels with optional adapter card
-Support for tape array or mirroring with optional adapter card
-Support Advanced System Management functions with optional adapter card
-Year 2000 ready



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Warranty³

Limited Warranty period and Three year Onsite Repair type:

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Weight & Dimensions⁶

Weight:	37 lbs
Travel weight:	--
Height:	5.25 inches
Width:	19 inches
Depth:	24 inches
Operating Temperature (C) (low; high):	5; 50
Relative Humidity (%) (low; high):	10; 80

Ship Information

Box 1

Weight:	--
Height:	--
Width:	--
Depth:	--

Box 2

Weight:	--
Height:	--
Width:	--
Depth:	--

Special ship information:

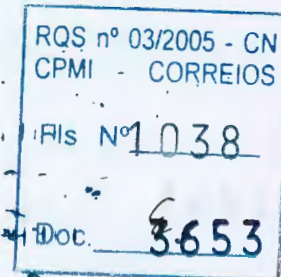


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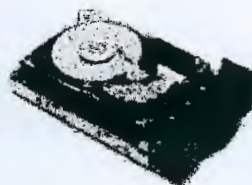
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MATTERS.**

Storage



Model 36L9746

Key Model Specifications

Key Characteristics			

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Features & Benefits

These drive options have a common, hot-swap carrier so they can be installed in the Netfinity 8500R, Netfinity 5600, and the Netfinity EXP200 providing convenience and lower support costs. All drives are pre-assembled onto a common hot-swap carrier to make installation quick and simple. -

The latest areal density technology fits more data onto each platter to maximize storage, optimizing RAID performance and providing lower cost/GB with increased capacity. -

Wide Ultra2 SCSI delivers 80MBps data transfers to the SCSI bus to provide maximum throughput -

These HDD options are SCA-2 compliant, which improve reliability by making a direct hot-swap connection. In addition, they contain the Predictive Failure Analysis (PFA) feature, which combined with Netfinity Manager, can alert you to impending drive failures so replacements can be made before a problem occurs. -

As with all Netfinity hard disk drive products, these options have been rigorously tested for compatibility and reliability with supported Netfinity products through the ServerProven program. This extra testing gives you the confidence these options will perform with consistency and reliability in your demanding enterprise server environment. -



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Characteristics

Interface bus:	SCSI
Form factor:	
Storage capacity:	36.4GB
Data width:	--
Buffer size:	--
Read/write head technology:	
Number of platters:	
Predictive failure monitor:	Yes
Buffer parity checking:	
Logical parms (heads, cyl, sectors):	
BER:	
Disk type:	
Cables:	
Max data transfer rate (burst):	80MB/s
Sustained data transfer rate (low; high):	--
Drive interface type:	Wide Ultra2 SCSI
Average access time:	12.17ms
Average data transfer rate:	--
Power consumption:	--
Seek time:	8ms
Platter RPM:	7200rpm
Other Information:	-Low Voltage Differential SCSI (LVDS) -80-pin, SCA-2 compliant, hot-swap interface -Mounted onto a hot-swap drive carrier



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Compatibility



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Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500 Rack Mounted models, Netfinity EXP200

_ Non-IBM systems:

Operating system requirements:

Adapters:

-Must be attached to either the standard RAID controller, the standard SCSI controller, or to a supported RAID or SCSI adapter.

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴: **CSA, TUV, UL**

Energy Star Compliant: --



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Warranty³

Limited Warranty period **Three year Customer Carry-in Exchange**
and type:



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Weight & Dimensions⁶

Weight:	2 lbs
Travel weight:	--
Height:	1.62 inches
Width:	4 inches
Depth:	5.75 inches
Operating Temperature (C) (low; high):	10; 32
Relative Humidity (%) (low; high):	8; 80

Ship Information

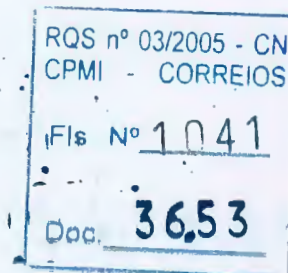
Box 1

Weight:	--
Height:	--
Width:	--
Depth:	--

Box 2

Weight:	--
Height:	--
Width:	--
Depth:	--

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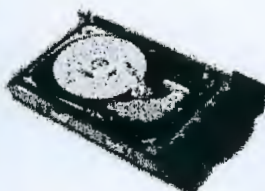
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Storage



Model 36L9745

Key Model Specifications

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Features & Benefits

These drive options have a common, hot-swap carrier so they can be installed in the Netfinity 8500R, Netfinity 5600, and the Netfinity EXP200 providing convenience and lower support costs. All drives are pre-assembled onto a common hot-swap carrier to make installation quick and simple. -

The latest areal density technology fits more data onto each platter to maximize storage, optimizing RAID performance and providing lower cost/GB with increased capacity. -

Wide Ultra2 SCSI delivers 80MBps data transfers to the SCSI bus to provide maximum throughput -

These HDD options are SCA-2 compliant, which improve reliability by making a direct hot-swap connection. In addition, they contain the Predictive Failure Analysis (PFA) feature, which combined with Netfinity Manager, can alert you to impending drive failures so replacements can be made before a problem occurs. -

As with all Netfinity hard disk drive products, these options have been rigorously tested for compatibility and reliability with supported Netfinity products through the ServerProven program. This extra testing gives you the confidence these options will perform with consistency and reliability in your demanding enterprise server environment. -



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Technical Details

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Weights & Dimensions



Characteristics

Interface bus:	SCSI
Form factor:	Slim high
Storage capacity:	18.2GB
Data width:	--
Buffer size:	--
Read/write head technology:	
Number of platters:	
Predictive failure monitor:	Yes
Buffer parity checking:	
Logical parms (heads, cyl, sectors):	
BER:	
Disk type:	
Cables:	
Max data transfer rate (burst):	80MB/s
Sustained data transfer rate (low; high):	--
Drive interface type:	Wide Ultra2 SCSI
Average access time:	11.67ms
Average data transfer rate:	--
Power consumption:	--
Seek time:	7.5ms
Platter RPM:	7200rpm
Other Information:	-Low Voltage Differential SCSI (LVDS) -80-pin, SCA-2 compliant, hot-swap interface -Mounted onto a hot-swap drive carrier



Compatibility

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Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

**Netfinity 4500R, Netfinity 4500F
Rack Mounted models, Netfinity
5100, Netfinity 5100 Rack Mounted
models, Netfinity 5600, Netfinity
5600 Rack Mounted models,
Netfinity 7100, Netfinity 7600,
Netfinity 8500 Rack Mounted
models, Netfinity EXP200**



_ Non-IBM systems:

Operating system requirements:

Adapters:

**-Must be attached to either the
standard RAID controller, the
standard SCSI controller, or to a
supported RAID or SCSI adapter.**

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴: **CSA, TUV, UL**

Energy Star Compliant: **--**



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Warranty³

Limited Warranty period **Three year Customer Carry-in Exchange**
and type:



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Weight & Dimensions⁶

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Weight: 1.4 lbs
 Travel weight: --
 Height: 1 inch
 Width: 4 inches
 Depth: 5.75 inches
 Operating Temperature (C) (low; high): 10; 32
 Relative Humidity (%) (low; high): 8; 80

Ship Information

Box 1

Weight: --
 Height: --
 Width: --
 Depth: --

Box 2

Weight: --
 Height: --
 Width: --
 Depth: --

Special ship information:

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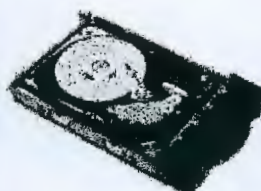
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Storage



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Features & Benefits

These drive options have a common, hot-swap carrier so they can be installed in the Netfinity 8500R, Netfinity 5600, and the Netfinity EXP200 providing convenience and lower support costs. All drives are pre-assembled onto a common hot-swap carrier to make installation quick and simple. -

The latest areal density technology fits more data onto each platter to maximize storage, optimizing RAID performance and providing lower cost/GB with increased capacity. -

Wide Ultra2 SCSI delivers 80MBps data transfers to the SCSI bus to provide maximum throughput -

These HDD options are SCA-2 compliant, which improve reliability by making a direct hot-swap connection. In addition, they contain the Predictive Failure Analysis (PFA) feature, which combined with Netfinity Manager, can alert you to impending drive failures so replacements can be made before a problem occurs. -

As with all Netfinity hard disk drive products, these options have been rigorously tested for compatibility and reliability with supported Netfinity products through the ServerProven program. This extra testing gives you the confidence these options will perform with consistency and reliability in your demanding enterprise server environment. -

Latest generation 10K technology provides the fastest hard disk drives available for Netfinity servers giving maximum performance for database/application serving, data mining and business intelligence

Model 36L9749

Key Model Specifications

Key Characteristics			



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database/application serving, data mining and business intelligence, high-capacity e-business, and data warehousing. -



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Characteristics

Interface bus:	SCSI
Form factor:	Slim high
Storage capacity:	18.2GB
Data width:	--
Buffer size:	--
Read/write head technology:	
Number of platters:	
Predictive failure monitor:	Yes
Buffer parity checking:	
Logical parms (heads, cyl, sectors):	
BER:	
Disk type:	
Cables:	
Max data transfer rate (burst):	80MB/s
Sustained data transfer rate (low; high):	--
Drive interface type:	Wide Ultra2 SCSI
Average access time:	8.39ms
Average data transfer rate:	--
Power consumption:	--
Seek time:	5.4ms
Platter RPM:	10000rpm
Other Information:	-Low Voltage Differential SCSI (LVDS) -80-pin, SCA-2 compliant, hot-swap interface -Mounted onto a hot-swap drive carrier

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Compatibility

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Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500 Rack Mounted models, Netfinity EXP200



_ Non-IBM systems:

Operating system requirements:

Adapters:

-Must be attached to either the standard RAID controller, the standard SCSI controller, or to a supported RAID or SCSI adapter.

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴: **CSA, TUV, UL**

Energy Star Compliant:

--



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Warranty³

Limited Warranty period **Three year Customer Carry-in Exchange**
and type:



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Weight & Dimensions⁶

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Weight: 1.4 lbs
 Travel weight: -
 Height: 1 inch
 Width: 4 inches
 Depth: 5.75 inches
 Operating Temperature (C) (low; high): 10; 32
 Relative Humidity (%) (low; high): 8; 80

Ship Information

Box 1

Weight: -
 Height: -
 Width: -
 Depth: -

Box 2

Weight: -
 Height: -
 Width: -
 Depth: -

Special ship information:

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Model 00N8071

Key Model Specifications

Key Characteristics

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Features & Benefits

9.1GB formatted capacities - Large storage capacity to hold even your large multimedia files

5.0ms typical average read seek times - For quick access to your important files

Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T.) - This industry-standard feature can provide advanced warning of an impending drive failure when used with the appropriate software (such as Netfinity Manager). Drives predicting failure within the product limited warranty period are eligible for replacement at IBM's expense before they fail.

High Platter RPM and Recording Density - For outstanding streaming data rates from 18 to 25 MBps.

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Interface bus:	SCSI
Form factor:	Slim high
Storage capacity:	9.1GB
Data width:	--
Buffer size:	2048KB
Read/write head technology:	
Number of platters:	
Predictive failure monitor:	Yes
Buffer parity checking:	
Logical parms (heads, cyl, sectors):	
BER:	
Disk type:	
Cables:	
Max data transfer rate (burst):	80MB/s
Sustained data transfer rate (low; high):	14MB/s; 25MB/s
Drive interface type:	Ultra160 SCSI
Average access time:	8ms
Average data transfer rate:	--
Power consumption:	--
Seek time:	5ms
Platter RPM:	10000rpm
Other Information:	-Contain Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T.)

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Compatibility

Restrictions: -Buffer size: Up to 384KB reserved for firmware

Hardware prerequisites:

System Units

_ IBM Systems: IntelliStation E Pro (6867, 6893),
IntelliStation M Pro (6889, 6868),
IntelliStation Z Pro (6865, 6866),
IntelliStation Ultimate Web Design
Machine, Netfinity 3500 M10

_ Non-IBM systems: -These drives are in compliance with the SCSI-3 draft proposed ANSI standards as they exist at the time of product release.

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

MS-DOS 6.22, PC DOS 7.0, PC DOS 2000, Microsoft Windows 3.1, Microsoft Windows 95 Version A and B, Microsoft Windows NT 4.0, IBM OS/2 4.0, Novell NetWare 4.x

Product approvals/certifications⁴: C-Tick, CE MARK, CSA, FCC, TUV, UL

Energy Star Compliant: No

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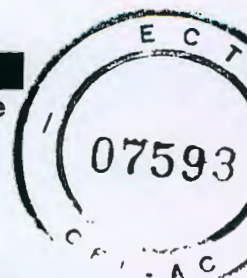
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Warranty³

Limited Warranty period **Three year Customer Carry-in Exchange**
and type:



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Weight & Dimensions⁶

Weight:	--
Travel weight:	--
Height:	1.02 inches
Width:	4 inches
Depth:	5.78 inches
Operating Temperature (C) (low; high):	5; 55
Relative Humidity (%) (low; high):	10; 90

Ship Information

Box 1

Weight:	--
Height:	--
Width:	--
Depth:	--

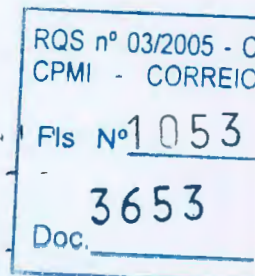
Box 2

Weight:	--
Height:	--
Width:	--
Depth:	--

Special ship information:

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DPLE

Storage



the tools matter

Model 01K7364

Key Model Specifications

Key Characteristics			
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Features & Benefits

Technical Details

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Features & Benefits

Convenience - Logical Drive Migration lets you add or remove disks or redefine arrays without shutting down your system.

Performance - An affordable 32-bit Active PCI Adapter supporting a single channel at Wide Ultra2 SCSI data transfer rates (80MBps) for improved productivity. The adapter has 4MB of cache to help provide superior data hit rates for improved system performance.

Reliability - Supports RAID levels 0, 1, and 5 plus the ability to change the RAID level of existing configurations on-the-fly and redundant storage of vital RAID configuration data for greater system availability.

Scalability - Grow your storage capabilities by adding up to 15 devices on the single Wide Ultra2 SCSI channel at data transfer rates of 80MBps.

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Interface bus:
Drive interface type:
Form factor:
Data width:
Buffer size:
Error correction:
Cables:
Average data transfer rate:
Power consumption:
Adapter Control:
Modes supported:
Adapter bus data:
Supported data transfer rates:
Adapter features:
Six interrupts:
Other Information:

PCI
Ultra2 SCSI
Fullsize
32-bit
4000KB



-
-
-
-
- 32-bit PCI
- 20MBps, 40MBps, 80MBps
- Logical drive migration (LDM)
-
- One Channel supports up to 15 disk drives.
- Wide Ultra2 SCSI support for up to 80MBps and cable lengths up to 25M
- EDO Cache
- I2O support
- Hot-swap PCI support
- Year 2000 ready
- 50MHz RISC processor
- ServeRAID software contained on CD-ROM
- Bootable CD-ROM support
- One VHDCI .8mm external connector
- One internal, industry standard, 68-pin connector
- One RAID channel
- ServeRAID Functions:
- Changing from RAID 0 to RAID 5, or vice versa, without requiring the data to be restored from a backup source.
- Expanding the array by adding up to three physical drives at a time.
- Logical drive size can be increased or left unchanged
- If left unchanged, additional logical drives can be defined
- Changing the RAID level on-the-fly from RAID 0 to RAID 5 by adding a drive, or RAID 5 to RAID 0 by removing a drive.
- Changing a two disk drive RAID 1 to RAID 5, on-the-fly, by adding one physical drive.
- Concurrent I/O support allowing logical drives to be accessed by users during LDM.
- Degraded mode support allowing a logical drive in critical mode not to affect LDM if already in progress, or preventing LDM start if the drive is in critical mode prior to start of LDM.
- Power failure recovery allowing LDM

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activity recovery even after a power disruption.

-Hot-Swap Rebuild - automatically starts rebuilding a replaced disk drive without operator intervention.

-Data scrubbing - periodically scans disk services and automatically repairs bad sectors on the disk array to enhance data integrity.

-One step array initialization and synchronization - reduces the time to prepare a new RAID 5 array to accept data.

-Auto synchronization - automatically initializes drives without user intervention.



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Compatibility

Restrictions:

-Splitting a SCSI RAID channel between external and internal devices is not supported with either Netfinity ServeRAID-3H Ultra2 SCSI Adapter or Netfinity ServeRAID-3L Ultra2 SCSI Adapter., -Netfinity 3000 can support single Netfinity ServeRAID-3H Ultra2 SCSI Adapter or single Netfinity ServeRAID-3L Ultra2 SCSI Adapter. The RAID adapter must be installed in PCI slot number 3., -Does not support a battery backup option.

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 1000, Netfinity 3000, Netfinity 3500, Netfinity 3500 M10, Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 5500, Netfinity 5500 Rack Mounted models, Netfinity 5500 M10, Netfinity 5500 M10 Rack Mounted models, Netfinity 5500 M20, Netfinity 5500 M20 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7000, Netfinity 7000 Rack Mounted models, Netfinity 7000 M10 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500R Rack

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Mounted models, PC Server 325
Pentium II models, PC Server 325
Rack Mounted Pentium II models,
PC Server 330 Pentium II models,
IntelliStation Z Pro (6865),
IntelliStation M Pro (6889),
IntelliStation Ultimate Web Design
Machine



_ Non-IBM systems: --
Operating system requirements: --
Adapters: --
Mounting kit etc.: --

--External cables are required when
attaching external SCSI storage
enclosures, -Requires an internal
DASD status cable for internal
RAID configurations using
hot-swap bays.

Supported software:

IBM OS/2 Warp Server Advanced
4.0 SMP Feature, Novell
IntranetWare 1.0, Microsoft
Windows NT 4.0 Server, SCO Open
Server 5.0.4, SCO Unixware 7.0

Product approvals/certifications⁴:

C-Tick (AS/NZS 3548), CE MARK
(EN 55022 Class B), CISPR-22
Class B, FCC Class B - Part 15,
IEC, VCCI Class B

Energy Star Compliant:

No

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Warranty³

Limited Warranty period and type: Three year Customer Carry-in Exchange

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Weight & Dimensions⁶

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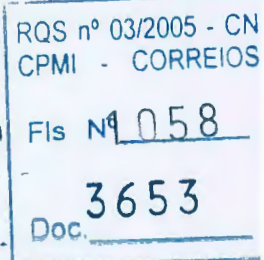
4



Weight: --
 Travel weight: --
 Height: --
 Width: --
 Depth: --
 Operating Temperature (C) (low; 10; 32 high):
 Relative Humidity (%) (low; 8; 80 high):
Ship Information --
Box 1
 Weight: --
 Height: --
 Width: --
 Depth: --
Box 2 --
 Weight: --
 Height: --
 Width: --
 Depth: --
 Special ship information:

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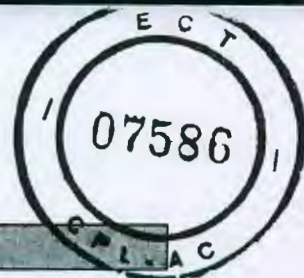
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A IBM está lançando o novo Monitor A50, que proporciona uma ótima qualidade de imagem, excelente performance e facilidade de uso, a um preço super competitivo.

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e



Principais Características e Benefícios

- * **Monitor FST de 15" e área visualizável de 13.8" (351mm);**
- * **Imagens Excepcionais com alto brilho e contraste aperfeiçoado;**
- * **Tela plana antireflexiva, elimina reflexos incômodos de brilho e cor, permitindo maior conforto ao usuário;**
- * **Controles digitais que proporcionam ajustes precisos para posicionamento da tela, brilho contraste;**
- * **Base giratória flexível para conforto do usuário;**
- * **Baixa emissão conforme diretrizes MPR-II;**
- * **Gerenciamento de energia ENERGY STAR e Swedish NUTEK via DPMS, permitindo maior economia de energia e maior vida útil para o monitor;**
- * **A característica Plug and Play via DDC 1/2B, permite gerenciamento externo através de softwares apropriados como Netfinity Manager;**
- * **Conformidade com ISO 9241-3, que garante melhor ergonomia e conforto ao usuário;**
- * **É complementado com um cabo de sinal de video já acoplado ao monitor que possui conector padrão 15 pinos D-shell.**
- * **Compatível com Windows 95 / 98 e NT;**
- * **Trabalha em até 70Khz, permite Flicker-Free em 1024x768 a 85Hz não intrelaçado;**
- * **Power Supply Universal Bivolt Automática;**
- * **Disponível na cor Branco Pérola;**
- * **Este produto não tem dependência de data portanto está pronto para o ano 2000.**

Hardware Compatível:

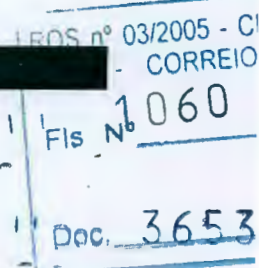
COMMERCIAL DESKTOP SYSTEMS

System

Video/Adapter Card

IBM 6561 PC 300

Cirrus 5465 AGP video



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IBM 6561 PC 300
IBM 6591 PC 300
IBM 6893 PC 300
IBM 6862 PC 300PL
IBM 6893 PC 300PL
IBM 6287 PC 300

Cirrus 5465 AGP video
Cirrus 5465 AGP video
MGA G200/ Diamond Mirage / MGA 200D
S3 Trio 3D
MGA G200
S3 Trio 3D

PSG SERVERS SYSTEMS

IBM Netfinity 3000	8476-xxx	Onboard S3 Trio64+ video
IBM Netfinity 3500	8644-xxx	S3 Virge /GX2 video
IBM Netfinity 5000	8659-xxx	S3 Trio64V2+ video
IBM Netfinity 5500	8661-xxx	S3 Trio64V2+ video
IBM Netfinity 5500	8662-xxx	S3 Trio64V2+ video
IBM Netfinity 7000	8680-xxx	S3 Trio64V2+ video

PSG APTIVA SYSTEMS

IBM Aptiva	2137
IBM Aptiva	2139

OBS: Pode ser instalado em outros equipamentos IBM PC Compatíveis

SOFTWARE COMPATÍVEL

Compatível com ambientes Windows 95 / 98 e NT

Modos de Display

Preset:

Addressability	Freq.Vertical	Freq. Horizontal
640 x 480	60 Hz NI	31.5 kHz
640 x 480	85 Hz NI	43.3 kHz
800 x 600	75 Hz NI	46.9 kHz
800 x 600	85 Hz NI	53.7 kHz
1024 x 768	75 Hz NI	60.0 kHz
1024 x 768	85 Hz NI	68.7 kHz

Preload:

720 x 400	70 Hz NI	31.5 kHz
720 x 400	85 Hz NI	37.9 kHz
640 x 480	75 Hz NI	37.5 kHz
MFI mode 2	75 Hz NI	31.5 kHz

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ilidade

Tamanho da tela e tipo / Área Visível	15" FST / 13.8" (351 mm)
Frequência Vertical	50 a 160 Hz
Frequência Horizontal	30 a 70 KHz
Maximo endereçamento	1024 x 768
Dot pich	.28mm
Garantia	3 anos (Balcão)

Energia:

Tensão de Entrada (Bivolt automático)	90 - 264 V Ac
Dissipação Máxima	341 Btu/Hr
Consumo Máximo	100 watts
Consumo em uso normal	90 watts
Consumo em VESA Standby/Suspend	15 watts
Consumo em VESA Off	5 watts

Características Físicas:

- * Largura: 360 mm (14.2")
- * Profundidade: 389 mm (15.3")
- * Altura: 390 mm (15.4")
- * Peso: 12.6 Kg (27.8 libras)

Nota: O peso e a altura incluem a base giratória.

Aprovações / Regulamentações:

- * **UL 1950 Primeira Edição (U.S.)**
- * **CSA (Canada)**
- * **IEC950 CB Report**
- * **FDA/DHHS (U.S.)**
- * **NOM (Mexico)**
- * **SEMKO (Sweden)**
- * **TUV (Germany)**
- * **NOM (Mexico)**
- * **CE (Europe)**
- * **IC (Canada)**
- * **EN 55022 B (Europe)**
- * **FDA/DHHS (U.S)**

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- * PTB (Germany)
- * FCC Classe B (U.S.)



Aprovações de Ambiente / Energia / Ergonomia / Compatibilidade:

- * Energy Star (US)
- * MPR-II (Sweden)
- * NUTEK
- * GS (Germany)
- * PC99 Listing
- * ISO 9241-3 (WW)
- * ISO 9241-8 (WW)

Itens que Acompanham o Produto:

- * Base Giratória
- * Cabo de força AC
- * Manual do Usuário
- * Relação de Autorizadas IBM
- * Disquete de Instalação

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Processor Upgrades

Options by IBM



Model 00N7943

Key Model Specifications

Key Characteristics

Model 00N7943	
Processor	
Cache	
Memory	

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Features & Benefits

- Feature Benefit information not available on this product

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Characteristics

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Processor (CPU):	Pentium III
Processor internal clock speed:	733MHz
Front side bus:	133MHz
Processor manufacturer:	Intel
L1 internal CPU cache:	32KB
Processor upgrade method:	Add processor option
BIOS type:	Flash ROM support DMI BIOS v2.0
Other Information:	Option can be used to upgrade 533EB MHz or 600EB MHz or 667 MHz Netfinity 5600 models to 733 MHz or 667MHz Netfinity 5100 models to 733 MHz.



Top

Compatibility

Restrictions: **-The second processor in any model must match the speed of the first processor.**

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴: **C-Tick, CE MARK, CSA, cUL, TUV, UL**

Energy Star Compliant: **No**



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Warranty³

Limited Warranty period and type: **Three year Customer Carry-in Exchange**



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Weight & Dimensions⁶

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000174 E

Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high):
Relative Humidity (%) (low; high):
Ship Information --
Box 1
Weight: --
Height: --
Width: --
Depth: --
Box 2 --
Weight: --
Height: --
Width: --
Depth: --
Special ship information:



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Memory Options by IBM

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[▶ Features & Benefits](#)[▶ Technical Details](#)[\\$ Buy Now](#)[▲ Top](#)**Features & Benefits**

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMs are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

[▲ Top](#)**Technical Details**[Characteristics](#)[Compatability](#)[Warranty](#)[Weights & Dimensions](#)[▲ Top](#)**Characteristics****Model 33L3123****Key Model Specifications**

Key Characteristics	128MB		
	133MHz ECC		
	SDRAM		
	RDIMM		
	Memory		

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CPMI - CORREIOS

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3653

Doc.

000176

Memory capacity: **128MB**
 Memory type: **ECC SDRAM**
 Form factor: **DIMM**
 Average access time: **133MHz**
 Number of pins: **168**
 Alloy:
 Other Information:

-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:

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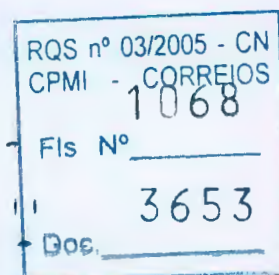
Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair

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Weight & Dimensions⁶



000177

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Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low; high):
Relative Humidity (%) (low; high):
Ship Information --
Box 1
Weight: --
Height: --
Width: --
Depth: --
Box 2 --
Weight: --
Height: --
Width: --
Depth: --
Special ship information:

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Memory Options by IBM

Model 33L3125

Key Model Specifications

Key Characteristics	256MB 133MHz ECC SDRAM RDIMM Memory	--	--
---------------------	---	----	----

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Features & Benefits

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMS are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Characteristics


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000179 E

Memory capacity: 256MB
 Memory type: ECC SDRAM
 Form factor: DIMM
 Average access time: 133MHz
 Number of pins: 168
 Alloy:
 Other Information:



-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



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Weight & Dimensions⁶

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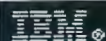
Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high):
Relative Humidity (%) (low; high):
Ship Information --
Box 1
Weight: --
Height: --
Width: --
Depth: --
Box 2 --
Weight: --
Height: --
Width: --
Depth: --
Special ship information:

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Memory Options by IBM

Model 33L3127**Key Model Specifications**

Key Characteristics	512MB 133MHz ECC SDRAM RDIMM Memory
---------------------	---

Features & Benefits **Technical Details** **Buy Now** **Top****Features & Benefits**

ECC detects single-bit parity errors and automatically fixes them, avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMs are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Dcc.

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Memory capacity: 512MB
 Memory type: ECC SDRAM
 Form factor: DIMM
 Average access time: 133MHz
 Number of pins: 168
 Alloy:
 Other Information:

-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5100, Netfinity 5100 Rack Mounted models

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

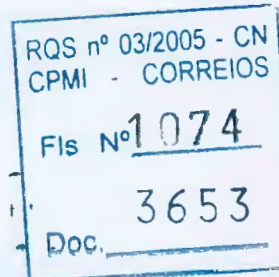
Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



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Weight & Dimensions⁶



000183

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Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high):
Relative Humidity (%) (low; high):
Ship Information --
Box 1
Weight: --
Height: --
Width: --
Depth: --
Box 2 --
Weight: --
Height: --
Width: --
Depth: --
Special ship information:

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Power Options by IBM

Model 33L3760**Key Model Specifications**

Key Characteristics	Netfinity 250W Redundant HS Power Supply
---------------------	--

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Delivers uninterrupted service for robust configurations requiring full 500 watt redundancy. This option provides ample power for high availability and convenience. -

When initially installed with an IBM Netfinity server, this option carries the same warranty as the system. If installed after the initial system installation, it carries the balance of the system warranty or the optional feature warranty (whichever is greater). -

▲ Top**Technical Details**[Characteristics](#)[Compatibility](#)[Warranty](#)[Weights & Dimensions](#)**▲ Top****Characteristics**RQS nº 03/2005 - CN
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Power adapter type: --
 Input voltage: --
 Output voltage: --
 Form factor: --
 Connector: --
 Cable length (m): --
 Power (Watts): 250 Watts
 Battery technology: --
 Battery voltage: --
 Battery intelligence: --
 Other Information:



-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 5100, Netfinity 5100 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7100, Netfinity 7600

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



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Weight & Dimensions⁶

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Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high):
Relative Humidity (%) (low; high):

Ship Information**Box 1**

Weight: --
Height: --
Width: --
Depth: --

Box 2

Weight: --
Height: --
Width: --
Depth: --

Special ship information:

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Processor Upgrades



Model 33L5057

Key Model Specifications

Key Characteristics	Pentium III Xeon 550MHz/1MB Upgrade	--	--
---------------------	---	----	----

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Features & Benefits

Increased performance for business media, communications and Internet capabilities - 550MHz, 100MHz bus speed, with 1MB internal cache

Pentium Xeon Processor Upgrade - Pentium Xeon Processors deliver leadership performance, value and flexibility for enterprise computing needs achieved with price/performance and mission-critical servers.

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Characteristics

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Processor (CPU):	Pentium III Xeon
Processor internal clock speed:	550MHz
Front side bus:	100MHz
Processor manufacturer:	Intel
L1 internal CPU cache:	32KB
Processor upgrade method:	Flash ROM support DMI BIOS v2.0
BIOS type:	This option is used to upgrade Netfinity 7100 and Netfinity 7600 models with like processors to SMP applications of up to four processors. It can also be used to upgrade Netfinity 7100 550MHz/512KB models to higher processing power.
Other Information:	



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Compatibility

Restrictions:	Additional processors in any model must match the type/speed of the first processor
Hardware prerequisites:	
System Units	
_ IBM Systems:	Netfinity 7100, Netfinity 7600
_ Non-IBM systems:	--
Operating system requirements:	--
Adapters:	--
Mounting kit etc.:	--
Supported software:	
Product approvals/certifications ⁴ :	C-Tick, CE MARK, CSA, cUL, TUV, UL
Energy Star Compliant:	No



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Warranty³

Limited Warranty period and type:	Three year Customer Carry-in Exchange
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Weight & Dimensions⁶

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Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low; 10; 32
high):
Relative Humidity (%) (low; 8; 80
high):

Ship Information**Box 1**

Weight: --
Height: --
Width: --
Depth: --

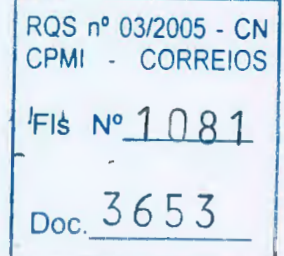
Box 2

Weight: --
Height: --
Width: --
Depth: --

Special ship information:

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Memory Options by IBM

Model 33L3067**Key Model Specifications**

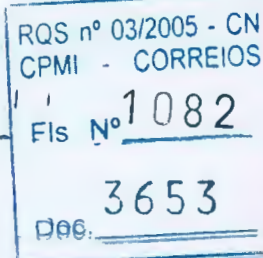
Key Characteristics	64MB 100MHz ECC SDRAM RDIMM Memory
---------------------	--

Features & Benefits **Technical Details** **Buy Now** **Top****Features & Benefits**

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMS are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

Top**Technical Details**[Characteristics](#)[Compatibility](#)[Warranty](#)[Weights & Dimensions](#) **Top****Characteristics**

000191 €

Memory capacity: 64MB
 Memory type: ECC SDRAM
 Form factor: DIMM
 Average access time: 100MHz
 Number of pins: 168
 Alloy:
 Other Information:



-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 7100, Netfinity 7600

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



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Weight & Dimensions⁶

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Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high): --
Relative Humidity (%) (low; high): --

Ship Information**Box 1**

Weight: --
Height: --
Width: --
Depth: --

Box 2

Weight: --
Height: --
Width: --
Depth: --

Special ship information:



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Memory Options by IBM

**Model 33L3113****Key Model Specifications**

Key Characteristics	128MB 100MHz ECC SDRAM RDIMM Memory	--	--
---------------------	---	----	----

Features & Benefits **Technical Details** **Buy Now** **Top****Features & Benefits**

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMs are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Memory capacity: **128MB**
 Memory type: **ECC SDRAM**
 Form factor: **DIMM**
 Average access time: **100MHz**
 Number of pins: **168**
 Alloy:
 Other Information:

-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

IBM Systems:

Netfinity 7100, Netfinity 7600

Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:

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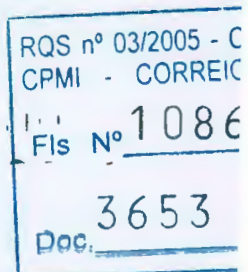
Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair

▲ Top

Weight & Dimensions⁶



000195 €



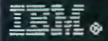
Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low;
high):
Relative Humidity (%) (low; high):
Ship Information --
Box 1
Weight: --
Height: --
Width: --
Depth: --
Box 2 --
Weight: --
Height: --
Width: --
Depth: --
Special ship information:

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Memory Options by IBM

Model 33L3115

Key Model Specifications

Key Characteristics	256MB 100MHz ECC SDRAM RDIMM Memory
---------------------	---



Features & Benefits

Technical Details

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Features & Benefits

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMS are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Characteristics

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000197

Memory capacity: **256MB**
 Memory type: **ECC SDRAM**
 Form factor: **DIMM**
 Average access time: **100MHz**
 Number of pins: **168**
 Alloy:
 Other Information:

-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



Top

Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 7100, Netfinity 7600

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



Top

Weight & Dimensions⁶

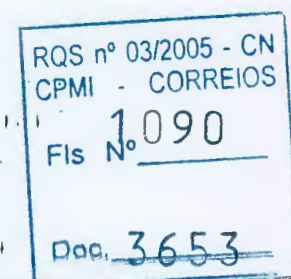
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000198 4

Weight: --
 Travel weight: --
 Height: --
 Width: --
 Depth: --
 Operating Temperature (C) (low; high):
 Relative Humidity (%) (low; high):
Ship Information --
Box 1
 Weight: --
 Height: --
 Width: --
 Depth: --
Box 2 --
 Weight: --
 Height: --
 Width: --
 Depth: --
 Special ship information:



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Worldwide

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Memory

Options by IBM

Model 33L3117

Key Model Specifications

Key Characteristics	512MB 100MHz ECC SDRAM RDIMM Memory
---------------------	---



Features & Benefits

Technical Details

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Features & Benefits

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMS are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Characteristics

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-Dec.

000200 6

Memory capacity: 512MB
 Memory type: ECC SDRAM
 Form factor: DIMM
 Average access time: 100MHz
 Number of pins: 168
 Alloy:
 Other Information:



-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.
 -Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



Top

Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 7100, Netfinity 7600

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair



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Weight & Dimensions⁶

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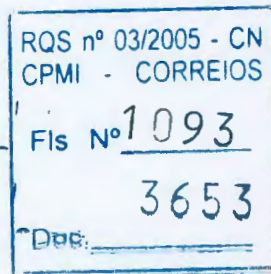
000201

4,

Weight: --
 Travel weight: --
 Height: --
 Width: --
 Depth: --
 Operating Temperature (C) (low; high):
 Relative Humidity (%) (low; high):
Ship Information --
Box 1
 Weight:
 Height: --
 Width: --
 Depth: --
Box 2 --
 Weight:
 Height: --
 Width: --
 Depth: --
 Special ship information:



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 E

Storage Options by IBM



Model 03K9310

Key Model Specifications

Key Characteristics	Ultra2 SCSI	--	--
	2m Cable		

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- ▶ Technical Details

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Features & Benefits

- Feature Benefit information not available on this product

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Technical Details

Characteristics
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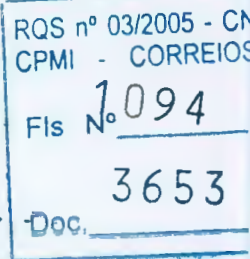
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Characteristics

Cable connector type:
Cable length:
Cable connectors:
Other Information:

External SCSI Cable
2m
VHDCI 0.8mm

Can be used in both a pedestal, Netfinity NetBAY3, or with an industry-standard rack such as the Netfinity Rack or Netfinity NetBAY22. However with industry-standard installations, care must be taken to ensure there is sufficient length to allow for servicing of Netfinity EXP15. This cable is the cable of choice to support pedestal installations.



000203

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Compatibility

Restrictions: --

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 3500 M10, Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 5500, Netfinity 5500 Rack Mounted models, Netfinity 5500 M10, Netfinity 5500 M10 Rack Mounted models, Netfinity 5500 M20, Netfinity 5500 M20 Rack Mounted models, Netfinity 5600, Netfinity 5600 Rack Mounted models, Netfinity 7000, Netfinity 7000 Rack Mounted models, Netfinity 7000 M10 Rack Mounted models, Netfinity 7100, Netfinity 7600, Netfinity 8500R Rack Mounted models

_ Non-IBM systems: --

Operating system requirements: --

Adapters: --

Mounting kit etc.: --

Supported software: --

Product approvals/certifications⁴: --

Energy Star Compliant: No



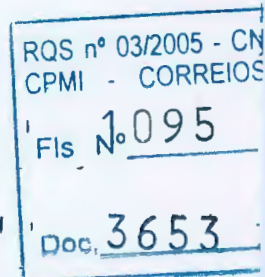
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Warranty³

Limited Warranty period and type: Three year Customer Carry-in Exchange

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Weight & Dimensions⁶



000204

Weight: --
 Travel weight: --
 Height: --
 Width: --
 Depth: --
 Operating Temperature (C) (low; high): --
 Relative Humidity (%) (low; high): --
Ship Information --
Box 1 --
 Weight: --
 Height: --
 Width: --
 Depth: --
Box 2 --
 Weight: --
 Height: --
 Width: --
 Depth: --
 Special ship information:



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Processor Upgrades

Options by IBM



Model 33L5056

Key Model Specifications

Key Characteristics	Pentium III Xeon 550MHz/512KB Upgrade
---------------------	---

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► Technical Details

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Features & Benefits

Increased performance for business media, communications and Internet capabilities - 550MHz, 100MHz bus speed, with 1MB internal cache

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Characteristics

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000206

Processor (CPU):	Pentium III Xeon
Processor internal clock speed:	550MHz
Front side bus:	100MHz
Processor manufacturer:	Intel
L1 internal CPU cache:	32KB
Processor upgrade method:	Flash ROM support DMI BIOS v2.0
BIOS type:	This option is used to upgrade
Other Information:	Netfinity 7100 with like processors to SMP applications of up to four processors.



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Compatibility

Restrictions: **Additional processors in any model must match the type/speed of the first processor**

Hardware prerequisites:

System Units

_ IBM Systems: **Netfinity 7100, Netfinity 7600**

_ Non-IBM systems: **--**

Operating system requirements: **--**

Adapters: **--**

Mounting kit etc.: **--**

Supported software: **--**

Product approvals/certifications⁴: **C-Tick, CE MARK, CSA, cUL, TUV, UL**

Energy Star Compliant: **No**

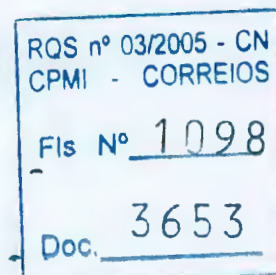
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Warranty³

Limited Warranty period and type: **Three year Customer Carry-in Exchange**

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Weight & Dimensions⁶



000207

Weight: --
Travel weight: --
Height: --
Width: --
Depth: --
Operating Temperature (C) (low; **10; 32**
high):
Relative Humidity (%) (low; **8; 80**
high):
Ship Information --
Box 1
Weight:
Height: --
Width: --
Depth: --
Box 2 --
Weight:
Height: --
Width: --
Depth: --
Special ship information:



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Memory Options by IBM

Model 33L3067Key Model Specifications

Key Characteristics	64MB 100MHz ECC SDRAM RDIMM Memory
---------------------	--

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Features & Benefits

ECC detects single-bit parity errors and automatically fixes them avoiding costly downtime and propagation of corrupted data. ECC memory supports memory requirements for demanding business applications. -

This ECC memory option contains industry-standard 3.3 V, 168-pin, single bank, 8-byte, registered dual in-line memory modules (RDIMM). All RDIMMs are 133MHz and support the PC 133 SDRAM specification (revision 1.0 or later). -

Available from 128MB to 1GB, adding power to your system is a simple and straightforward process. -

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Characteristics
**THE WORK
MATTERS.**

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CPMI - CORREIOS

Fls. N° 1100

Doc. 3653

000209

Memory capacity: 64MB
 Memory type: ECC SDRAM
 Form factor: DIMM
 Average access time: 100MHz
 Number of pins: 168
 Alloy:
 Other Information:



-These IBM optional features are designated as Customer Carry-in Exchange/Repair (CCE/CCR); however, it becomes IOR when installed in an IBM Netfinity or PC Server with an IOR warranty classification.

-Optional features initially installed with an IBM Netfinity or PC Server carry the same warranty as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.



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Compatibility

Restrictions:

Hardware prerequisites:

System Units

_ IBM Systems:

Netfinity 4500R, Netfinity 4500R Rack Mounted models, Netfinity 5000, Netfinity 5000 Rack Mounted models, Netfinity 7100, Netfinity 7600

_ Non-IBM systems:

Operating system requirements:

Adapters:

Mounting kit etc.:

Supported software:

Product approvals/certifications⁴:

Energy Star Compliant:



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Warranty³

Limited Warranty period and type:

Three year Customer Carry-in Exchange, Customer Carry-in Repair

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Weight & Dimensions⁶

000210

Weight: --
 Travel weight: --
 Height: --
 Width: --
 Depth: --
 Operating Temperature (C) (low;
 high): --
 Relative Humidity (%) (low; high): --

Ship Information

Box 1

Weight: --
 Height: --
 Width: --
 Depth: --

Box 2

Weight: --
 Height: --
 Width: --
 Depth: --

Special ship information:



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ANEXO V
CERTIFICAÇÕES ISO 9000



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000212

2

UNDERWRITERS LABORATORIES INC.

CERTIFICATE OF REGISTRATION

International Business Machines Corporation

3605 Highway 52 North
Rochester, MN 55901

with off-site facilities located at:

The AS/400 Lab
and S/390 Lab
1701 North Street
Endicott, NY 13760

11400 Burnet Road
Austin, TX 78758

Storage Systems Division
3605 Highway 52 North
Rochester, MN 55901



522 South Road
Poughkeepsie, NY 1260

Underwriters Laboratories Inc.® (UL) issues this certificate to the Firm named above, after assessing the Firm's quality system and finding it in compliance with

ISO 9001:1994

EN ISO 9001:1994; BS EN ISO 9001:1994; ANSI/ASQC Q9001:1994

for the following scope of registration:

- 3571 (US): Electronic Computers
- 3572 (US): Computer Storage Devices
- 7371 (US): Computer Programming Services

The design, manufacture, service and support of computer products, features, options and after market upgrades. Specific technologies by facility include:

The facility of control in Rochester, MN performs the following functions:

- AS/400 hardware and software development, and level 1 and level 2 service and support
- RS/6000 hardware development
- NCD hardware and software development
- AS/400 and RS/6000 manufacture
- SSD substrate manufacture
- SSD DASD sub system hardware development

The off-site facility in Austin, TX performs the following functions:

- RS/6000 hardware development
- AIX software development and level 3 software service and support
- NCD hardware and software development

The off-site facility in Endicott, NY performs the following functions:

- AS/400 software development
- S/390 software development

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- S/390 software development and service and support
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- RS/6000 SP hardware development and test

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File Number: A1583 Volume: 1
Issue Date: December 7, 1992
Revision Date: January 17, 2000
Renewal Date: February 7, 2001

S. Joe Bhatia
Executive Vice President and
Chief Operating Officer - International



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Doc. 3653

7 MAR. 2000



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SERVIÇOS DE SUPORTE A PRODUTOS
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O BVQI do Brasil Sociedade Certificadora Ltda certifica
que o Sistema de Gerenciamento da Qualidade do Fornecedor
acima foi avaliado e encontrado em conformidade com os
requisitos das normas da qualidade e escopo de
fornecimento detalhado abaixo

NORMAS DA QUALIDADE

NBR ISO 9001:1994

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SERVIÇOS DE INSTALAÇÃO, MIGRAÇÃO, MANUTENÇÃO, SUPORTE OPERACIONAL E REPARO DE PRODUTOS HARDWARE E SOFTWARE COMERCIALIZADOS OU SUPTADOS PELA IBM INCLUINDO PROCESSADORES CENTRAIS, UNIDADES DE CONTROLE E SEUS PERIFÉRICOS, SISTEMAS PARA IMPRESSÃO, EQUIPAMENTOS DE MICRO INFORMÁTICA, DE TELECOMUNICAÇÃO E DE REDES, SOLUÇÕES DE AUTOMAÇÃO INDUSTRIAL, COMERCIAL E BANCÁRIA, SISTEMAS OPERACIONAIS E APLICATIVOS. PROJETOS, OBRAS CIVIS, MUDANÇAS E MANUTENÇÃO EM CENTROS DE PROCESSAMENTO DE DADOS. PROJETOS E IMPLEMENTAÇÃO DE SISTEMAS DE AUTOMAÇÃO E DE SISTEMAS DE SEGURANÇA EM PRÉDIOS COMERCIAIS E RESIDENCIAIS. PROJETO, CABEAMENTO, CONFIGURAÇÃO E DETERMINAÇÃO DE PROBLEMAS EM REDES COM ELEMENTOS DE MÚLTIPLOS FORNECEDORES.

Data da Aprovação Original: 30 DE MARÇO DE 1994

Este Certificado é válido por um período de três anos a partir da data mencionada abaixo, sujeito a operação satisfatória contínua do Sistema de Gerenciamento da Qualidade do Fornecedor.

11 DE ABRIL DE 1997

Data 21 DE NOVEMBRO DE 1997



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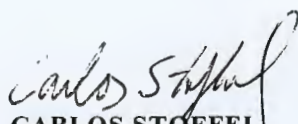
000214



DECLARAÇÃO

Declaramos para todos os devidos fins que o Certificado de aprovação nº 40108, expedido para a empresa **IBM BRASIL – INDÚSTRIAS, MÁQUINAS E SERVIÇOS LTDA – Serviços de Suporte a Produtos**, teve sua validade prorrogada até 11 de Julho de 2000, a fim de permitir a sua renovação.

Rio de Janeiro, 7 de April de 2000.


CARLOS STOFFEL
Engenheiro da Qualidade
BVQI – Brasil

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Fls Nº 1106
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Conferido a
IBM SUPPORT CENTER

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SÃO PAULO/SP - BRASIL

O BVQI do Brasil Sociedade Certificadora Ltda certifica que o Sistema de Gerenciamento da Qualidade do Fornecedor acima foi avaliado e encontrado em conformidade com os requisitos das normas da qualidade e escopo de fornecimento detalhado abaixo

NORMAS DA QUALIDADE

NBR ISO 9001:1994

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DESENVOLVIMENTO E IMPLEMENTAÇÃO DE SOLUÇÕES PARA OPERAÇÃO DE HELP DESK E CALL CENTER.

OPERAÇÃO DE HELP DESK E TELEATENDIMENTO QUE OFERECE SERVIÇOS A CLIENTES NAS ATIVIDADES DE: GERENCIAMENTO DE SOLICITAÇÕES DE SERVIÇOS A AMBIENTES E PRODUTOS DE INFORMÁTICA; SUPORTE REMOTO PARA DETERMINAÇÃO DE PROBLEMAS, SUPORTE AO USO E A INSTALAÇÃO DE HARDWARE, SISTEMAS OPERACIONAIS E SOFTWARES APLICATIVOS DE MICROINFORMÁTICA, ACESSO E USO DA INTERNET E INTRANET; INVENTÁRIO DE HARDWARE E SOFTWARE; E ATENDIMENTO AO CONSUMIDOR E USUÁRIOS, ELETRONICAMENTE OU COM APOIO DE OPERADORES.

Data da Aprovação Original: 19 DE JUNHO DE 1997

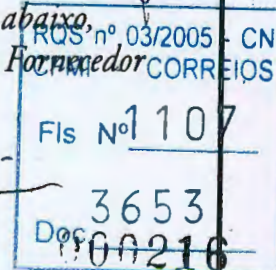
Este Certificado é válido por um período de três anos a partir da data mencionada abaixo, sujeito a operação satisfatória contínua do Sistema de Gerenciamento da Qualidade do Fornecedor

19 DE JUNHO DE 1997

Data 11 DE MAIO DE 1999



BVQI do Brasil Sociedade Certificadora Ltda



Certificado nº 41219

SF06/V



Certificate of Approval

Awarded to

INTERNATIONAL BUSINESS MACHINES CORPORATION

Research Triangle Park - Personal Systems Group

Networking Business Unit

3039 Carwallis Road, Research Triangle Park, NC 27709

Off-Site Locations: 5605 Six Forks Road, Bldg. 655, Raleigh, NC 27609
11400 Burnett Road, Austin, TX 78758
3605 Highway 52 North, Rochester, MN 55901

Bureau Veritas Quality International (NA) Inc. certifies that the Management System of the above supplier has been audited and found to be in accordance with the requirements of the standards and scope of supply detailed below.

STANDARDS

ISO 9001

ANSI/ISO/ASQ Q9001

SCOPE OF SUPPLY

*The design, development, manufacture and customer support of personal and networking computing products.
The design, development and support of hardware and software for point-of-sale products.
The design of software to support manufacturing for the IBM Corporation.
The refurbishment and upgrade of computing and printing products.*

Original Approval Date: 22 October 1992

Subject to the continued satisfactory operation of the supplier's Management System, this Certificate is valid for a period of three years from:

13 April 2000

For Bureau Veritas Quality International (N.A.) Inc.
Jamestown, New York U.S.A.

Date 13 April 2000

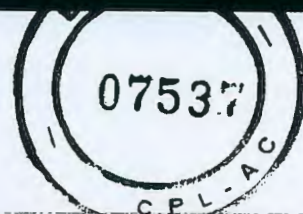


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acima foi avaliado e encontrado em conformidade com os
requisitos das normas da qualidade e escopo de
fornecimento detalhado abaixo*

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MANUFATURA, SUPORTE TECNOLÓGICO E RECONFIGURAÇÃO DE
UNIDADES CENTRAIS DE PROCESSAMENTO IBM, SERVIDORES PARA
REDES DE COMPUTADORES, SISTEMAS DE AUTOMAÇÃO COMERCIAL
E SISTEMAS DE ARMAZENAMENTO DE DADOS.

Data da Aprovação Original: 14 DE AGOSTO DE 1992

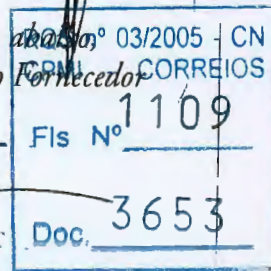
Este Certificado é válido por um período de três anos a partir da data mencionada, desde que o Fornecedor esteja sujeito a operação satisfatória contínua do Sistema de Gerenciamento da Qualidade do Fornecedor.

18 DE NOVEMBRO DE 1998

08 DE JUNHO DE 1999



BVQI do Brasil Sociedade Certificadora Ltda



Certificado nº 52908

000218

SF06/V

O uso da Identificação de Credenciamento indica o credenciamento com relação às atividades cobertas pelo Certificado No. OCS-0006



CERTIFICATE OF REGISTRATION

A.G.A. Quality

A SERVICE OF IAS

Certifies the Quality Management System of

IBM PC Company Server Development
3039 Cornwallis, Research Triangle Park, NC 27609



CERTIFICATE NO.

AQC03001

QUALITY STANDARD

ISO 9001:1994; ANSI/ASQC Q9001:1994

SCOPE OF
REGISTRATION

The non-manufacturing design and development of hardware and software for server systems for the personal computer marketplace.
SIC 3571 EAC Sector 19

INITIAL
CERTIFICATION
DATE

June 11, 1993

CERTIFICATE VALID

From May 28, 1997 to May 28, 2000

A.G.A. Quality has assessed the quality management system of the supplier indicated above and has found it to be in compliance with the quality standards noted. This certificate is valid for the period shown and is subject to continued satisfactory performance of the supplier's quality management system.

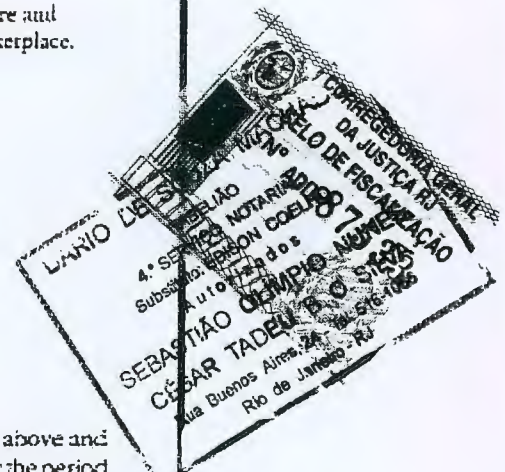
Issued at Cleveland, Ohio, USA

for the Registrar

A.G.A. Quality
is accredited by:



RVA Council for
Accreditation



QSCF 3.2.5 (8/96)

A.G.A. Quality, 8501 East Pleasant Valley Road, Cincinnati, OH 45244

RJS-SP, 09/2005 - CN
CPMI - CORREIOS

Fis. Nº 1110

3653

Doc.

MARINA CUNHA BRENNER
Tradutora Juramentada e Intérprete
Telefone: 262-9479
RIO DE JANEIRO, RJ - BRASIL
Presença do CERTIDÃO
menção nº 17469/98

000219

4º OFICIN DE NOTAS - Matriz
DARIO DE SOUZA MACHADO - Nº 752228
Rua Buenos Aires 24 - RJ - Tel. 516-1066
Rio de Janeiro, 15 de Julho de 1998
SEBASTIAO OLIMPIO MUNES - Substituto - RPS - 19
R\$. = 1,00 - P/Aut. 0,17 - P/Proc. Dados 1,70 - Total R\$0,80
Certifico que a presente é cópia fiel
do original que foi exibido.



MARINA CUNHA BRENNER

Tradutora Pública Juramentada e Intérprete Comercial



Eu, abaixo assinada, Tradutora Pública e Intérprete Comercial desta Cidade do Rio de Janeiro, Estado do Rio de Janeiro, República Federativa do Brasil, devidamente nomeada aos 13 de setembro de 1974 e registrada na Junta Comercial do Estado do Rio de Janeiro sob o número 16, **CERTIFICO** que me foi apresentado um documento exarado em idioma inglês, para tradução, o que faço em razão de meu ofício, como segue:

TRADUÇÃO Nº 17464/98 - MCB

CERTIFICADO DE REGISTRO

A.G.A. QUALITY

Um serviço da I.A.S.

Atesta o Sistema de Gerenciamento de Qualidade da IBM PC Company Server Development, estabelecida em 3039 Cornwallis, Research Triangle Park, Estado da Carolina do Norte 27609 (EE.UU. da América). -----

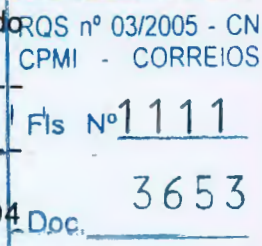
Número do Certificado: AQC03001 -----

Padrão de Qualidade: ISO 9001:1994; ANSI/ASQC Q9001-1994 -----

Âmbito do Registro: Projeto e desenvolvimento, sem fabricação, de equipamentos e de programas de computador, para sistemas servidores, destinados ao mercado de computadores pessoais. SIC 3571 EAC Setor 19. -----

Data da Emissão do Primeiro Certificado: 11 de junho de 1993. -----

Validade do Certificado: De 28 de maio de 1997 até 28 de maio de 2000. -----





MARINA CUNHA BRENNER

Tradutora Pública Juramentada e Interprete Comercial



Nº 17464/98

.2.

A A.G.A. Quality analisou o sistema de gerenciamento de qualidade da fornecedora indicada acima, tendo verificado que está em conformidade com os padrões de qualidade mencionados. O presente Certificado é válido para o período especificado, e está sujeito a um desempenho satisfatório permanente do sistema de gerenciamento de qualidade da fornecedora. -----

Expedido em Cleveland, Estado de Ohio, EE.UU. -----

(-Assinatura ilegível-), pelo Oficial de Registros. -----

A A.G.A. Quality é credenciada pela ANSI-NAS, e pelo RVA Council for Accreditation.-) -----

(-AGA Registered Quality System, estabelecida em 8501 East Pleasant Valley Road, Cleveland, Ohio, EE.UU.-) -----

RQS nº 03/2005 - CN
CPMI - CORREIOS
Fls Nº 1112
Doc 3653

POR TRADUÇÃO CONFORME, DOU FÉ.

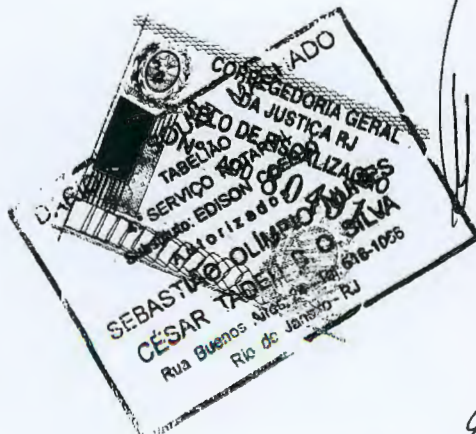
Rio de Janeiro, 13 de julho de 1998.

Marina Cunha Brenner
MARINA CUNHA BRENNER
Tradutora Juramentada

R\$ 27,88.-

4º OFÍCIO DE NOTAS - Matriz
DARIO DE SOUZA MACHADO - Nº 752199
Rua Buenos Aires 24 - RJ - Tel. 516-1066
Certifico que a presente é cópia fiel do original que foi exibido.

Rio de Janeiro, 15 de Julho de 1998
SEBASTIAO OLIMPIO NUNES - Substituto - RPS - 19
R\$. = 1,00 - P/Aut. 0,17 - P/Proc. 1,70 - Total R\$0,80





REPÚBLICA FEDERATIVA DO BRASIL - ESTADO DO RIO DE JANEIRO

23º OFÍCIO DE NOTAS

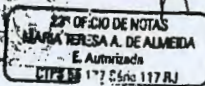
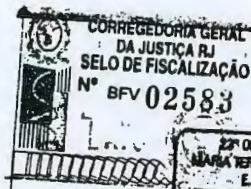
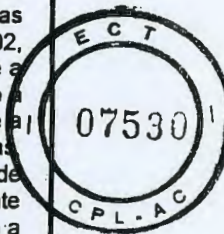
GUIDO MACIEL - TABELIÃO

ARY SUCENA FILHO - SUBSTITUTO

MATRIZ: AV. NILO PEÇANHA, 26 - 3º ANDAR - RIO DE JANEIRO - RJ

SUCURSAL TIJUCA: RUA SANTA SOFIA, 40 LOJA A - RIO DE JANEIRO - RJ

os atos necessários ao fiel cumprimento do presente mandato, de tudo prestando contas à outorgante. Os outorgados, entretanto, não poderão usar o nome da outorgante na assinatura de títulos de favor, estranhos aos seus negócios, tais como avais, fianças e outras garantias semelhantes, nem substabelecer, no todo ou em parte, com ou sem reserva de poderes. O PRESENTE MANDATO VIGORARÁ ATÉ 31 DE MARÇO DE 2001. Certifico e porto fé que pelo presente ato são devidas custas no valor de R\$ 20,99, sendo R\$ 8,47 a que se refere a Tabela VII, nº 02, item "b"; R\$ 4,23 que se refere a Tabela VII, Obs.12a., R\$ 1,60 a que se refere a Tabela "I", item 9, R\$ 2,86 a que se refere a Lei 3.217/99; R\$ 3,83 a que se refere a Mútua dos Magistrados/ACOTERJ. Assim o disseram e me pediram lhes lavrasse a presente que lhes li, aceitam e assinam, dispensando a presença de testemunhas conforme faculta o artigo 386 do Código de Normas da Egrégia Corregedoria de Justiça deste Estado. Eu, VERA LUCIA BORELLI MATTOS, Escrevente Juramentada, CTPS nº 72267/033-RJ, lavrei, li e encerro o presente ato, colhendo a assinatura. (a.a.) ROBERTO FELICIO LOPES COIMBRA.- EXTRAÍDA nesta mesma data. Eu [assinatura] digitei. E eu, [assinatura] a subscrevo e assino em público e raso.-



ACTÓRIO DO 1º TABELIÃO
DE NOTAS - SÃO PAULO
PAULO RODRIGUES CRUZ TABELIÃO
Rua Domingos de Morais, 1062, Gd. 1º
AUTENTICAÇÃO 069
Autentico o presente documento nº 069
a minúscula apresentado do que vai a 18.
ABR 2000
3. aplicadas
10. 91

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CPMI - CORREIOS
Fls Nº 1113
Doc. 3653

000225



REPÚBLICA FEDERATIVA DO BRASIL - ESTADO DO RIO DE JANEIRO

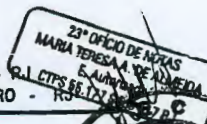
23º OFÍCIO DE NOTAS

GUIDO MACIEL - TABELIÃO

ARY SUCENA FILHO - SUBSTITUTO

MATRIZ: AV. NILO PEÇANHA, 26 - 3º ANDAR - RIO DE JANEIRO - RJ

SUCURSAL TIJUCA: RUA SANTA SOFIA, 40 LOJA A - RIO DE JANEIRO - RJ



ATO Nº 096

LIVRO Nº 7693

FOLHAS 102

IBM-Mario Pereira outa (2000)

PROCURAÇÃO BASTANTE QUE FAZ IBM

BRASIL - INDÚSTRIA, MÁQUINAS E SER

VIÇOS LTDA., na forma abaixo:-----

07531

CPL - AC

SAIBAM os que este público instrumento de procuração bastante virem que, no ano de dois mil (2000), aos vinte e três (23) dias do mês de Março, nesta cidade do Rio de Janeiro, Capital do Estado do Rio de Janeiro, na sede deste 23º Ofício de Notas, na Av. Nilo Peçanha nº 26 - 2º andar, onde a chamado vim, e perante mim, VERA LÚCIA BORELLI MATTOS, Escrevente Juramentada, CTPS nº 72267/033-RJ, compareceu como outorgante: IBM BRASIL - INDÚSTRIA, MÁQUINAS E SERVIÇOS LTDA., com sede nesta cidade, na Av. Pasteur números 138/146, inscrita no CGC/MF sob o nº 33.372.251/0001-56, representada neste ato por seu Diretor Roberto Felicio Lopes Coimbra, brasileiro, casado, advogado, domiciliado e residente nesta cidade, identidade OAB/RJ nº 20.764 e CPF/MF nº 237.766.847-04; por mim identificados, conforme documentos mencionados, do que dou fé. E pela outorgante, na forma aqui representada, me foi dito que por este instrumento nomeia e constitui seus bastantes procuradores: 1) MARIO PEREIRA DE ARAUJO SANTOS, brasileiro, casado, residente nesta cidade, portador da identidade nº 3.845.345, expedida pela SSP/SP em 29.01.75 e inscrito no CPF/MF sob o nº 340.293.038-20; 2) MARCO ANTONIO BARBOSA LAURIA, brasileiro, casado, residente nesta cidade, portador da identidade nº 06045795-9, expedida pelo IFP/RJ em 28.02.96 e inscrito no CPF/MF sob o nº 754.022.547-53; 3) MARCOS ANDRÉ DE OLIVEIRA PARAISO, brasileiro, casado, residente nesta Cidade, portador da identidade nº 08014889-3, expedida pelo IFP/RJ, inscrito no CPF/MF sob o nº 014.679.087-11; 4) DALMIR JOSÉ PATTO DOS SANTOS, brasileiro, casado, residente em São Paulo, portador da identidade nº 11.475.588, expedida pelo SSP/SP, inscrito no CPF/MF sob o nº 046.637.188-84; 5) RENATO MOISE BELLELIS, brasileiro, casado, residente em São Paulo, portador da identidade nº 13.204.793, expedida pelo SSP/SP, inscrito no CPF/MF sob o nº 118.016.028-24; todos funcionários da outorgante, com poderes para, de per si, independentemente da ordem de nomeação, sem prejuízo de poderes semelhantes porventura outorgados a outros procuradores, em todo o território nacional, representarem a IBM junto a quaisquer repartições públicas federais, estaduais e municipais, da administração direta ou indireta, sociedades de economia mista, empresas públicas, fundações, entidades paraestatais e/ou autárquicas, Banco do Brasil S/A e outros bancos, Tesouro Nacional, Caixa Econômica Federal, Alfândegas, Instituto Nacional de Seguridade Social (INSS), e a clientes particulares, pessoas físicas e/ou jurídicas, praticando os seguintes atos: - participar de qualquer tipo de licitação, podendo fazer parte de reuniões promovidas pelas respectivas comissões; apresentar e assinar documentação de habilitação e propostas técnicas e de preço e contratos e documentos adicionais complementares; assinar livros de presença e ata; impugnar licitantes e propostas; recorrer a qualquer instância administrativa; rubricar páginas de documentos; desistir de recorrer administrativamente, abrindo mão do prazo recursal; transigir, requerer e alegar o que convier e pedir informações; passar recibos e dar quitação por qualquer importância recebida em nome da outorgante. Assinar propostas e/ou contratos de compra e venda de máquinas e equipamentos IBM, com cláusula de reserva de domínio, bem como promover a liquidação dos mesmos. Assinar propostas e/ou contratos de compra e venda de máquinas, suprimentos e equipamentos IBM em geral. Assinar propostas e/ou contratos de locação de máquinas, suprimentos e equipamentos IBM. Assinar propostas e/ou contratos de prestação de serviços técnicos de qualquer natureza. Assinar contratos de conservação de máquinas e equipamentos de fabricação IBM. Assinar propostas e/ou contratos de licença de uso de software desenvolvidos ou de propriedade da IBM ou empresas do grupo. Apresentar ou encaminhar faturas ou duplicatas. Assinar, receber, retirar e abrir correspondências, registradas ou não, com ou sem valor, "Collis Posteaux", telegramas, encomendas, cargas e tudo o mais que for endereçado à IBM. Proceder e autorizar despachos de mercadorias, na importação, exportação e mercado interno, junto às Alfândegas, estradas de ferro, agências rodoviárias, agências marítimas e empresas aéreas e praticar todos

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CPMI - CORREIOS

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3653

Doc. _____

AUTENTICAÇÃO

SELO DE AUTENTICAÇÃO

S.P. 11 ABR 2000

VALOR: R\$ 1.000,00

000224

IBM



ANEXO VI

DECLARAÇÃO / COMPROVAÇÃO IMUNIDADE ANO 2000

RQS nº 03/2005 - CN	
CPMI - CORREIOS	
Fls Nº	1115
	3653
Doc.	

A handwritten signature inside an oval.

000222

9

IBM BRASIL - Indústria, Máquinas e Serviços Ltda.
Av. Pasteur, 138/146 - Rio de Janeiro - RJ
CEP 22296-900 Tel.: (021) 546-5252 FAX: (021) 546-5082
Internet: WWW.IBM.COM.BR
CGC: 33.372.251/0001-56

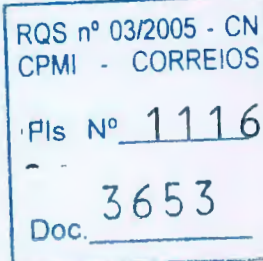
IBM



São Paulo, 06 de abril de 2000

Informamos, para os devidos fins, que os produtos abaixo relacionados estão Prontos para o ano 2000. Entende-se como "Produto pronto para o ano 2000" aquele que, quando usado de acordo com sua documentação associada, é capaz de processar, fornecer e/ou receber corretamente dados de datas contidas entre os séculos XX e XXI, desde que todos os produtos (por exemplo, hardware, software e firmware) usados com o Produto (ou Material Fornecido) troque com ele adequadamente dados exatos de datas.

- 7044-170 IBM RS/6000 Modelo 170
- 7044-270 IBM RS/6000 Modelo 270
- 7017-S7A IBM RS/6000 Servidor S70 - Advanced
- 7017-S80 IBM RS/6000 Servidor Empresarial S80
- 7205-311 IBM Unidade de Fita Externa DLT
- 7133-D40 IBM Sistema de Disco Serial
- 5765-C34 IBM AIX Versão 4



Atenciosamente,

Renato Moise Bellelis
Gerente de Vendas - Unidade de Produto Web Servers
IBM Brasil-Indústria Máquinas e Serviços Ltda.

000223

9

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Search IBM

Year 2000 Hardware Product Readiness



Search Results

Machine Type Model:	865821Y
Year 2000 Readiness:	HW READY (see Readiness Legend below)
Product Description:	NF5100 733 256 128/0HD S
Update Level:	
Platform:	PC SERVERS
Action Required:	
IBM Customer Comments:	
Support/Information Link:	
Support Info Last Changed:	

Note: For full product information, click on Hardware or Software under Search/Report on the navigation bar to the left. This will allow you to run an application to generate an expanded report that will be e-mailed to you.

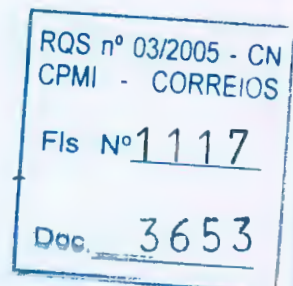
Readiness Legend:

READY

Ready

A product is Year 2000 Ready if the product, when used in accordance with its associated documentation, is capable of correctly processing, providing and/or receiving date data within and between the 20th and 21st centuries; provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

Note that a ready product may require a service update to achieve readiness (Service updates includes APARs and PTFs for software and EC updates for hardware.)



000226

08/05/2000 17:2

**Ready***

The * indicates that customer action is specifically required for the product to be Year 2000 ready, such as PTF, bios update, or EC.)

Ready#

(Indicates that the most current release is ready but one or more prior release(s) are not ready.)

Ready**

(Indicates that the most current release is ready once service is applied but one or more prior release(s) are not ready.)

HW Ready

(Indicates that the ready status refers to hardware only and not to any software that might be pre-installed or otherwise provided by IBM with the purchase of the hardware.) For PC products, if you take a simple action, your model will be capable of updating its hardware clock correctly for the new century. Like most other Year 2000 ready PCs throughout the industry, a reboot is recommended after the Year 2000 occurs in order to synchronize the hardware clock for the new century.

HW Ready*

(HW Ready indicates that the ready status refers to hardware only and not to any software that might be pre-installed or otherwise provided by IBM with the purchase of the hardware. The * indicates that customer action is required for the product to be Year 2000 ready, such as bios update or EC.) For PC products, this means your model's hardware can meet the criteria to be considered "Ready", but only if you update your PC to the level of BIOS identified in the report. Like most other Year 2000 ready PCs throughout the industry, a reboot is recommended after the Year 2000 occurs in order to synchronize the hardware clock for the new century.

OS Ready

(Indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products.)

OS Ready*

(OS Ready indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products. The * indicates that customer action is required for the product to be Year 2000 ready, such as the application of a PTF.)

NOT READY Not Ready

IBM considers a product not Year 2000 ready if we know that it does not meet the definition of Year 2000 ready set out above, or if it has not been tested. There are no plans to make products in this category ready. For PC products, in order to avoid the PC providing potentially incorrect date information, you must manually reset the hardware clock after the Year 2000 occurs, before using the system.

ROS N° 032005 - CN
EPMI - CORREIOS
Fls N° 1118
3653
Doc. _____

000227

08/05/2000 17:21

**NOT RDY+**

(Indicates the product is not ready, but a software tool is available that may be able to help the user achieve Year 2000 hardware readiness equivalent function under selected operating systems.) For PC products, a year 2000 device driver is available from IBM that may be able to help you achieve Year 2000 hardware readiness equivalent function under selected operating systems.

VENDOR**Vendor**

No readiness information is available from IBM. Please contact the original manufacturer.

IBM is pleased to provide you with the following Year 2000 product readiness report. We believe the report will be helpful in guiding your efforts to become Year 2000 ready.

To ensure you have the most current information regarding the Year 2000 status of IBM products, you should periodically refer to IBM's Year 2000 web site at <http://www.yr2k.raleigh.ibm.com>. IBM cannot guarantee that the information contained in this report is complete, current or applies in every situation.

For questions about information contained in this report or other products not listed in it, please contact your IBM representative or the Year 2000 Technical Support Center at <http://www.ibm.com/software/year2000> and choose the "Contact Us" selection.

IBM's Year 2000 Internet web pages are
Year 2000 readiness disclosures

RQS n° 03/2005 - CN
CPMI - CORREIOS
Fls N° 1119
Doc. 3653



000228

08/05/2000 17:21

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(7 digits)

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[Maint Service Statement](#)[IBM Year 2000](#)[IBM Microelectronics](#)

Year 2000 Hardware Product Readiness

Search Results

Machine Type Model:	866621Y
Year 2000 Readiness:	HW READY (see Readiness Legend below)
Product Description:	NF7100 550 1 256/0HD S
Update Level:	
Platform:	PC SERVERS
Action Required:	
IBM Customer Comments:	
Support/Information Link:	
Support Info Last Changed:	



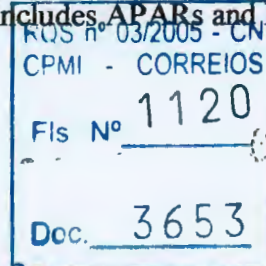
Note: For full product information, click on Hardware or Software under Search/Report on the navigation bar to the left. This will allow you to run an application to generate an expanded report that will be e-mailed to you.

Readiness Legend:

READY**Ready**

A product is Year 2000 Ready if the product, when used in accordance with its associated documentation, is capable of correctly processing, providing and/or receiving date data within and between the 20th and 21st centuries provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

Note that a ready product may require a service update to achieve readiness (Service updates include APARs and PTFs for software and EC updates hardware.)



000229

08/05/2000 17:19

**Ready***

(The * indicates that customer action is specifically required for the product to be Year 2000 ready, such as PTF, bios update, or EC.)

Ready#

(Indicates that the most current release is ready but one or more prior release(s) are not ready.)

Ready*#

(Indicates that the most current release is ready once service is applied but one or more prior release(s) are not ready.)

HW Ready

(Indicates that the ready status refers to hardware only and not to any software that might be pre-installed or otherwise provided by IBM with the purchase of the hardware.) For PC products, if you take a simple action, your model will be capable of updating its hardware clock correctly for the new century. Like most other Year 2000 ready PCs throughout the industry, a reboot is recommended after the Year 2000 occurs in order to synchronize the hardware clock for the new century.

HW Ready*

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OS Ready

(Indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products.)

OS Ready*

(OS Ready indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products. The * indicates that customer action is required for the product to be Year 2000 ready, such as the application of a PTF.)

NOT READY**Not Ready**

IBM considers a product not Year 2000 ready if we know that it does not meet the definition of Year 2000 ready set out above, or if it has not been tested. There are no plans to make products in this category ready. For PC products, in order to avoid the PC providing potentially incorrect date information, you must manually reset the hardware clock after the Year 2000 occurs, before using the system.

RCS n 03/2005 - ON
CPMI - CORREIOS
Fis N° 1121
Doc. 3653

000230

08/05/2000 17:19

**NOT RDY+**

(Indicates the product is not ready, but a software tool is available that may be able to help the user achieve Year 2000 hardware readiness equivalent function under selected operating systems.) For PC products, a year 2000 device driver is available from IBM that may be able to help you achieve Year 2000 hardware readiness equivalent function under selected operating systems.

VENDOR**Vendor**

No readiness information is available from IBM. Please contact the original manufacturer.

IBM is pleased to provide you with the following Year 2000 product readiness report. We believe the report will be helpful in guiding your efforts to become Year 2000 ready.

To ensure you have the most current information regarding the Year 2000 status of IBM products, you should periodically refer to IBM's Year 2000 web site at <http://www.yr2k.raleigh.ibm.com>. IBM cannot guarantee that the information contained in this report is complete, current or applies in every situation.

For questions about information contained in this report or other products not listed in it, please contact your IBM representative or the Year 2000 Technical Support Center at <http://www.ibm.com/software/year2000> and choose the "Contact Us" selection.

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Year 2000 Hardware Product Readiness

Search Results

Machine Type Model:	866611Y
Year 2000 Readiness:	HW READY (see Readiness Legend below)
Product Description:	NF7100 550 512 256/0HD S
Update Level:	
Platform:	PC SERVERS
Action Required:	
IBM Customer Comments:	
Support/Information Link:	
Support Info Last Changed:	



Note: For full product information, click on Hardware or Software under Search/Report on the navigation bar to the left. This will allow you to run an application to generate an expanded report that will be e-mailed to you.

Readiness Legend:

READY

Ready

A product is Year 2000 Ready if the product, when used in accordance with its associated documentation, is capable of correctly processing, providing and/or receiving date data within and between the 20th and 21st centuries provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

Note that a ready product may require a service update to achieve readiness (Service updates includes APARs and PTFs for software and EC updates hardware.)

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**Ready***

(The * indicates that customer action is specifically required for the product to be Year 2000 ready, such as PTF, bios update, or EC.)

Ready#

(Indicates that the most current release is ready but one or more prior release(s) are not ready.)

Ready*#

(Indicates that the most current release is ready once service is applied but one or more prior release(s) are not ready.)

HW Ready

(Indicates that the ready status refers to hardware only and not to any software that might be pre-installed or otherwise provided by IBM with the purchase of the hardware.) For PC products, if you take a simple action, your model will be capable of updating its hardware clock correctly for the new century. Like most other Year 2000 ready PCs throughout the industry, a reboot is recommended after the Year 2000 occurs in order to synchronize the hardware clock for the new century.

HW Ready*

(HW Ready indicates that the ready status refers to hardware only and not to any software that might be pre-installed or otherwise provided by IBM with the purchase of the hardware. The * indicates that customer action is required for the product to be Year 2000 ready, such as bios update or EC.) For PC products, this means your model's hardware can meet the criteria to be considered "Ready", but only if you update your PC to the level of BIOS identified in the report. Like most other Year 2000 ready PCs throughout the industry, a reboot is recommended after the Year 2000 occurs in order to synchronize the hardware clock for the new century.

OS Ready

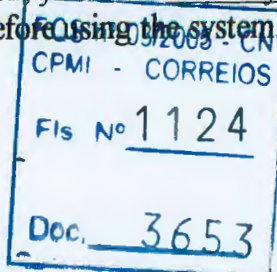
(Indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products.)

OS Ready*

(OS Ready indicates that the ready status of the IBM operating system software refers to IBM products only and does not apply to any "as is" or non-IBM software that may be provided along with the IBM software products. The * indicates that customer action is required for the product to be Year 2000 ready, such as the application of a PTF.)

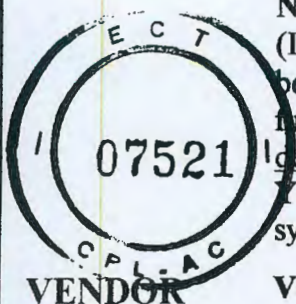
NOT READY**Not Ready**

IBM considers a product not Year 2000 ready if we know that it does not meet the definition of Year 2000 ready set out above, or if it has not been tested. There are no plans to make products in this category ready. For PC products, in order to avoid the PC providing potentially incorrect date information, you must manually reset the hardware clock after the Year 2000 occurs, before using the system.



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**NOT RDY+**

(Indicates the product is not ready, but a software tool is available that may be able to help the user achieve Year 2000 hardware readiness equivalent function under selected operating systems.) For PC products, a year 2000 device driver is available from IBM that may be able to help you achieve Year 2000 hardware readiness equivalent function under selected operating systems.

Vendor

No readiness information is available from IBM. Please contact the original manufacturer.

IBM is pleased to provide you with the following Year 2000 product readiness report. We believe the report will be helpful in guiding your efforts to become Year 2000 ready.

To ensure you have the most current information regarding the Year 2000 status of IBM products, you should periodically refer to IBM's Year 2000 web site at <http://www.yr2k.raleigh.ibm.com>. IBM cannot guarantee that the information contained in this report is complete, current or applies in every situation.

For questions about information contained in this report or other products not listed in it, please contact your IBM representative or the Year 2000 Technical Support Center at <http://www.ibm.com/software/year2000> and choose the "Contact Us" selection.

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ANEXO VII
CERTIFICAÇÃO HCL

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Details	Product Type	Company Name	Product Name
	System/Server Multiprocessor	IBM	IBM Netfinity 5100 Pentium III Dual 733
	System/Server Multiprocessor	IBM	Netfinity 5100 Pentium III Dual 667MHz

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CONCORRÊNCIA

001/2000

PASTA - 22



Pasta

22

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Doc.	3653



Brasília/DF, 09 de Maio de 2.000

À
EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS – ECT
BRASÍLIA/DF

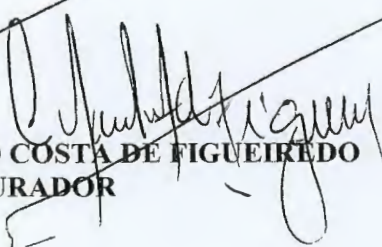
REF: CONCORRÊNCIA Nº 001/2000
ABERTURA: DIA 09/05/2000 - ÀS 09:30 HORAS
ATT: COMISSÃO PERMANENTE DE LICITAÇÃO

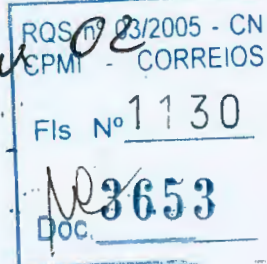
Prezados Senhores,

Em atendimento ao edital em referência, apresentamos a seguir, nossa **PROPOSTA TÉCNICA**, para o fornecimento de equipamentos para processamento de dados.

Nesta oportunidade ressaltamos nossa inteira disponibilidade para eventuais esclarecimentos que V. Sas. entendam necessários e renovamos nossos protestos de estima e consideração.

Atenciosamente,


CELSO COSTA DE FIGUEIREDO
PROCURADOR





APRESENTAÇÃO DA LICITANTE

Razão Social: **MICROLOG INFORMÁTICA E TECNOLOGIA LTDA.**
Endereço : SHCGN 714-715 – BLOCO “D” – LOJA 40
ASA NORTE – BRASÍLIA/DF
FONE: (061) 347-0995

CONTATOS TÉCNICOS E COMERCIAIS

Nome: CELSO COSTA DE FIGUEIREDO
Tel.: (061) 347-0995

Nome: JOÃO BOSCO M. PINTO (para informações técnicas sobre os produtos)
Tel.: (061) 347-0995

1 - PRODUTOS OFERTADOS

ESPECIFICAÇÕES TÉCNICAS DOS EQUIPAMENTOS

ITEM 1.1. - SERVIDOR DE REDE TIPO INT1

NÃO COTADO

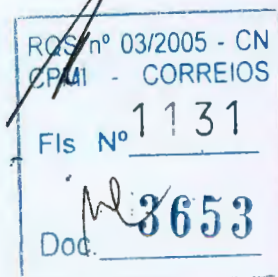
ITEM 1.2. - SERVIDOR DE REDE TIPO INT2

NÃO COTADO

ITEM 1.3. - SERVIDOR DE APLICAÇÃO TIPO INT3

QUANTIDADE: 09 (NOVE) UNIDADES

Servidor de Aplicação
Marca: **DELL**
Modelo: **POWEREDGE 6300**
Fabricante: **DELL**





000002

1. PADRONIZAÇÃO

Processador:

- ✓ Quatro Processadores Intel Pentium III Xeon com clock de 550 MHz cada.

Barramento:

- ✓ Barramento do sistema de 100 MHz.

Memória Cache:

- ✓ 01 MB ECC L2 por processador.

Memória RAM:

- ✓ 02 GBytes ECC EDO, expansível até 04 GBytes instalada "on board".

Slots:

- ✓ Quatro slots PCI 64 bits
- ✓ Três slots PCI de 32 bits
- ✓ Cinco slots PCI livres após montada configuração proposta.

Interface Serial:

- ✓ Duas interfaces seriais padrão RS-232C.

Interface Paralela:

- ✓ Uma interface paralela padrão Centronics.

Fonte de Alimentação Interna:

- ✓ Bivolt com redundância, hot-swappable, compatível com a configuração máxima do equipamento.

Unidade de Disco Flexível:

- ✓ Uma unidade de 3 1/2" com capacidade de 1,44 MBytes.

Disco Interno e Controladora de disco SCSI:

- ✓ Wide Ultra SCSI. Suporta RAID 0.
- ✓ Dois discos rígidos de 9 GB cada, espelhados, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.

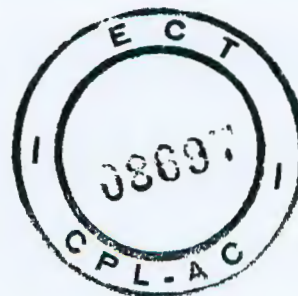
Controladora de Array de Disco:

- ✓ Wide Ultra SCSI, que suporta RAID 0 e 5.

Array de Discos:

- ✓ Cinco discos rígidos Wide Ultra SCSI, "Hot-swappable", com capacidade de 18 (dezoito) Gbytes cada, formatados, perfazendo um total de 54 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8 ms. Suporta RAID-0 e 5 com "HOT/SPARE".

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Unidade de Fita DAT:

- ✓ Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 20 Gbytes sem compressão e até 40 Gbytes com compressão, com uma controladora SCSI dedicada.

Gabinete:

- ✓ Modelo Torre, com capacidade interna para 08 (oito) unidades de disco rígido "Hot-swappable".

Teclado Alfanumérico:

- ✓ Com 104 teclas padrão ABNT2.

Placa de Vídeo:

- ✓ Integrada à placa mãe (on-board), padrão VGA, com 02 MBytes.

Monitor de Vídeo:

- ✓ SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm. Atinge resolução de 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.

Mouse Serial:

- ✓ Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

Unidade de CD-ROM:

- ✓ Uma unidade interna, interface SCSI, com velocidade de 40X, com driver de instalação para Windows NT Server 4.0.

Placa de Rede:

- ✓ Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3, saídas 10BaseT / 100Base-TX, velocidade dupla 10/100 Mbps autosenso ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Compatibilidade:

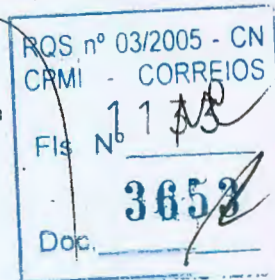
- ✓ O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificação HCL - Hardware Compatibility List, na categoria System/Server Multiprocessor, conforme ANEXO II desta proposta.

Imunidade:

- ✓ O produto é imune a quaisquer problemas decorrentes do "Bug do milênio", conforme ANEXO II desta proposta.

Documentação Técnica:

- ✓ A documentação que acompanha o equipamento é em língua inglesa.





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Outros:

- ✓ Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

Garantia:

- ✓ Total do fabricante por pelo prazo de 03 (três) anos.

Certificação:

- ✓ ISO 9002 do fabricante dos equipamentos e da Assistência Técnica. Apresentado cópia do documento oficial emitido pelo órgão certificador.

Assistência Técnica

- ✓ Relação completa da Rede de Assistência Técnica Autorizada para os produtos cotados, em todo o território nacional, com a nomeação para cada endereço, do técnico responsável que irá atender consultas da licitadora, conforme ANEXO III desta proposta.

Chamado de Suporte:

- ✓ Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos fornecidos e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, será colocado outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.

Horário de Atendimento:

- ✓ Das 08:00 às 24:00 hs (de 2ª a 6ª feira)

MICROLOG INFORMÁTICA E TECNOLOGIA LTDA. declara que:

(x) Atende () Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

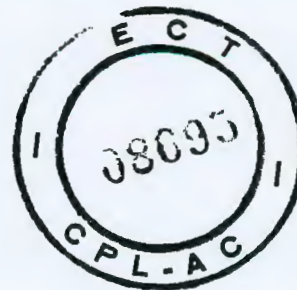
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2. DESEMPENHO

PROCESSADOR		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 Mhz, cada.		03
Quatro processadores Intel Pentium III Xeon, clock igual a 550 Mhz.	Atende	02
MEMÓRIA RAM		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual a 4 Gbytes		02

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DISCO INTERNO E CONTROLADORA DE DISCO SCSI		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Internos)	Atende	02
CONTROLADORA DE ARRAY DE DISCO		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	Atende	02

FONTE DE ALIMENTAÇÃO HOT-SWAPPABLE (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02

3. QUALIDADE

CERTIFICAÇÃO		
Assinalar com a palavra "atende" para as Certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	01

4. SUPORTE DE SERVIÇOS

PRAZO DE ATENDIMENTO		
Assinalar com a palavra "atende" a opção correspondente ao Prazo máximo de atendimento ao equipamento cotado:		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	Atende	02
Até 06 horas		01

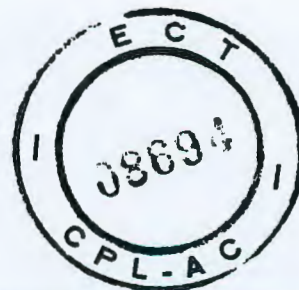
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Fls. Nº 1135
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HORÁRIO DE ATENDIMENTO E SUPORTE		
Assinalar com a palavra "atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:		
Além do horário comercial, o atendimento será prestado também nos horários, conforme Segue:	Resposta	Pontos
Horário integral - 24 horas/7 dias por semana		02
Horário semi-integral - 24 horas (de 2ª a 6ª feria)	Atende	01

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CENTRAL DE ATENDIMENTO E SUPORTE		
<i>Assinalar com a palavra "atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:</i>		
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software (0800) 903355	Atende	01
DURAÇÃO DA GARANTIA		
<i>Assinalar com a palavra "atende" a opção correspondente a Duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
05 (cinco) anos		03
04 (quatro) anos		02
03 (três) anos	Atende	01

Demais características conforme Documentação Técnica no Anexo II.

ITEM 1.4. - SERVIDOR DE APLICAÇÃO TIPO INT4

QUANTIDADE: 06 (SEIS) UNIDADES

Servidor de Aplicação
 Marca: **DELL**
 Modelo: **POWEREDGE 6300**
 Fabricante: **DELL**

1. PADRONIZAÇÃO

Processador:

- ✓ Quatro Processadores Intel Pentium III Xeon, com clock de 550 MHz, cada.

Barramento:

- ✓ Barramento do sistema de 100 MHz.

Memória Cache:

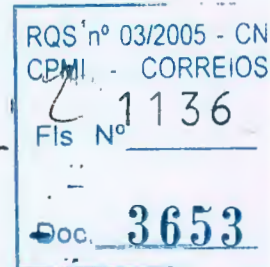
- ✓ 01 MB ECC L2 por processador.

Memória RAM:

- ✓ 04 GBytes ECC EDO.

Slots:

- ✓ Quatro slots PCI 64 bits
- ✓ Três slots PCI de 32 bits
- ✓ Cinco slots PCI livres após montada configuração proposta.



07
L**Interface Serial:**

- ✓ Duas interfaces seriais padrão RS-232C.

Interface Paralela:

- ✓ Uma interface paralela padrão Centronics.

Fonte de Alimentação Interna:

- ✓ Bivolt com redundância, hot-swappable, compatível com configuração máxima do equipamento.

Unidade de Disco Flexível:

- ✓ Uma unidade de 3 1/2" com capacidade de 1.44 MBytes.

Disco Interno e Controladora de disco SCSI:

- ✓ Wide Ultra SCSI. Suporta RAID 0.
- ✓ Dois discos rígidos de 9 GB cada, espelhado, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.

Controladora de Array de Disco:

- ✓ Wide Ultra 2 SCSI que suporta, RAID 0 e 5.

Array de Discos:

- ✓ Seis discos rígidos Wide Ultra 2 SCSI, "Hot-swappable", com capacidade de 18 (dezoito) Gbytes cada, formatados, perfazendo um total de 72 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8 ms. Suporta RAID-0 e 5 com "HOT SPARE".

Unidade de Fita DAT:

- ✓ Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 20 Gbytes sem compressão e até 40 Gbytes com compressão, com uma controladora SCSI dedicada.

Gabinete:

- ✓ Modelo Torre, com capacidade interna para 08 (oito) unidades de disco rígido "Hot-swappable".

Teclado Alfanumérico:

- ✓ Com 104 teclas padrão ABNT 2.

Placa de Vídeo:

- ✓ Integrada à placa mãe (on-board), padrão VGA, com 02 MBytes.

Monitor de Vídeo:

- ✓ SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm. Atinge resolução de 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.

Mouse Serial:

- ✓ Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

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Unidade de CD-ROM:

- ✓ Uma unidade interna, interface SCSI, com velocidade de 40X, com driver de instalação para Windows NT Server 4.0.

Placa de Rede:

- ✓ Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3, saídas 10BaseT/100Base-TX, velocidade dupla 10/100 Mbps autosense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.

Compatibilidade:

- ✓ O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificação HCL - Hardware Compatibility List, na categoria System/Server Multiprocessor, conforme ANEXO II desta proposta.

Imunidade:

- ✓ O produto é imune a quaisquer problemas decorrentes do "Bug do milênio", conforme ANEXO II desta proposta.

Documentação Técnica:

- ✓ A documentação que acompanha o equipamento é em língua inglesa.

Outros:

- ✓ Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

Garantia:

- ✓ Total do fabricante por pelo prazo de 03 (três) anos.

Certificação:

- ✓ ISO 9002 do fabricante dos equipamentos e da Assistência Técnica. Apresentado cópia do documento oficial emitido pelo órgão certificador.

Assistência Técnica

- ✓ Relação completa da Rede de Assistência Técnica Autorizada para os produtos cotados, em todo o território nacional, com a nomeação para cada endereço, do técnico responsável que possa atender consultas da licitadora, conforme ANEXO III desta proposta.

Chamado de Suporte:

- ✓ Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos fornecidos e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, será colocado outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.

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3653

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W**Horário de Atendimento:**

✓ Das 08:00 às 24:00 hs (de 2ª a 6ª feira)

MICROLOG INFORMÁTICA E TECNOLOGIA LTDA. declara que:

(x) Atende

() Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

2. DESEMPENHO

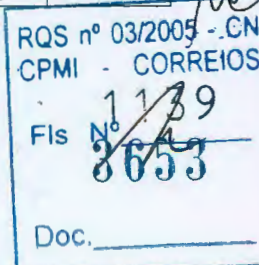
PROCESSADOR		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 Mhz, cada.		03
Quatro processadores Intel Pentium III Xeon, clock igual a 550 Mhz.	Atende	02

MEMÓRIA RAM		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual a 4 Gbytes		02

DISCO INTERNO E CONTROLADORA DE DISCO SCSI		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Internos)	Atende	02

CONTROLADORA DE ARRAY DE DISCO		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	Atende	02

FONTE DE ALIMENTAÇÃO HOT-SWAPPABLE (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02





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3. QUALIDADE

CERTIFICAÇÃO		
<i>Assinalar com a palavra "atende" para as Certificações que o modelo do equipamento cotado possui:</i>		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	01

4. SUPORTE DE SERVIÇOS

PRAZO DE ATENDIMENTO		
<i>Assinalar com a palavra "atende" a opção correspondente ao Prazo máximo de atendimento ao equipamento cotado:</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	Atende	02
Até 06 horas		01

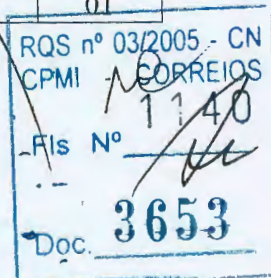
HORÁRIO DE ATENDIMENTO E SUPORTE		
<i>Assinalar com a palavra "atende" a opção correspondente ao Horário de atendimento às chamadas referentes ao equipamento cotado:</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral – 24 horas/7 dias por semana		02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)	Atende	01

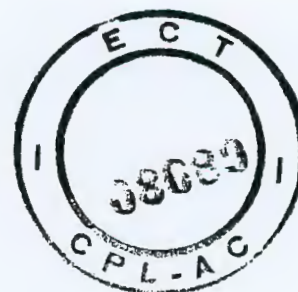
7
NÃO ATENDE

CENTRAL DE ATENDIMENTO E SUPORTE		
<i>Assinalar com a palavra "atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:</i>		
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software (0800) 903355	Atende	01

DURAÇÃO DA GARANTIA		
<i>Assinalar com a palavra "atende" a opção correspondente a Duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
05 (cinco) anos		03
04 (quatro) anos		02
03 (três) anos	Atende	01

Demais características conforme Documentação Técnica no Anexo II.





ITEM 1.5. - SERVIDOR DE APLICAÇÃO TIPO INT5

QUANTIDADE: 46 (QUARENTA E SEIS) UNIDADES

Servidor de Aplicação

Marca: **DELL**

Modelo: **POWEREDGE 4400**

Fabricante: **DELL**

1. PADRONIZAÇÃO

Processador:

- ✓ Dois Processadores Intel Pentium III Xeon, com clock de 600 MHz, cada.

Barramento:

- ✓ Barramento do sistema de 133 MHz.

Memória Cache:

- ✓ 256 KB ECC L2 "full speed" por processador.

Memória RAM:

- ✓ 01 GBytes ECC SDRAM.

Slots:

- ✓ Dois slots PCI 64 bits 66MHz (hot-plug)
- ✓ Dois slots PCI 64 bits 33MHz (hot-plug)
- ✓ Dois slots PCI 64 bits 33MHz
- ✓ Um slot PCI 32 bits 33MHz
- ✓ Cinco slots PCI livres, após montada configuração proposta.

Interface Serial:

- ✓ Duas interfaces seriais padrão RS-232C.

Interface Paralela:

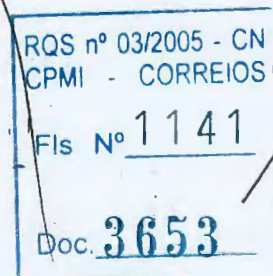
- ✓ Uma interface paralela padrão Centronics.

Fonte de Alimentação Interna:

- ✓ Bivolt com redundância, hot-swappable, compatível com configuração máxima do equipamento.

Unidade de Disco Flexível:

- ✓ Uma unidade de 3 1/2" com capacidade de 1.44 MBytes.





121
Y

Disco Interno e Controladora de disco SCSI:

- ✓ Wide Ultra SCSI. Suporta RAID 0.
- ✓ Dois discos rígidos de 9 GB cada, espelhado, com tempo médio de acesso igual a 8 ms e rotação de 10.000 RPM.

Controladora de Array de Disco:

- ✓ Wide Ultra SCSI que suporta, RAID 0 e 5.

Array de Discos:

- ✓ Cinco discos rígidos Wide Ultra SCSI, "Hot-swappable", com capacidade de 18 (dezoito) Gbytes cada, formatados, perfazendo um total de 54 GB líquidos. Rotação de 10.000 RPM, com tempo médio de acesso igual a 8 ms. Suporta RAID-0 e 5 com "HOT SPARE".

Unidade de Fita DAT:

- ✓ Uma unidade de fita padrão DAT para utilização de mídias com capacidade de 20 Gbytes sem compressão e até 40 Gbytes com compressão, com uma controladora SCSI dedicada.

Gabinete:

- ✓ Modelo Torre, com capacidade interna para 08 (oito) unidades de disco rígido "Hot-swappable".

Teclado Alfanumérico:

- ✓ Com 104 teclas padrão ABNT 2.

Placa de Vídeo:

- ✓ Integrada à placa mãe (on-board), padrão VGA, com 02 MBytes.

Monitor de Vídeo:

- ✓ SVGA policromático não entrelaçado com tela plana, anti-reflexiva de 15", dot-pitch de 0.28 mm. Atinge resolução de 800 x 600, atende às normas MPR II, EPA Energy Star. Seleção automática de tensão entre 90-240 VAC - full-range.

Mouse Serial:

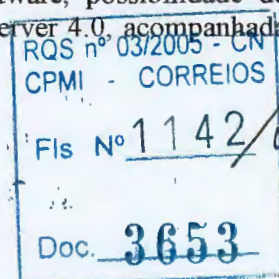
- ✓ Duas teclas padrão Microsoft com resolução de 400 dpi, mouse-pad e driver de instalação.

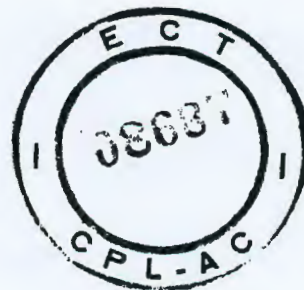
Unidade de CD-ROM:

- ✓ Uma unidade interna, interface SCSI, com velocidade 40X, com driver de instalação para Windows NT Server 4.0.

Placa de Rede:

- ✓ Uma placa de rede padrão Ethernet de 32 bits - IEEE 802.3, saídas 10BaseT/100Base-TX, velocidade dupla 10/100 Mbps autossense ou configurável por software, possibilidade de gerenciamento SNMP, com driver de instalação para Windows NT Server 4.0, acompanhada dos respectivos manuais de documentação.





Compatibilidade:

- ✓ O equipamento cotado apresenta compatibilidade com produtos Microsoft segundo Certificação HCL - Hardware Compatibility List, na categoria System/Server Multiprocessor, conforme ANEXO II desta proposta.

Imunidade:

- ✓ O produto é imune a quaisquer problemas decorrentes do "Bug do milênio", conforme ANEXO II desta proposta.

Documentação Técnica:

- ✓ A documentação que acompanha o equipamento é em língua inglesa.

Outros:

- ✓ Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.

Garantia:

- ✓ Total do fabricante por pelo prazo de 03 (três) anos.

Certificação:

- ✓ ISO 9002 do fabricante dos equipamentos e da Assistência Técnica. Apresentado cópia do documento oficial emitido pelo órgão certificador.

Assistência Técnica

- ✓ Relação completa da Rede de Assistência Técnica Autorizada para os produtos cotados, em todo o território nacional, com a nomeação para cada endereço, do técnico responsável que possa atender consultas da licitadora, conforme ANEXO III desta proposta.

Chamado de Suporte:

- ✓ Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos fornecidos e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, será colocado outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.

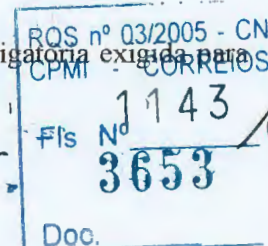
Horário de Atendimento:

- ✓ Das 08:00 às 24:00 hs (de 2ª a 6ª feira)

MICROLOG INFORMÁTICA E TECNOLOGIA LTDA. declara que:

(x) Atende () Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.





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2. DESEMPENHO

PROCESSADOR		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento.	Resposta	Pontos
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 600 Mhz, cada.	Atende	03
Dois processadores Intel Pentium III Xeon, clock igual a 550 Mhz, cada.		02

MEMÓRIA RAM		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento.	Resposta	Pontos
Igual a 4 Gbytes	7	02
Igual a 2 Gbytes	9	01

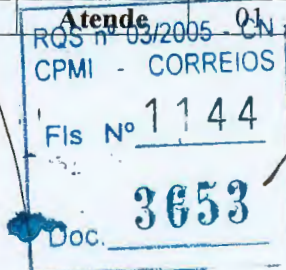
DISCO INTERNO E CONTROLADORA DE DISCO SCSI		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Internos)	Atende	02

CONTROLADORA DE ARRAY DE DISCO		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento.	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	Atende	02

FONTE DE ALIMENTAÇÃO HOT-SWAPPABLE (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento.	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02

3. QUALIDADE

CERTIFICAÇÃO		
Assinalar com a palavra "atende" para as Certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	





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4. SUPORTE DE SERVIÇOS

PRAZO DE ATENDIMENTO		
<i>Assinalar com a palavra "atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado:</i>		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue:	Resposta	Pontos
Até 04 horas	Atende	02
Até 06 horas		01

HORÁRIO DE ATENDIMENTO E SUPORTE		
<i>Assinalar com a palavra "atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado:</i>		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue:	Resposta	Pontos
Horário integral – 24 horas/7 dias por semana		02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)	Atende	01

COTOU 16x5x4

NÃO
ATENDE!

CENTRAL DE ATENDIMENTO E SUPORTE		
<i>Assinalar com a palavra "atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado:</i>		
Está disponível, para o atendimento aos chamados:	Resposta	Pontos (cumulativos)
(0800) para hardware e software (0800) 903355	Atende	01

DURAÇÃO DA GARANTIA		
<i>Assinalar com a palavra "atende" a opção correspondente a Duração da garantia dada pelo fabricante para o equipamento cotado.</i>		
O fabricante oferece garantia para o produto por um período de:	Resposta	Pontos
05 (cinco) anos		03
04 (quatro) anos		02
03 (três) anos	Atende	01

Demais características conforme Documentação Técnica no Anexo II.

ITENS 1.6. a 1.11. – SERVIDORES INT6, INT7, RISC1, RISC2, RISC3 e RISC4

NÃO COTADOS





16

✓

CONDIÇÕES GERAIS DE FORNECIMENTO

1 - PRAZO DE ENTREGA

Os equipamentos ofertados terão seus prazos de entrega e suas respectivas quantidade conforme ANEXO V desta proposta.

Os equipamentos serão entregues nos almoxarifados das Diretorias Regionais, conforme ANEXO VI desta proposta, lacrados em caixas de papelão que possibilitem o seu transporte, manuseio, e armazenamento.

2 - GARANTIA DOS PRODUTOS

Os equipamentos propostos serão garantidos pelo prazo de 36 (trinta e seis) meses on-site, contados a partir da data de emissão do último Termo de Aceitação.

Garantimos disponibilidade para o fornecimento de peças de reposição, de prestação de assistência técnica e/ou suporte técnico aos produtos de hardware, por um período de 03 (três) anos, a contar da data mencionada na alínea anterior.

Os usuários deverão observar as normas de uso estabelecidas no Manual do Usuário que acompanha cada equipamento ofertado.

3 - CONDIÇÕES DE ASSISTÊNCIA TÉCNICA

Caso vencedora, durante o prazo de garantia ofertado, prestaremos os serviços de assistência técnica aos equipamentos, mediante manutenção preventiva e corretiva, de acordo com os manuais e normas técnicas específicas constantes dos respectivos manuais de cada equipamento, mantendo-os em perfeitas condições de uso, sem qualquer ônus para a ECT.

Entende-se por manutenção preventiva aquela destinada a prevenir a ocorrência de quebras e defeitos dos equipamentos.

Entende-se por manutenção corretiva aquela destinada a remover os defeitos apresentados pelos equipamentos, nesse caso, a substituição de peças, ajustes e reparos necessários.

A Assistência Técnica em Brasília será efetuada pela própria licitante através de seu corpo técnico qualificado, e nas demais localidades através da Rede de Assistência Técnica credenciada conforme ANEXO III)

Quando da necessidade de abertura de chamados técnicos, a ECT deverá fazê-lo através do DPG de fabricante (0800) 903355 disponibilizado para este fim. A partir de então a Microlog será automaticamente comunicada para fazer o acompanhamento, direcionamento logístico ou qualquer outra providência técnica ou comercial necessária para garantir o cumprimento das

RQS nº 03/2005 -	ECT - CORREIOS
Fis. Nº 146	3653
Doc.	

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cláusulas contratuais pertinentes. Disponibilizamos ainda, o telefone (0xx61) 347-0995 para contato direto com a Microlog, onde haverá plantão de suporte técnico e comercial para dirimir qualquer questão relacionada ao contrato em questão.

4 - VALIDADE DA PROPOSTA

A presente proposta tem seus preços válidos pelo prazo de 60 (sessenta) dias, a contar da data da reunião da licitação.

5 - DECLARAÇÃO

Declaramos para todos os efeitos legais, que ao apresentar esta proposta, estamos de pleno acordo com as condições gerais e especiais estabelecidas para esta licitação, às quais nos submetemos incondicional e integralmente.

Os equipamentos serão entregues conforme a pauta de distribuição anexas ao Edital, em seus respectivos almoxarifados relacionados no ANEXO IV

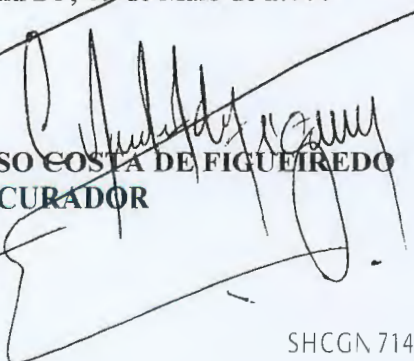
6 - SITE DO FABRICANTE E DO FORNECEDOR

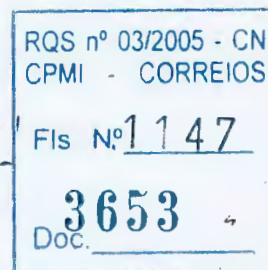
Fabricante: www.dell.com.br
Fornecedor: www.microlog.com.br

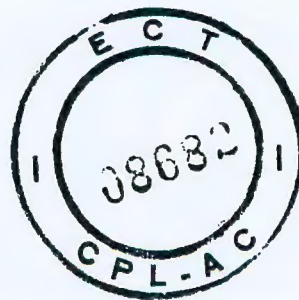
7 - DADOS GERAIS DA LICITANTE

MICROLOG INFORMÁTICA E TECNOLOGIA LTDA.
SHCGN 714/715 – BLOCO “D” – LOJA 40
ASA NORTE – BRASÍLIA/DF
CNPJ/MF Nº 32.923.310/0001-74
CF/DF Nº 07.321.915/001-54
FONE: (061) 347-0995
FAX: (061) 273-0239
CEP: 70760-795

Brasília/DF, 09 de Maio de 2.000


CELSON COSTA DE FIGUEIREDO
PROCURADOR





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V

ANEXO I

PLANILHAS DE ESPECIFICAÇÃO TÉCNICA



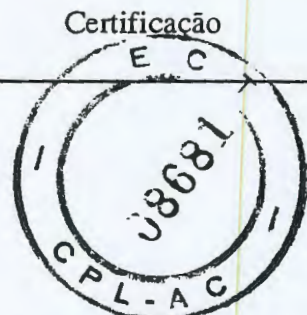
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CPMI - CORREIOS
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Doc. 3653

4



I.3. - SERVIDOR DE APLICAÇÃO TIPO INT3

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA
Outros	Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.
Garantia	Total do fabricante por pelo prazo de 02 (dois) anos.
Certificação	ISO 9000 ou NBR equivalente. Apresentar cópia do documento oficial emitido pelo órgão certificador e tradução oficial, caso o mesmo tenha sido emitido em língua estrangeira diferente do inglês.
Assistência Técnica	Caso a LICITANTE não seja a FABRICANTE do produto licitado, mas apenas DISTRIBUIDORA do mesmo, esta deve apresentar Carta de Solidariedade do Fabricante, assegurando o fornecimento e a garantia do produto em questão. Entretanto, se a Licitante é apenas FORNECEDORA do produto, esta pode apresentar Carta de Solidariedade do Fabricante ou do Distribuidor, sendo que na segunda opção, também deve ser entregue carta de solidariedade do Fabricante para o Distribuidor apresentado. A Licitante deverá ainda anexar à sua Proposta Técnica, a relação completa da Rede de Assistência Técnica Autorizada para o produto, em todo o território nacional, com a nomeação para cada endereço, de Técnico responsável que possa atender consultas da licitadora
Chamado de Suporte	Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos instalados nos estados de São Paulo, Rio de Janeiro e em Brasília e de 08 horas para as demais localidades e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, o fornecedor deverá colocar outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.
Horário de Atendimento	Das 08:00 às 24:00 hs (de 2ª a 6ª feira)



Assistência Técnica

ROS nº 03/2005 - CN
CPMI - CORREIOS

Fls Nº 149

Doc. 3653

A empresa _____ declara que:

(X) Atende () Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



I.3. – SERVIDOR DE APLICAÇÃO TIPO INT3**2. DESEMPENHO (DE)**

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais :

- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação “hot-swappable”.

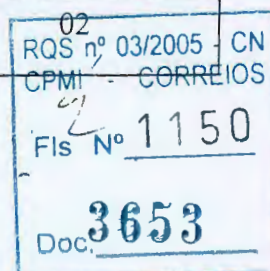
INSCRIÇÃO NO CNPJ

32 923 313/0001-74MIKROLOG - EDITORAÁTICA E
TECNOLOGIA LTDA.SHCGN CR Qd. 714/715 Bl. D Lj 40
ASA NORTE — CEP 70760-795
BRÁSÍLIA - DF

Processador		
<i>Assinalar com a palavra “Atende” no campo “Resposta”, conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Quatro processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.		03
Quatro processadores Intel Pentium III Xeon, clock igual a 550 MHz.		02

Memória RAM		
<i>Assinalar com a palavra “Atende” no campo “Resposta”, conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 4 Gbytes		02

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra “Atende” no campo “Resposta”, conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)		



1.3. – SERVIDOR DE APLICAÇÃO TIPO INT3

Controladora de Array de Disco			21
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento	Resposta	Pontos	
RAID 1 por Hardware para controladora de Array de Disco	Atende	02	

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02

3. QUALIDADE (QD)**PESO 04**

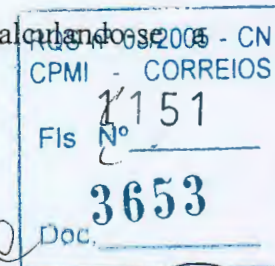
A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	01

4. SUPORTE DE SERVIÇOS (SS)**PESO 06**

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais :

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.



1.3. – SERVIDOR DE APLICAÇÃO TIPO INT3

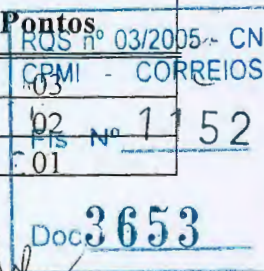
Prazo de Atendimento		
Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	Atende	02
Até 06 horas		01

Horário de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana		02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)	Atende	01

Central de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :		
Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	Atende	01

Duração da Garantia		
Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.		
O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	Atende	01





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I.4. – SERVIDOR DE APLICAÇÃO TIPO INT4

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA
Outros	Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.
Garantia	Total do fabricante por pelo prazo de 02 (dois) anos.
Certificação	ISO 9000 ou NBR equivalente. Apresentar cópia do documento oficial emitido pelo órgão certificador e tradução oficial, caso o mesmo tenha sido emitido em língua estrangeira diferente do inglês.
Assistência Técnica	Caso a LICITANTE não seja a FABRICANTE do produto licitado, mas apenas DISTRIBUIDORA do mesmo, esta deve apresentar Carta de Solidariedade do Fabricante, assegurando o fornecimento e a garantia do produto em questão. Entretanto, se a Licitante é apenas FORNECEDORA do produto, esta pode apresentar Carta de Solidariedade do Fabricante ou do Distribuidor, sendo que na segunda opção, também deve ser entregue carta de solidariedade do Fabricante para o Distribuidor apresentado. A Licitante deverá ainda anexar à sua Proposta Técnica, a relação completa da Rede de Assistência Técnica Autorizada para o produto, em todo o território nacional, com a nomeação para cada endereço, de Técnico responsável que possa atender consultas da licitadora
Chamado de Suporte	Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos instalados nos estados de São Paulo, Rio de Janeiro e em Brasília e de 08 horas para as demais localidades e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, o fornecedor deverá colocar outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.
Horário de Atendimento	Das 08:00 às 24:00 hs (de 2ª a 6ª feira)

A empresa _____ declara que:

(☒) Atende (☐) Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.

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1.4. – SERVIDOR DE APLICAÇÃO TIPO INT4

Controladora de Array de Disco		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	Atende	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02

3. QUALIDADE (QD)

PESO 04

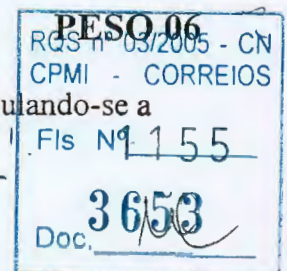
A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui :		
Possui Certificação atualizada conforme segue :	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	01

4. SUPORTE DE SERVIÇOS (SS)

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais :

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.



I.5. - SERVIDOR DE APLICAÇÃO TIPO INT5

ATRIBUTO	CONFIGURAÇÃO MÍNIMA EXIGIDA
Outros	Cabos, acessórios, manuais e documentação que são necessários ao pleno funcionamento do equipamento.
Garantia	Total do fabricante por pelo prazo de 02 (dois) anos.
Certificação	ISO 9000 ou NBR equivalente. Apresentar cópia do documento oficial emitido pelo órgão certificador e tradução oficial, caso o mesmo tenha sido emitido em língua estrangeira diferente do inglês.
Assistência Técnica	Caso a LICITANTE não seja a FABRICANTE do produto licitado, mas apenas DISTRIBUIDORA do mesmo, esta deve apresentar Carta de Solidariedade do Fabricante, assegurando o fornecimento e a garantia do produto em questão. Entretanto, se a Licitante é apenas FORNECEDORA do produto, esta pode apresentar Carta de Solidariedade do Fabricante ou do Distribuidor, sendo que na segunda opção, também deve ser entregue carta de solidariedade do Fabricante para o Distribuidor apresentado. A Licitante deverá ainda anexar à sua Proposta Técnica, a relação completa da Rede de Assistência Técnica Autorizada para o produto, em todo o território nacional, com a nomeação para cada endereço, de Técnico responsável que possa atender consultas da licitadora
Chamado de Suporte	Com atendimento "on site" (atuação de um técnico no local onde está instalado o equipamento), no prazo máximo de 04 (quatro) horas para os equipamentos instalados nos estados de São Paulo, Rio de Janeiro e em Brasília e de 08 horas para as demais localidades e prazo máximo para solução do problema de até 24 (vinte e quatro) horas. Caso o problema não seja resolvido neste prazo máximo, o fornecedor deverá colocar outro equipamento similar ou superior em substituição, até o conserto integral do equipamento com defeito.
Horário de Atendimento	Das 08:00 às 24:00 hs (de 2ª a 6ª feira)



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A empresa _____ declara que:

(☒) Atende (☐) Não Atende

Plenamente os atributos técnicos que constituem a configuração mínima obrigatória exigida para este produto.



I.5. – SERVIDOR DE APLICAÇÃO TIPO INT5

2. DESEMPENHO (DE)

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PESO 06

A pontuação para o fator DESEMPENHO (DE) será atribuída calculando-se o somatório da pontuação obtida para os seguintes subfatores opcionais :

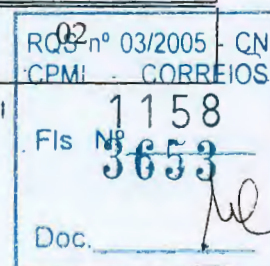
- Processador;
- Memória RAM;
- Disco Interno e Controladora de disco SCSI;
- Controladora de Array de Disco;
- Fonte de alimentação hotswappable.



Processador		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao modelo do equipamento</i>	Resposta	Pontos
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 600 MHz, cada.	Atende	03
Dois processadores Intel Pentium III Xeon, clock igual ou superior a 550 MHz, cada.		02

Memória RAM		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à memória do equipamento</i>	Resposta	Pontos
Igual a 4 GBytes		02
Igual a 2 GBytes		01

Disco Interno e Controladora de disco SCSI		
<i>Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Disco Interno e Controladora de disco SCSI do equipamento</i>	Resposta	Pontos
RAID 1 por Hardware para controladora SCSI (Discos Interno)		



1.5. – SERVIDOR DE APLICAÇÃO TIPO INT5

Controladora de Array de Disco		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente à Controladora de Array de Disco do equipamento	Resposta	Pontos
RAID 1 por Hardware para controladora de Array de Disco	Atende	02

Fonte de Alimentação Hot-swappable (que suporte a configuração máxima do equipamento)		
Assinalar com a palavra "Atende" no campo "Resposta", conforme a opção correspondente ao tipo de fonte de alimentação do equipamento	Resposta	Pontos
Fonte de alimentação hot-swappable.	Atende	02

3. QUALIDADE (QD)

PESO 04

A pontuação do fator QUALIDADE (QD) será atribuída considerando a certificação de que as empresas, na fabricação e manutenção do(s) equipamento(s) proposto(s), atendem aos padrões das normas ISO9002 ou NBR equivalente:

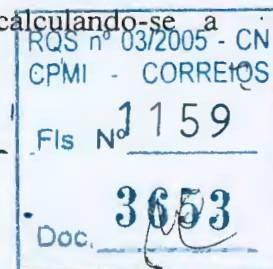
Certificação		
Assinalar com a palavra "Atende" para as certificações que o modelo do equipamento cotado possui:		
Possui Certificação atualizada conforme segue:	Resposta	Pontos
ISO 9002 referente a serviços de suporte de hardware e software	Atende	01

4. SUPORTE DE SERVIÇOS (SS)

PESO 06

A pontuação para o fator SUPORTE DE SERVIÇOS (SS) será atribuída calculando-se a pontuação obtida para os seguintes subfatores opcionais:

- Prazo de atendimento;
- Horário de atendimento e suporte;
- Central de atendimento e suporte;
- Duração da garantia.



I.5. – SERVIDOR DE APLICAÇÃO TIPO INT5

Prazo de Atendimento		
Assinalar com a palavra "Atende" a opção correspondente ao prazo máximo de atendimento ao equipamento cotado :		
Tendo como base o registro de chamada do suporte técnico, o atendimento será prestado nos prazos, conforme segue :	Resposta	Pontos
Até 04 horas	Atende	02
Até 06 horas		01

Horário de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente ao horário de atendimento às chamadas referentes ao equipamento cotado :		
Além do horário comercial, o atendimento será prestado também nos horários, conforme segue :	Resposta	Pontos
Horário integral – 24 horas/ 7 dias por semana		02
Horário semi-integral – 24 horas (de 2ª a 6ª feira)	Atende	01

Central de Atendimento e Suporte		
Assinalar com a palavra "Atende" a opção correspondente às facilidades oferecidas no atendimento às chamadas referentes ao equipamento cotado :		
Está disponível, para o atendimento aos chamados :	Resposta	Pontos (cumulativos)
(0800) para hardware e software	Atende	02

Duração da Garantia		
Assinalar com a palavra "Atende" a opção correspondente a duração da garantia dada pelo fabricante para o equipamento cotado.		
O fabricante oferece garantia para o produto por um período de :	Resposta	Pontos
5 (cinco) anos		03
4 (quatro) anos		02
3 (três) anos	Atende	01



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ANEXO II

DOCUMENTAÇÃO TÉCNICA (MANUAL E CATÁLOGO)

CERTIFICAÇÃO ANO 2000

CERTIFICAÇÃO HCL

CERTIFICAÇÃO ISO 9000

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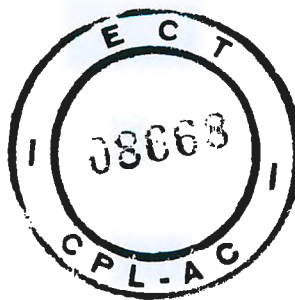
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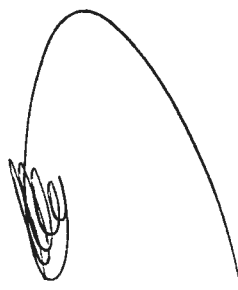
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ESPECIFICAÇÕES

DELL POWEREDGE 6300



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- ▷ Planning for the Microsoft Windows 2000 Transition
- ▷ The Increasing Demand for Hard Disk Drive Technology
- ▷ Linux as a Solution for Dell's Enterprise Customers
- ▷ Fibre Channel RAID Performance
- ▷ RAID Technology
- ▷ Protecting Your Data

SYSTEM SPECIFICATIONS



PowerEdge 6300

The PowerEdge™6300 is designed to support large numbers of users running critical application 24 hours a day. The more users a server handles, the more expensive downtime can become, so the PowerEdge 6300 was engineered with the availability, manageability, and serviceability required to help ensure maximum uptime. The PowerEdge 6300 includes the latest Intel® Pentium III Xeon™ processors, up to 4GB of ECC memory capacity, four 64-bit and three 32-bit PCI slots, and hard drive capacity of up to 252GB.

Customize & Price

Processors

- * Up to 4 Intel® Pentium® III Xeon™ processors, 550MHz
- * 100MHz front side bus
- * 32KB level 1 cache (16KB instruction cache and 16KB two-way write-back data cache)
- * 512KB, 1MB, or 2MB level 2 cache
- * Intel 450NX chipset

Memory

- * 256MB - 4GB ECC EDO DIMM memory
- * 16 DIMM sockets

Storage

SCSI:

- * Integrated Ultra-2/LVD SCSI Adaptec® AIC-7890
- * Integrated Ultra/Narrow SCSI-3 SCSI Adaptec AIC-7860
- * Optional Adaptec Ultra-2/LVD SCSI 2940 card
- * Optional PowerEdge Expandable RAID Controller, Version 2, Single Channel (PERC 2/SC)
- * Optional PowerEdge Expandable RAID Controller, Version 2, Quad

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Channel (PERC 2)

* Optional PowerVault™ 2xxS SCSI external storage system

* 9GB¹, 18GB, 36GB Ultra-2/LVD SCSI (7,200 and 10,000 rpm) hard dr

Fibre Channel:

* PowerVault 650F, 651F, 630F fibre channel RAID system

* 9GB, 18GB, 36GB fibre channel (10,000 rpm) hard drives

Removable Media and Tape Backup:

* Up to 40X max. SCSI CD-ROM

* Standard 3.5" 1.44MB diskette drive

* Optional PowerVault 100T-DDS3-I tape drive (12GB/24GB)

* Optional PowerVault 100T-DDS4 I tape drive (20GB/40GB)

* Optional PowerVault 110T-DLT4-I / DLT4-E tape drive (20GB/40GB)

* Optional PowerVault 110T-DLT7-I / DLT7-E tape drive (35GB/70GB)

* Optional PowerVault 120T-DDS3-I autoloader (96GB/192GB)

* Optional PowerVault 120T-DLT4-E autoloader (140GB/280GB)

* Optional PowerVault 120T-DLT7-E autoloader (245GB/490GB)

* Optional PowerVault 130T-DLT4-E library (166GB/1.05TB)

* Optional PowerVault 130T-DLT4-E library (166GB/1.05TB)

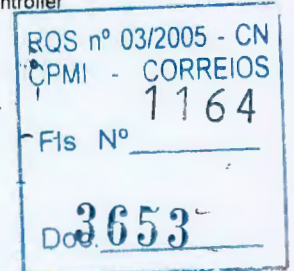
Graphics

* Integrated VGA-compatible, ATI-Rage Pro 3D controller

I/O Slots

* 4 x 64-bit PCI slots

* 3 x 32-bit PCI slots



Drive Bays

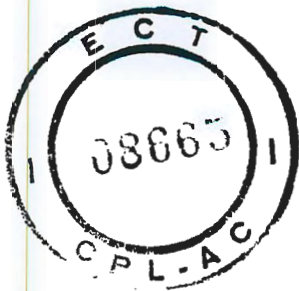
* Hot-pluggable Hard Drive Bays: Six 1.6" or eight 1.0" hard drive bays

* Externally accessible removable media bays: Three 5.25" half height bays for one CD-ROM, two available; dedicated 3.5" diskette bays

* Optional: Two, hot-plug 1" hard drives can be installed in multi-media bays



ME



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I/O Ports

- PS/2 keyboard, PS/2 mouse, 2 serial, parallel, video ports
- System management bus optional through cable

Communications

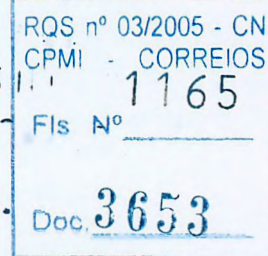
- Intel Pro/10+ PC LAN Adapter
- Intel Pro/100+ Server Adapter
- Intel Pro/100+ Dual Port Server Adapter
- Intel Pro/1000 Gigabit Server Adapter
- IBM® 16/4 Token Ring Adapter®
- 56K² V.90 WinModem supported under Windows NT® Server only
- 128K 4-port, PCI BRI ISDN modem

Input Devices

- Windows SpaceSaver 101-key
- Windows Performance 101-key
- Dell PS/2-style

Optional Software

- Novell® NetWare® Version 4.2, 5.0
- Microsoft Windows NT Server, Version 4.0
- Microsoft Windows 2000 Server
- Microsoft Windows 2000 Advanced Server
- Red Hat® Red Hat Linux 6.1
- Microsoft BackOffice Small Business Server Version 4.5
- Dell OpenManage™ PowerSuites for Veritas® Backup Exec™
- Dell OpenManage PowerSuites for Computer Associates® ARCserve®
- Legato® NetWorker





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* Veritas® NetBackup (NDMP)

* Tivoli® Storage Manager

Chassis

* Full-tower Chassis - 17.5" (h) x 10.5" (w) x 23.5" (d)

* 7U rack height

* Weight 75 lb.

Power

* Hot-pluggable: Three standard 320W redundant power supplies

* Hot-pluggable redundant cooling fans

* 110/220 Volts

Warranty

* Three-year limited warranty:³ 3 years of Next Business Day On-Site⁴ P replacement and 1 year of Next Business Day On-Site Labor Service

* 30-day "Getting Started" NOS helpline provides free telephone support help get you up and running quickly (when operating system is also purchased from Dell)

* 7-day/24-hour hardware technical support standard for as long as you own your computer

* 4-hour same⁷ business day response upgrades [5x10⁵ and 7x24⁶ optio

* DirectLine™ network operating system support (12 month contract for to 5 encounters) and upgrades available

* Pre-Failure Alert

Management

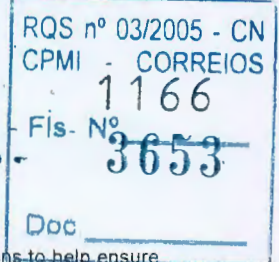
* Fault monitoring of voltage, fan, and thermal conditions to help ensure notification in case of potential problems

* Management of drive array under optional PowerEdge Expandable RAID Controller

* Tracks memory errors that have been corrected by the ECC memory

* Automatic Server Recovery will reboot and restart the server if the OS hangs without user intervention

* User-definable OS thresholds can be set, allowing administrators to tur





systems and eliminate bottlenecks to performance

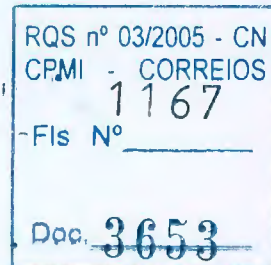
- Console alerting through HP® OpenView® Network Node Manager Special Edition keeps administrators informed of server performance or potential problems
- Asset management features allow customers to inventory server configuration, CPU, memory and disk
- Dell OpenManage™ Server Assistant CD included with every server to get your PowerEdge server up and running
- Dell OpenManage Resolution Assistant directly integrates Dell Service Center technical support with PowerEdge server environments
- Optional Dell Remote Assistant Card Version 2.0
- HP OpenView Network ManageX® Special Edition

Environmental

- Operating Temperature: 10° C to 35° C (50° F to 95° F)
- Storage Temperature: -40° C to 65° C (-40° F to 149° F)
- Relative humidity 8% to 80% non-condensing
- Operating Vibration: 0.25G at 3Hz to 300Hz for 15 minutes
- Storage Vibration: 0.5G at 3Hz to 300Hz for 15 minutes
- Operating Shock: 5G for 11ms
- Storage Shock: 20G with a velocity change of 1397mm/sec.
- Operating Altitude: -16m to 3,048m (-50 ft to 10,000 ft)
- Storage Altitude: -16m to 10,600m (-50 ft to 35,000 ft)

Regulatory

- FCC (U.S. only) Class A
- DOC (Canada) Class A
- EN 55022, IEC 801-2, EN50082-1, ICE 801-3, ICE801-4
- VCCI Class II
- UL 1950
- CSA 950



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* EN 60950

* IEC 60950

* CE



Customize & Price

¹ For hard drives, GB means 1 billion bytes; total accessible capacity varies depending on operating environment.

² Download speeds limited to 53 Kbps. Upload speeds are less (in the 30 Kbps range) and vary by mode manufacturer. Speeds also vary depending on line conditions. Analog phone line and compatible server equipment required.

³ For a complete copy of our Guarantees or Limited Warranties, please write Dell, USA, L.P., One Dell V Round Rock, TX 78682.

⁴ On-site service may be provided by a third-party provider under contract with Dell, and is not available certain areas. Technician will be dispatched if necessary following phone-based troubleshooting.

⁵ The service technician may not arrive until the following business day if dispatched after 4:00pm. Dell v dispatch a technician to the customer site within 4 hours of determining the hardware problem. Service n be provided by a third-party provider under contract with Dell. Technician will be dispatched if necessary following phone-based troubleshooting.

⁶ For 7x24 service, Dell will dispatch a service technician within 4 hours of determining the hardware problem. Service may be provided by a third-party provider under contract with Dell. Technician will be dispatched if necessary following phone-based troubleshooting.

⁷

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YEAR 2000

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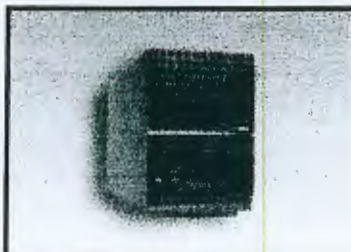
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PRODUCT READINESS ADVISOR



Your System Information

Model: PowerEdge 6300



YR 2000

System Year 2000 Assessment

Your system is Year 2000 compliant.

No further changes are required. All released BIOS versions for this model are Y2K compliant. For more information on the Year 2000 problem and how Dell systems handle it.

Note: The Dell Readiness Advisor assesses the readiness of the system hardware only, configured as it was originally shipped to. If your hardware has been upgraded or altered since purchasing your system from Dell, the Dell Product Readiness Advisor will not provide an accurate assessment.

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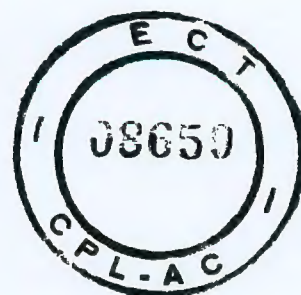
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HCL

DELL POWEREDGE 6300



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Mean . . .

Search for **PowerEdge 6300**
in **System/Server Multiprocessor**



Product Type Company Name Product Name

Please click below for more details.

Windows 95

Windows 98

Windows NT4

Windows 2000

System/Server Multiprocessor	Dell	PowerEdge 6300				
System/Server Multiprocessor	Dell	PowerEdge 6300/400				
System/Server Multiprocessor	Dell	PowerEdge 6300/550				
System/Server Multiprocessor	Dell	PowerEdge 6300/500				
System/Server Multiprocessor	Dell	PowerEdge 6300/450				
System/Server Multiprocessor	Dell	PowerEdge 6300/550 PentiumIII 550 (4p)				

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MANUAL TÉCNICO
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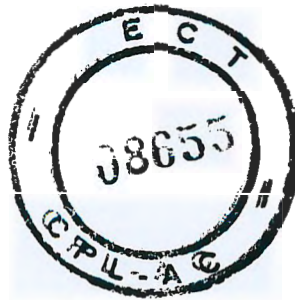
Dell® PowerEdge® 6300 Systems

SERVICE MANUAL



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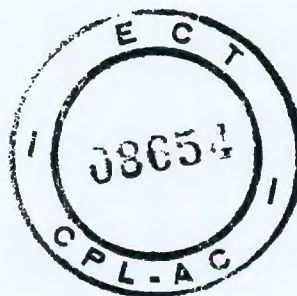
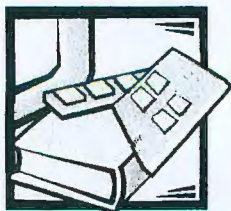
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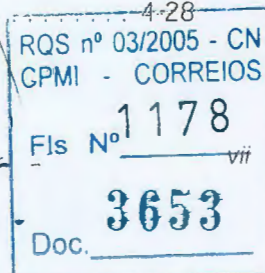
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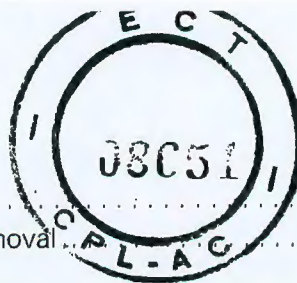
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Read This First

A prerequisite for using this manual to service Dell computer systems is a basic knowledge of IBM®-compatible PCs and prior training in IBM-compatible PC troubleshooting techniques. In addition to information provided in this manual and the *User's Guide* that came with the system, Dell provides the *Diagnostics and Troubleshooting Guide* for troubleshooting procedures and instructions on using the Dell Diagnostics to test the computer system.

Warnings, Cautions, and Notes

Throughout this manual, there may be blocks of text printed in bold type or in italic type. These blocks are warnings, cautions, and notes, and they are used as follows:



WARNING: A WARNING indicates the potential for bodily harm and provides instructions for how to avoid the problem.



CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and provides instructions for how to avoid the problem.



NOTE: A NOTE provides helpful information about using the computer system.



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CHAPTER 1 System Overview



Dell® PowerEdge® 6300 systems are feature-rich, enterprise-class server systems that use Intel® Pentium® II Xeon™ microprocessor(s) with MMX™ technology and incorporate a high-performance PCI local bus.

The PowerEdge 6300 systems have been designed for better serviceability and increased reliability. The sliding system board tray allows easy access to the system board for performing processor and memory upgrades. The Dell-designed SCSI backplane board and hard-disk drive carriers eliminate the extensive cabling and drive configuration usually required for a SCSI subsystem. The plastic drive rails attached to devices mounted in the external drive bays allow you to remove these devices without removing a single screw. The systems can be used either freestanding or rack-mounted.

A PowerEdge 6300 system can contain up to four Pentium II Xeon microprocessors. Each processor is housed in a single-edge contact (SEC) cartridge/heat sink assembly mounted in a guide bracket on the system board, allowing for greater heat dissipation. The processor has an internal operating frequency of 400 MHz (or a higher speed when available) and an external operating frequency of 100 MHz. Contact Dell for information about Dell-supported microprocessor upgrades.

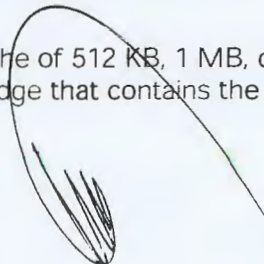
System Features

In addition to the standard features found in a traditional personal computer, Dell PowerEdge 6300 systems include the following new and/or advanced features:

- One to four Intel Pentium II Xeon microprocessors with an internal operating frequency of 400 MHz (and higher speeds when available) and an external bus speed of 100 MHz.
- Support for symmetric multiprocessing (SMP) when two or more microprocessors are installed.

NOTE: Additional microprocessors must have the same internal operating frequency as the initial microprocessors. Not all versions of the Pentium II microprocessor will work properly as additional microprocessors in this system; the upgrade kit from Dell contains the correct version for this system.

- A secondary (L2) cache of 512 KB, 1 MB, or 2 MB of SRAM is included within the SEC cartridge that contains the microprocessor.



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- A minimum of 128 MB of system memory, upgradable to a maximum of 4 GB by installing combinations of 32-, 128-, and 256-MB buffered EDO DIMMs in the 16 DIMM sockets on the memory board.
- BIOS in upgradable flash memory on the PCI bus.
- Up to six hot-pluggable SCSI hard-disk drives. Two additional 1-inch drives can be installed in the optional removable media bay.
- Three redundant, hot-pluggable power supplies and a power-supply paralleling board (PSPB).
- Five redundant system cooling fans.
- Seven PCI connectors, four 64-bit and three 32-bit.
- Three peer-to-peer PCI expansion subsystems.
- A VGA-compatible video subsystem with an ATI 3D RAGE PRO SVGA video controller. This video subsystem contains 2 MB of SGRAM video memory (nonupgradeable).
- A National Semiconductor PC87309 super I/O controller that controls the bidirectional parallel port, two serial ports, and the diskette drive in the externally accessible front bay.
- Two Adaptec AIC-7890 Ultra2/LVD SCSI host adapters that support up to six 1.6-inch internal SCSI hard-disk drives via a SCSI backplane board and special SCSI hard-disk drive carriers.



NOTE: The 1.6-inch drive carriers will accommodate 1-inch drives.

The SCSI backplane automatically configures SCSI ID numbers and SCSI termination on individual hard-disk drives, greatly simplifying drive installation. The backplane supports hot-pluggable SCSI hard-disk drive installation and removal when used in conjunction with the PowerEdge Expandable RAID controller.

- An Adaptec AIC-7860 Ultra/Narrow SCSI-III host adapter that supports up to three externally accessible SCSI devices in the external hard-disk drive bays.
- Drive failure, online, and activity indicators visible on each hard-disk drive connected to the SCSI backplane.
- Server management circuitry that monitors operation of the system fans as well as critical system voltages and temperatures. The server management circuitry works in conjunction with the HP OpenView Network Node Manager Special Edition (NNM SE) and the Dell OpenManage™ Hardware Instrumentation Package (HIP) software package.
- System board support for the Dell OpenManage Remote Assistant when the optional Dell Remote Assistant Card (DRAC) is installed, which provides additional local and remote server management.

For a complete list of system features, see "Technical Specifications" found later in this chapter. For information about installing the PowerEdge 6300 systems in a rack, see the *Dell PowerEdge 6300 Systems Rack Kit Installation Guide*.

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When following the text in this manual, assume that the location or direction relative to the computer is as shown in Figure 1-1. Figures 1-2 through 1-4 illustrate front-panel, back-panel, and interior features of the PowerEdge 6300 systems.

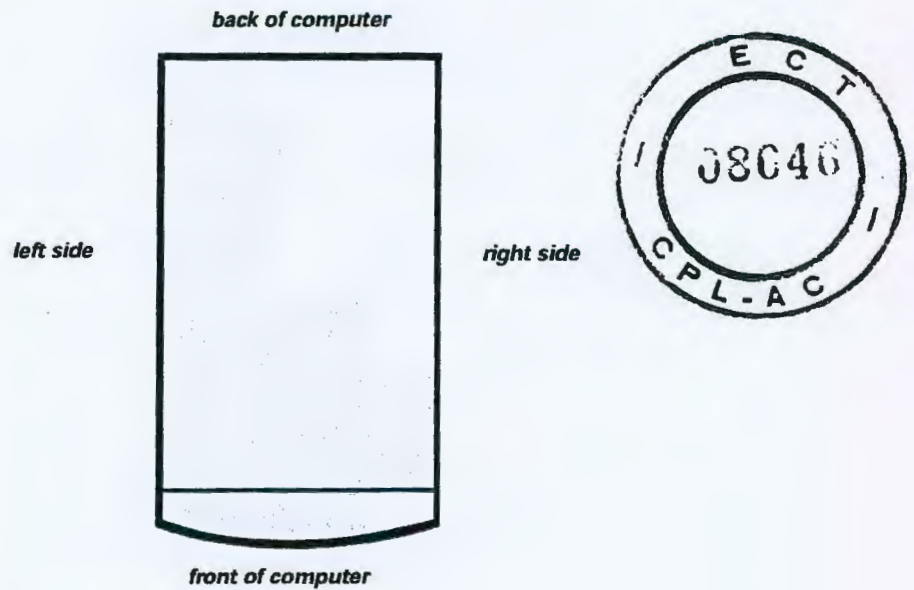


Figure 1-1. Computer Orientation

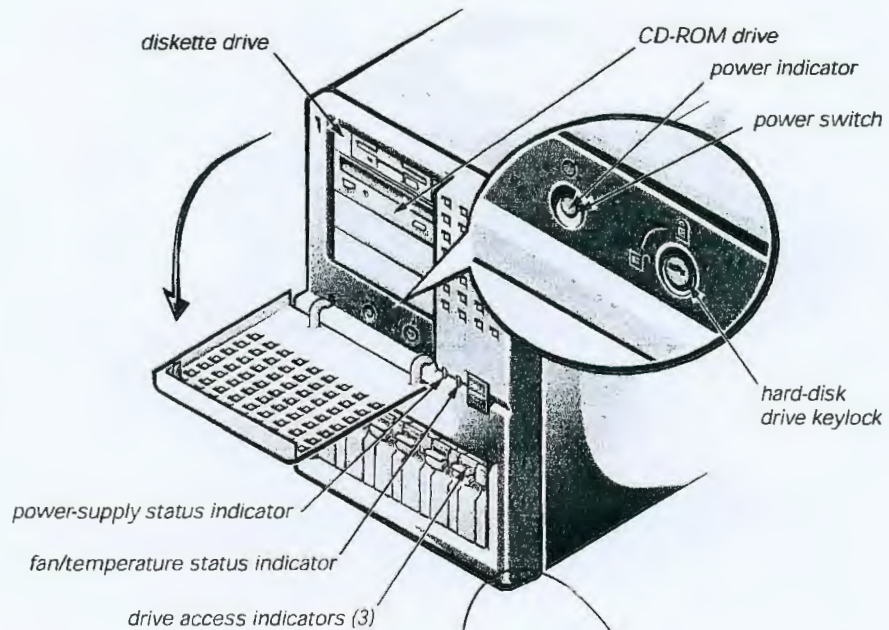


Figure 1-2. Front-Panel Features

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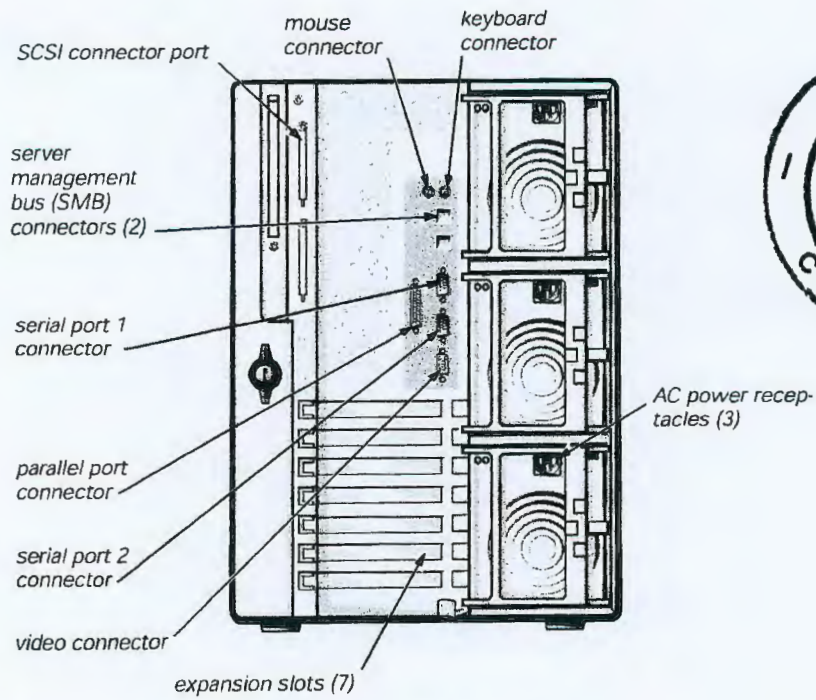


Figure 1-3. Back-Panel Features



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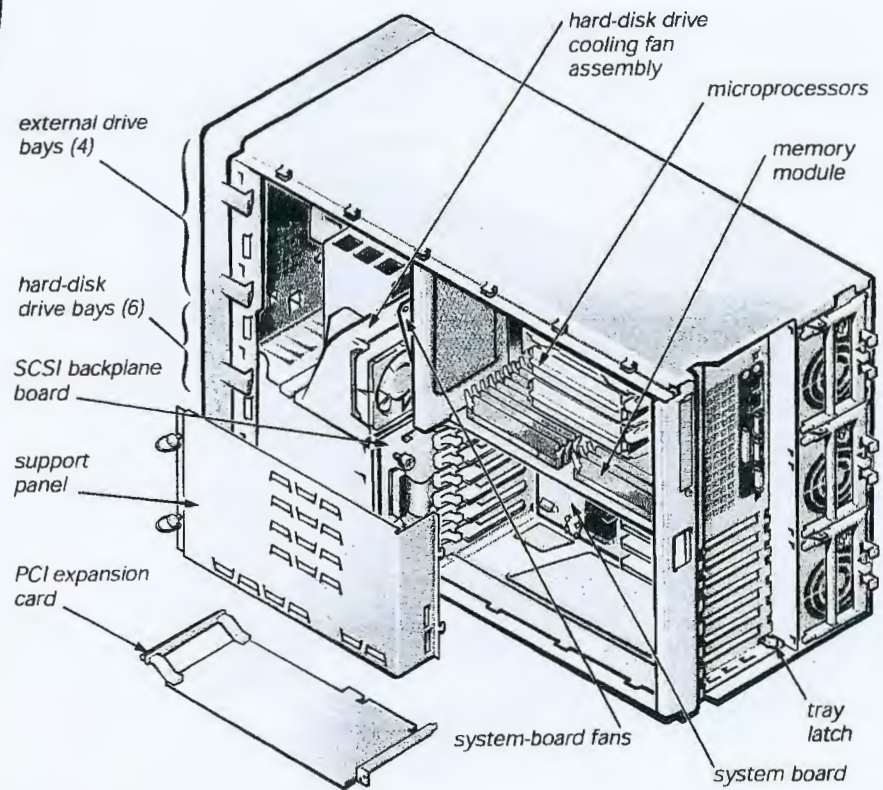


Figure 1-4. Back/Right Side Internal View



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Accessing the Interior of the System

To access the SCSI backplane board or the PSPB, release the system-board tray latch at the back lower corner of the tray (see Figure 1-5) and pull the tray open to the first stop position, or *service position*).



NOTE: From the service position, if you depress and release the tray latch and pull the tray out again, you will come to a second stop position that is used by manufacturing. To remove the tray completely from any position, depress the latch, hold it in, and pull the tray out of the chassis.

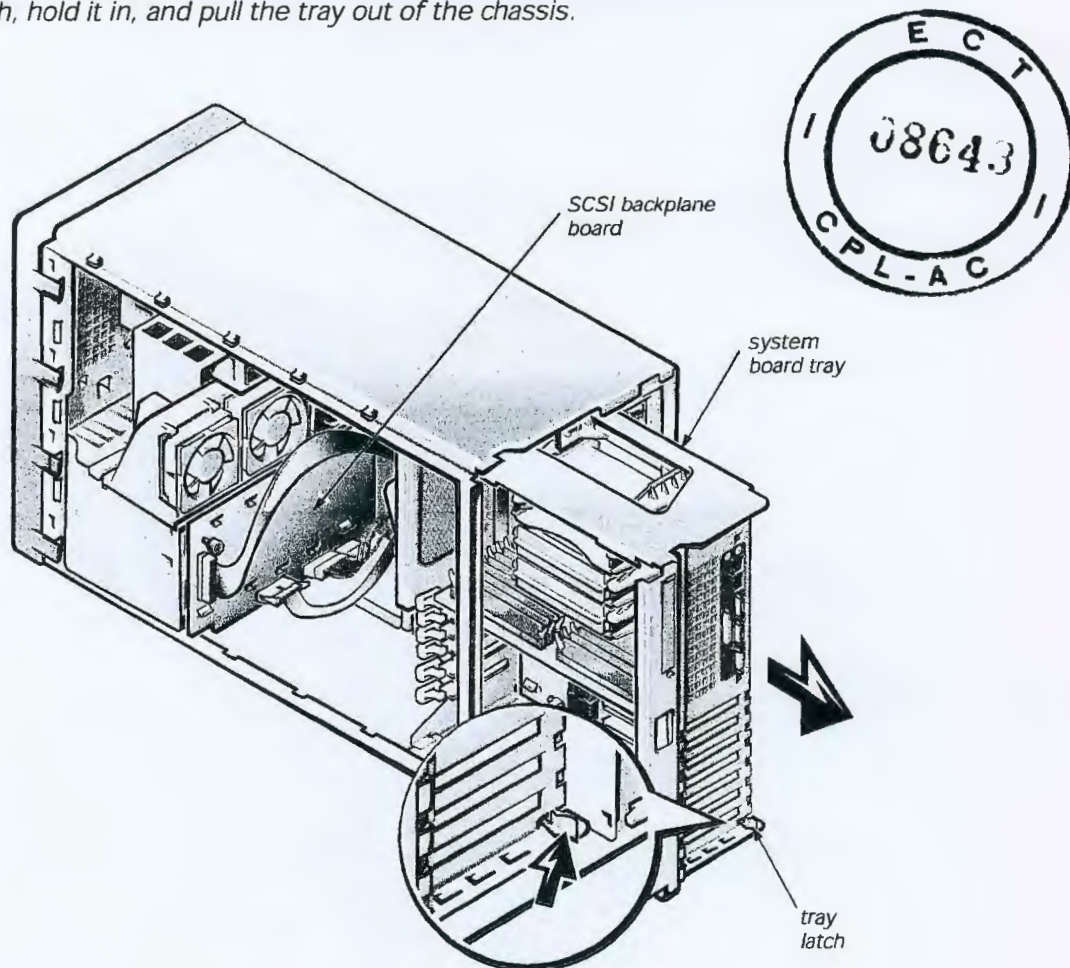


Figure 1-5. Opening the System Board Tray



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System Memory

System memory resides on a memory module card and consists of a minimum of 128 MB of 72-bit buffered EDO memory. Memory can be expanded up to 4 GB by installing combinations of 32-, 128-, and 256-MB buffered EDO DIMMs on the memory module.



NOTE: DIMMs must be rated at 50 or 60 ns. With a mixture of 50- and 60-ns DIMMs, system memory will run at 60 ns.

The memory module provides 16 168-pin DIMM sockets divided into four banks, each consisting of four sockets labeled "DIMM A" through "DIMM D" (see Figure 1-6). Memory upgrade guidelines are as follows:

- DIMMs must be installed one bank (four DIMMs) at a time, starting with bank 1 and working toward bank 4. There should be no open banks between populated banks.
- Within a bank, install DIMMs in the following order: DIMM A, DIMM B, DIMM C, and DIMM D.
- DIMM sizes cannot be mixed within a memory bank. However, one memory bank can hold different-size DIMMs from another memory bank.
- Of the DIMMs to be installed in the system, install the size you have the most of in the lowest-numbered bank(s), the less numerous size in the next banks, and least numerous size in the highest-numbered banks being used. For example, when installing four 256-MB DIMMs, eight 128-MB DIMMs, and four 32-MB DIMMs, install the 128-MB DIMMs in banks 1 and 2. The 256- and 32-MB DIMMs can be installed in banks 3 and 4; it does not matter which bank holds which size.

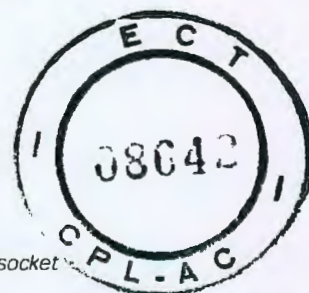
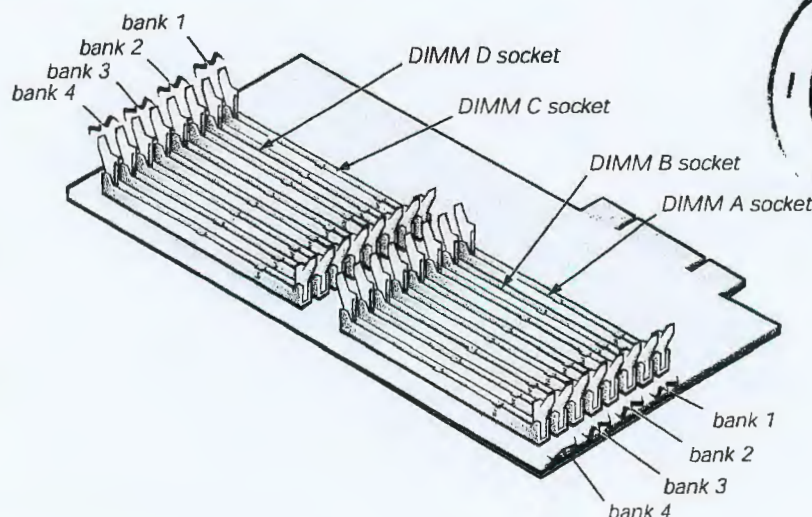


Figure 1-6. Memory Module

For more detailed information about DIMM installation guidelines and samples of DIMM configurations, see "Adding Memory" in Chapter 8 of the Dell PowerEdge 6300 Systems Installation and Troubleshooting Guide.

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See "DIMMs" in Chapter 4 of this document for information on removing and replacing DIMMs.

PCI Expansion Subsystem

The Resource Configuration Utility (RCU) included with the system automatically configures installed PCI expansion cards. For more information on the RCU, see Chapter 5, "Using the Resource Configuration Utility," in the *Dell PowerEdge 6300 Systems User's Guide*.

The seven expansion-card slots include four 64-bit and three 32-bit PCI expansion-card connectors located on the system board (see Figure 1-13). The 64-bit slots support both 32- and 64-bit cards.

Video Controller

The video subsystem is built into the system board and consists of a PCI VGA-compatible video subsystem with an ATI 3D RAGE PRO SVGA video controller. The video subsystem contains 2 MB of SGRAM video memory, which is not upgradable. Maximum noninterlaced resolutions are 640 x 480 (16.7 million colors), 800 x 600 (16.7 million colors), and 1024 x 768 (256 colors).

Integrated SCSI Controllers

Two integrated Adaptec AIC-7890 Ultra2/LVD SCSI host adapters support up to six 1- or 1.6-inch internal SCSI hard-disk drives through a 68-pin connector on the system board for a SCSI backplane board. The SCSI backplane board automatically configures SCSI ID numbers and SCSI termination on individual hard-disk drives, greatly simplifying drive installation. The integrated SCSI controller resides on the PCI local bus for optimum performance.

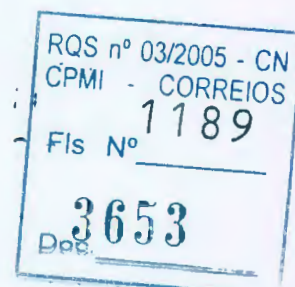
An integrated Adaptec AIC-7860 Ultra/Narrow SCSI host adapter attached to the PCI bus supports up to three SCSI devices in the external drive bays through a 50-pin connector on the system board.

SCSI Hard-Disk Drives

Dell PowerEdge 6300 systems include a SCSI backplane board, which greatly simplifies cabling and configuration for SCSI hard-disk drives. SCSI ID and termination for SCSI hard-disk drives are both configured by the SCSI backplane board, rather than on individual drives. SCSI hard-disk drives are supplied by Dell in special drive carriers that fit in the internal drive bays.



NOTE: For maximum performance, install Ultra2/LVD drives exclusively. Although you can install a mixture of Ultra2/LVD and Ultra hard-disk drives, they will operate at the slower Ultra transfer rate.





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SCSI Configuration Guidelines

SCSI hard-disk drives must be configured as follows:

- Disable termination on the drive. The SCSI backplane board provides termination for the SCSI bus.
- Set the SCSI ID on all drives to 0. All SCSI ID numbers for the drives are set by the SCSI backplane board.
- Configure the drive so that the drive motor waits for a **start unit** command from the SCSI host adapter before spinning.

SCSI devices in the external drive bays are controlled by the Ultra/Narrow SCSI controller on the system board. Although SCSI devices are installed essentially the same way as other devices, their configuration requirements are different. To configure SCSI devices installed in the external bays, follow the guidelines in the following subsections.

SCSI ID Numbers

Each device attached to the Ultra/Narrow SCSI host adapter must have a unique SCSI ID number from 0 to 7.

When SCSI devices are shipped from Dell, the default SCSI ID numbers are assigned as follows:

- The onboard Ultra/Narrow SCSI host adapter is configured through the BIOS as SCSI ID 7.
- A SCSI tape drive is configured as SCSI ID 6 (the default ID number for a tape drive).
- A SCSI CD-ROM drive is usually configured as SCSI ID 5.



*NOTE: There is **no** requirement that SCSI ID numbers be assigned sequentially or that devices be attached to the cable in order by ID number.*

Device Termination

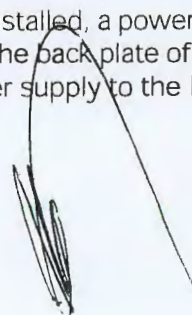
All Dell PowerEdge 6300 systems have an active terminator installed at the end of the SCSI cable. All of the devices attached to the SCSI cable should have their termination disabled.

PSPB and System Power Supplies

The Dell PowerEdge 6300 includes a PSPB and three 320-W redundant system power supplies.

System Power Supplies

The system power supplies are stacked at the rear of the chassis and can slide in and out of the unit. When fully installed, a power supply automatically mates with a power harness attached to the back plate of the power supply cage. The power harness connects the power supply to the PSPB.



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The power supplies can operate from an AC power source of 115 VAC at 60 Hz or 230 VAC at 50 Hz. They provide the DC operating voltages and currents listed in Table 1-1.



NOTE: The power supplies produce DC voltages only under their loaded condition. Therefore, when you measure these voltages, the DC power connectors must be mated to their PSPB harnesses at the bulkhead, and the harnesses must be connected to their corresponding power input connectors on the PSPB. The PSPB in turn must be connected as appropriate to the system board, SCSI backplane board, or external drive bay.

Table 1-1. DC Voltage and Current Ranges

Voltage	Range	Maximum Output Current ¹
+3.3 VDC	+3.23 to +3.45 VDC	18.0 A
+5 VDC	+4.90 to +5.25 VDC	40.0 A
+12 VDC	+11.40 to +12.60 VDC	16.0 A
-12 VDC	-10.80 to -13.20 VDC	0.5 ² A
-5 VDC	-4.50 to -5.50 VDC	0.3 A
+5 VFP	+4.85 to +5.35 VDC	0.4 A



¹ Maximum continuous combined load on +5 VDC and +3.3 VDC outputs cannot exceed 240 W.

² Maximum combined load current on -5 VDC and -12 VDC outputs cannot exceed 0.6 A.

PSPB

The PSPB multiplexes input from the power supplies to supply redundant power to the system board, SCSI backplane, and external drive bays. Through embedded server management (ESM), the PSPB can also be used to perform such tasks as detecting the presence of one to three power supplies; monitoring voltage and current outputs from the power supplies, voltage going to the system board, and fan RPMs; and supporting the SMB_ALERT protocol used by the server management bus.

The PSPB connects to the power supplies through short harnesses that attach to the back of the power supply cages. The PSPB is attached to the side wall of the computer behind the external drive cage and is oriented in parallel with the system board. For information on removing and replacing the PSPB, see "Power-Supply Paralleling Board" in Chapter 4.

Figure 1-7 shows the PSPB power connector layout; Table 1-2 shows the cable connections made from the PSPB.



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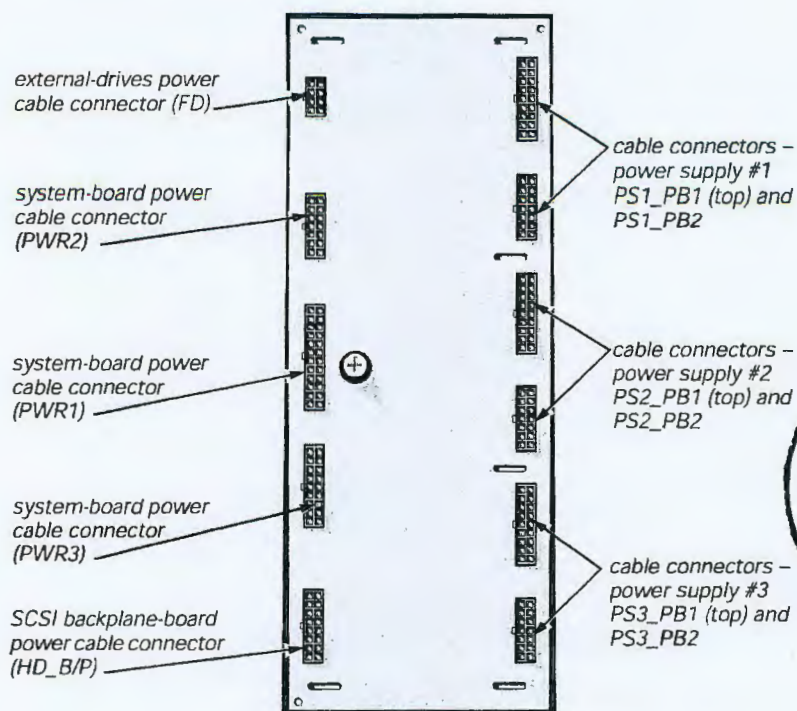


Figure 1-7. Power-Supply Paralleling Board

Table 1-2. Power Cable Connections From the PSPB

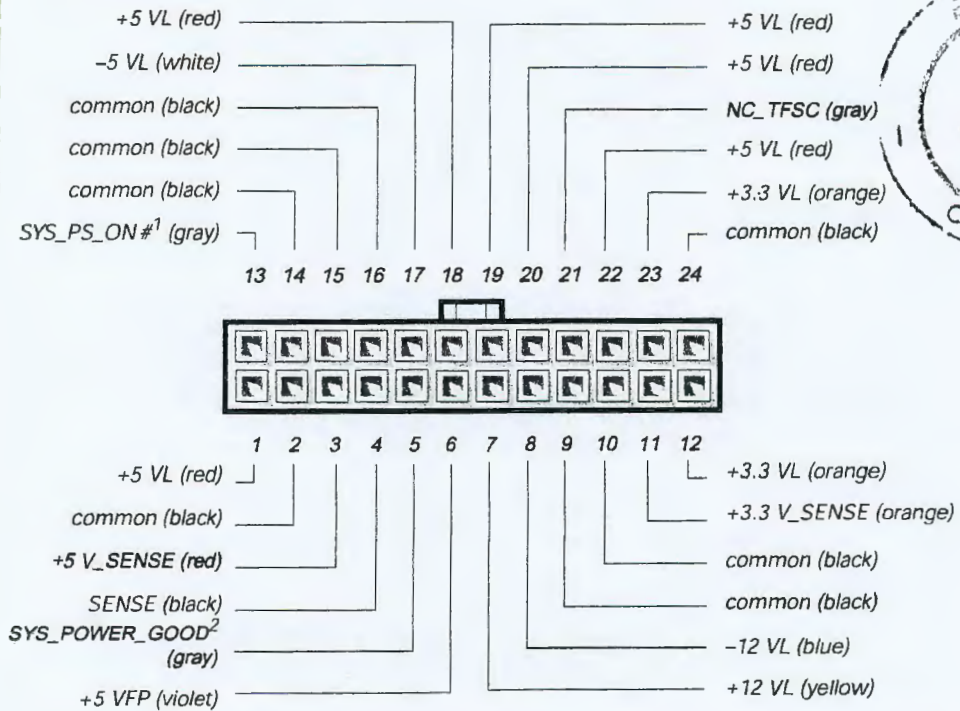
Connector	Cable Connection
PS1_PB1 and PS1_PB2	To the power connector on the first power supply
PS2_PB1 and PS2_PB2	To the power connector on the second power supply
PS3_PB1 and PS3_PB2	To the power connector on the third power supply
PWR1	To POWER1 connector on system board
PWR2	To POWER2 connector on system board
PWR3	To POWER3 connector on system board
FD	To diskette drives and other devices in external drive bays
HD_B/P	To POWER connector on SCSI backplane board



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Pin Assignments for the PSPB Power Connectors

The power-supply output voltages can be measured at the back (wire side) of the connectors without disconnecting them. In the following diagrams, voltages for the PSPB PWRx connectors are shown as measured at the system board; voltages for the PSPB FD connector are shown as measured at the PSPB; voltages for the PSPB HD_B/P connector are shown as measured at the SCSI backplane.



- ¹ Pin 13 — SYS_PS_ON# should measure between +4.75 and +5.25 VDC except when the power button on the front panel is pressed, taking SYS_PS_ON# to its active-low state.
- ² Pin 5 — SYS_POWER_GOOD should measure between +4.75 and +5.25 VDC when the power supply is operating to indicate that all power-supply output voltages are within the ranges specified in Table 1-1.

Figure 1-8. PSPB DC Power Connector PWR1



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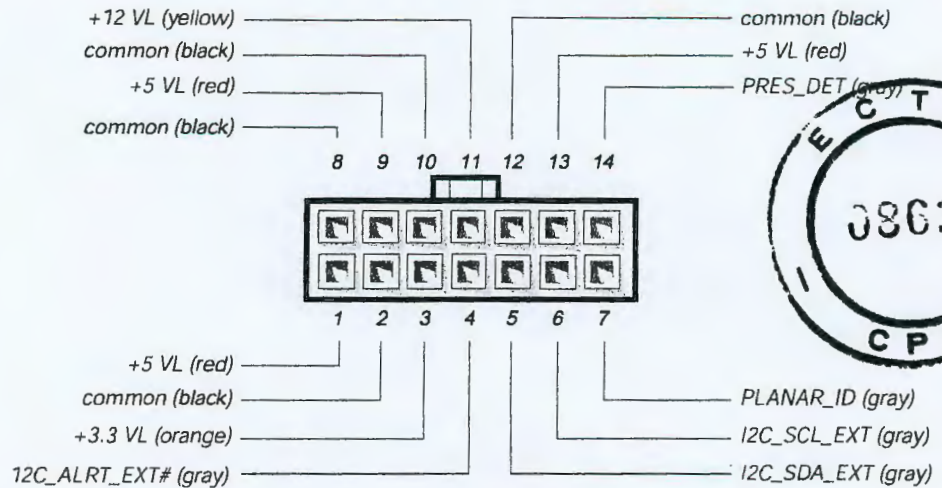


Figure 1-9. PSPB Power Connector PWR2

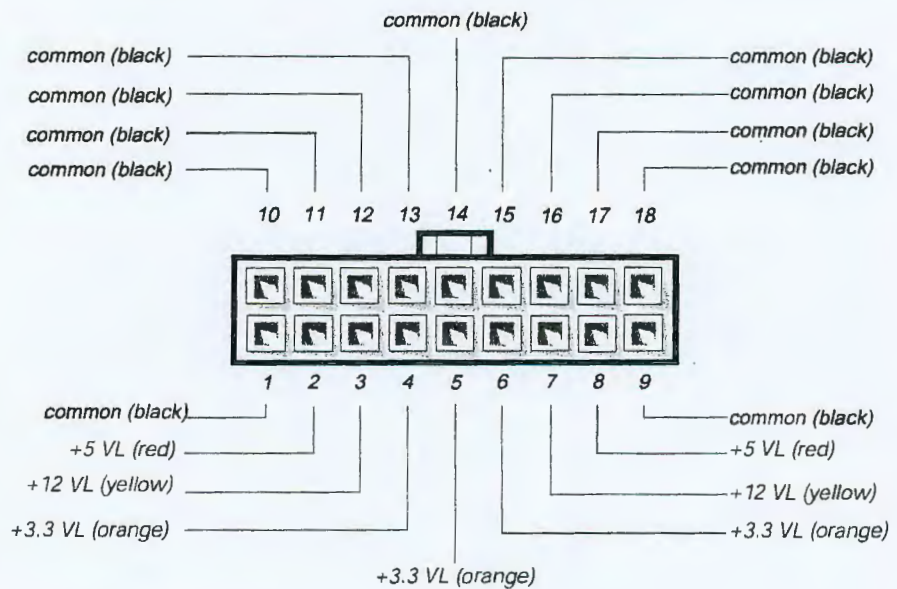


Figure 1-10. PSPB Power Connector PWR3

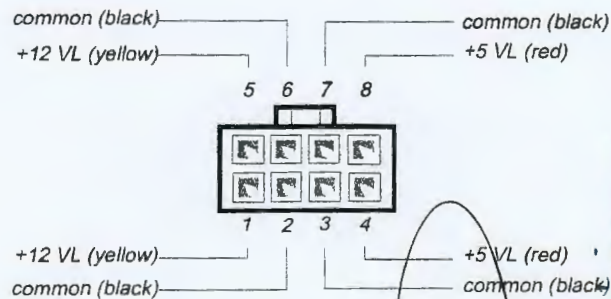
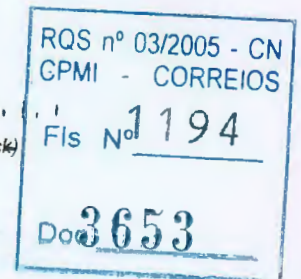


Figure 1-11. PSPB Power Connector FD



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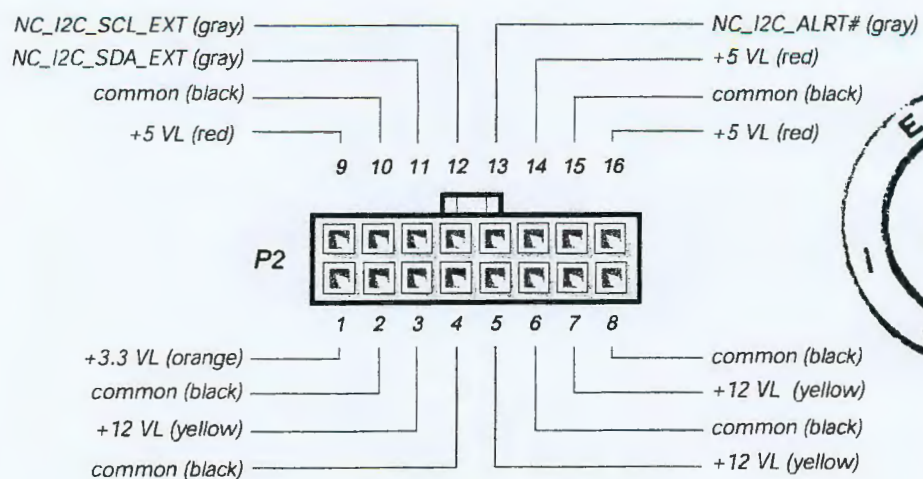
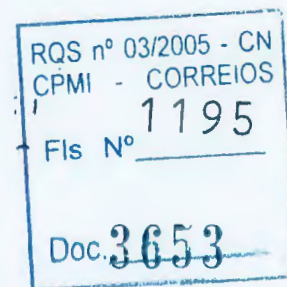


Figure 1-12. PSPB Power Connector HD_B/P



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System Board Layout

The subsections that follow provide service-related information about the system board components. Figure 1-13 illustrates the location of important system board components.

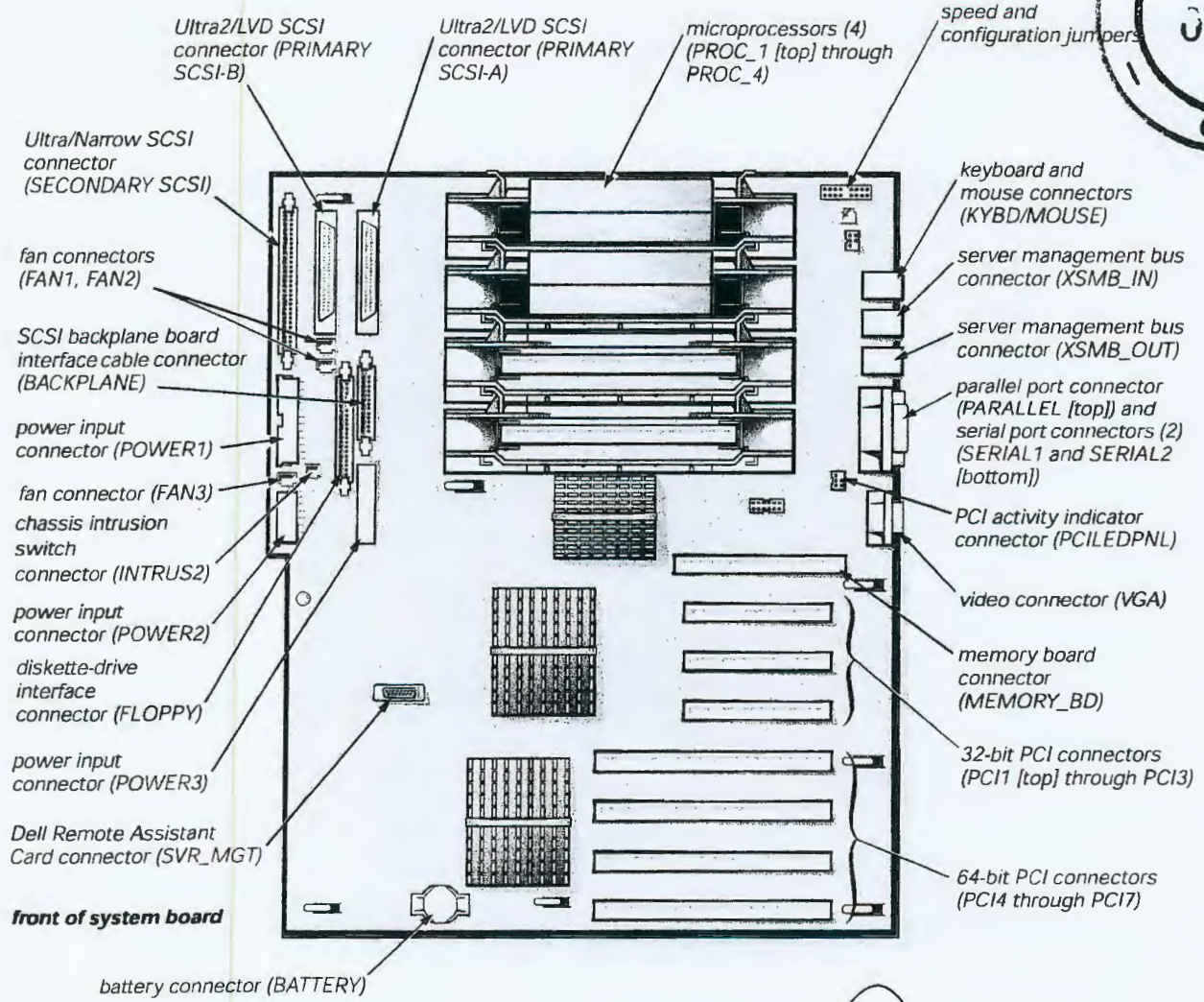
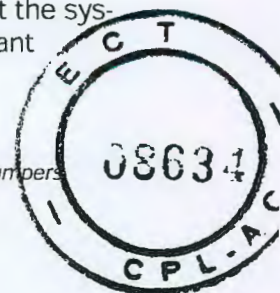


Figure 1-13. System Board Components

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SCSI Backplane Board Layouts

Figure 1-14 shows the location of the connectors on the SCSI backplane board.

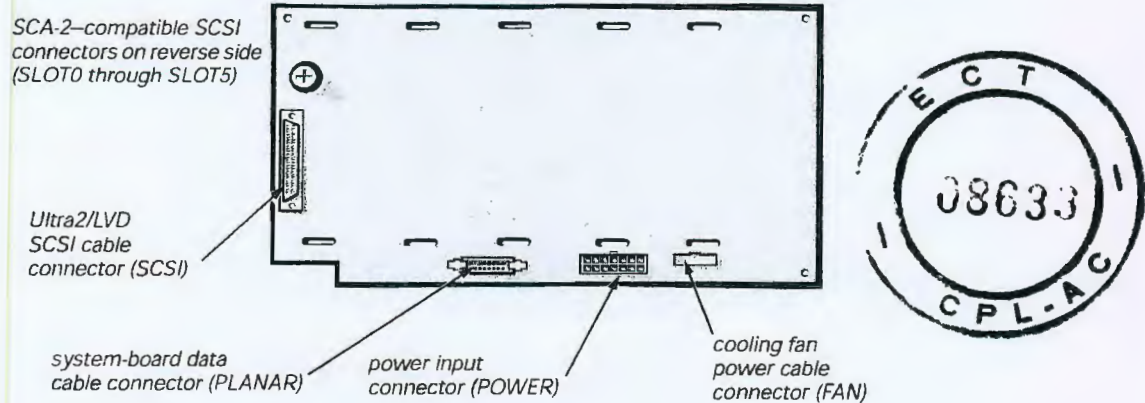


Figure 1-14. SCSI Backplane Board



CAUTION: Should you remove power from the SCSI backplane board (either by removing the power cable or during replacement of the system board battery), you may need to reflash your system's firmware.

The original firmware on the SCSI backplane is stored in EEPROM. However, if the SCSI backplane firmware is ever updated, the update is stored in volatile RAM. If power is removed from an updated backplane board, the update will be lost and the board will revert to its original firmware in EEPROM.

If at system startup you receive the message **Warning: Firmware is out-of-date, please update...**, it is best to reflash **all** system firmware from your **Dell Server Assistant CD**.



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System Board Jumpers

Figure 1-15 illustrates the location of the system board jumpers, and Table 1-3 describes the jumper settings.

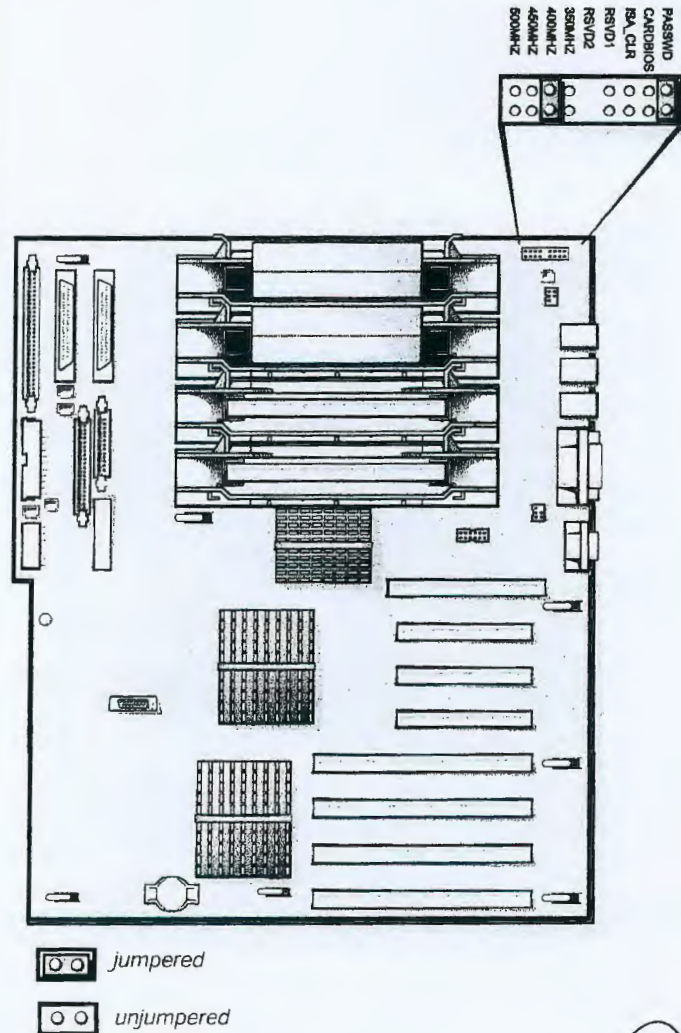


Figure 1-15. System Board Jumpers

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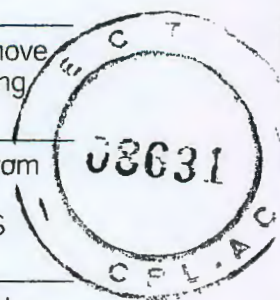
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Table 1-3. Jumper Descriptions

Jumper	Settings
PASSWD	Installed (default) to enable the password feature. Remove the jumper and boot the computer to remove an existing password.
CARDBIOS	Not installed (default) to allow normal boot operation from the system BIOS. Install the jumper only to boot the system from a BIOS expansion card.
ISA_CLR	Not installed (default) to retain the ISA configuration settings at system boot. Install the jumper and boot the computer to clear the ISA configuration settings. Remove the jumper before restoring ISA configuration information.
RSVD1	Do <i>not</i> install. Reserved for future microprocessor speed.
RSVD2	Do <i>not</i> install. Reserved for future microprocessor speed.
350MHZ	Do <i>not</i> install.
400MHZ	Installed only if the microprocessor's internal speed is 400 MHz.
450MHZ	Installed only if the microprocessor's internal speed is 450 MHz (when available).
500MHZ	Installed only if the microprocessor's internal speed is 500 MHz (when available).



Interrupt Assignments

Table 1-4 lists the default IRQ line assignments.

Table 1-4. Interrupt Assignments

IRQ Line	Used/Available
IRQ0	Used by the system timer
IRQ1	Used by the keyboard to signal that the output buffer is full
IRQ2	Used by interrupt controller 1 to enable IRQ8 through IRQ15
IRQ3	Used by serial port 2 (COM2 and COM4)
IRQ4	Used by serial port 1 (COM1 and COM3)
IRQ5	Available unless used by a secondary parallel port
IRQ6	Used by the diskette drive controller
IRQ7	Used by the primary parallel port
IRQ8	Used by the RTC
IRQ9	Used for power management functions



Table 1-4. Interrupt Assignments (continued)

IRQ Line	Used/Available
IRQ10	Available
IRQ11	Available
IRQ12	Used by the PS/2 mouse port unless mouse is disabled in System Setup program
IRQ13	Used by the math coprocessor
IRQ14	Available
IRQ15	Used by embedded server-management functions

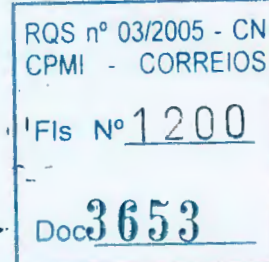


DMA Channel Assignments

Table 1-5 lists the default DMA channel assignments.

Table 1-5. DREQ Line Assignments

DREQ Line	Used By/Available
DREQ0	Not required for PCI-only system
DREQ1	Not required for PCI-only system
DREQ2	Generated by super I/O controller to initiate DMA cycle for attached diskette drive
DREQ3	Not required for PCI-only system
DREQ4	Generated by bus controller chip to activate second DMA controller
DREQ5	Not required for PCI-only system
DREQ6	Not required for PCI-only system
DREQ7	Not required for PCI-only system



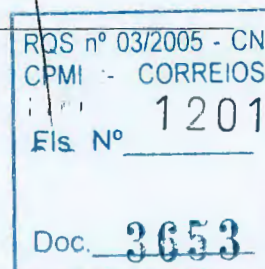
Technical Specifications

Table 1-6 lists detailed technical specifications.



Table 1-6. Technical Specifications

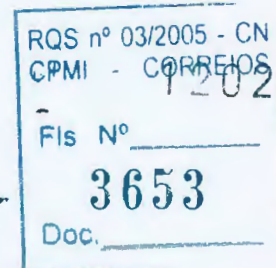
Microprocessor	
Microprocessor type	1 to 4 Intel Pentium II Xeon microprocessors
Microprocessor speed	400 MHz (100 MHz externally); higher internal speeds when available, all with 100-MHz external speeds
Internal cache	512-KB, 1-MB, or 2-MB L2 cache
Math coprocessor	internal to the microprocessor
System Information	
System chipset	Intel 450NX controller chipset
Data bus width	64 bits
Address bus width	32 bits
Expansion Bus	
Bus types	32- and 64-bit PCI local bus
Bus speed	33.33 MHz
PCI expansion-card connectors	three 32-bit and four 64-bit full-length slots
System Clocks	
System clock	100 MHz
Diskette/ communications ports	48 MHz from the system clock
SCSI channels	three 40-MHz channels
Memory	
Architecture	4-way interleaved 50- or 60-ns buffered EDO DIMMs
DIMM sockets	(16) 168-pin sockets
DIMM capacities	32-, 128-, and 256-MB buffered EDO
Standard RAM	128 MB (minimum)
Maximum RAM	4 GB
BIOS address	F000:0000h-F000:FFFFh
External cache	none



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Table 1-6. Technical Specifications (continued)

Integrated SCSI Controllers	
Types	two Adaptec AIC-7890 Ultra2/LVD (Fast-40) controllers, with integrated 68-pin SCSI connectors on the system board; Adaptec AIC-7860 Ultra/Narrow controller, with integrated 50-pin SCSI connector on the system board
Drives	
Externally accessible bays	one 3.5-inch bay dedicated to a diskette drive; one 5.25-inch bay (upper bay) containing a CD-ROM drive; two 5.25-inch bays for optional devices. Optional cage can be installed in the two option bays to support two additional hard-disk drives.
Internally accessible bays	six bays for SCSI hard-disk drives
Ports	
Externally accessible:	
Serial (DTE)	two 9-pin connectors; 16550-compatible
Parallel	one 25-hole connector (bidirectional)
Video	one 15-hole connector (VGA-compatible)
PS/2-style keyboard	6-pin mini-DIN
PS/2-compatible mouse	6-pin mini-DIN
Server-management bus daisy-chain connector. . .	two modular 8-pin connectors
Internally accessible:	
Ultra2/LVD SCSI controllers	two 68-pin connectors
Ultra/Narrow SCSI controller	50-pin connector
Diskette drive	34-pin connector



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**Table 1-6. Technical Specifications** (continued)

Controls and Indicators	
Power control	push button behind drive door on front panel
Power indicator	green LED behind drive door on front panel
Fan/temperature status indicator	green LED on front panel (blinks amber for fan failure or out-of-bounds temperature)
Power-supply status indicator	green LED on front panel (blinks amber for power supply or system voltage fault)
Drive online indicator	green LED on each SCSI drive carrier
Drive activity indicator	green LED on each SCSI drive carrier
Drive failure indicator	amber LED on each SCSI drive carrier (blinks if drive failure is detected)
Video	
Video type	ATI 3D RAGE PRO video controller; VGA connector
Video memory (standard)	2 MB (not upgradable)
Power	
DC power supply:	
Wattage	320 W per supply
Voltage	115 V at 60 Hz; 230 V at 50 Hz
Backup battery	3.0-V CR2032 lithium coin cell
Physical	
Height (with support feet)	44.5 cm (17.5 inches)
Width	30.5 cm (12.0 inches)
Depth	71.1 cm (28.0 inches)
Weight (maximum configuration)	50.0 kg (110.0 lb)

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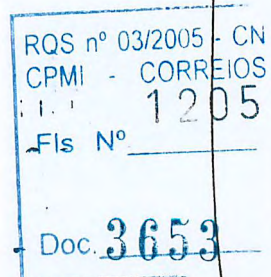
Table 1-6. Technical Specifications (continued)

Environmental	
Temperature:	
Operating	10° to 35°C (50° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	8% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz for 15 min
Storage	-0.5 G at 3 to 200 Hz for 15 min
Maximum shock:	
Operating	six shock pulses in the positive and negative x, y, and z axes at 50 G for 2 ms
Storage	six shock pulses in the positive and negative x, y, and z axes at 92 G for 2 ms
Altitude:	
Operating	-16 to 3048 m (-50 to 10,000 ft)
Storage	-16 to 10,600 m (-50 to 35,000 ft)



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CHAPTER 2

Basic Troubleshooting



This chapter describes basic troubleshooting procedures that can help you diagnose a computer system problem. These procedures can often reveal the source of a problem or indicate the correct starting point for troubleshooting the system. For a brief explanation of how to load and start the system diagnostics, see "Running the Dell Diagnostics" found later in this chapter. Dell recommends that you perform the following procedures in the order they are presented in this manual.



WARNING: The power supplies in this computer system produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the computer cover and access any of the components inside the computer.

Initial User Contact

When you first contact a user who has a problem, ask the user to describe the problem and the conditions under which it occurs. A verbal description can often indicate the cause of a problem or indicate the appropriate troubleshooting procedure to use. After the user describes the problem, follow these steps:

1. **Ask the user to back up any data on the hard-disk drive if the system's condition permits.**

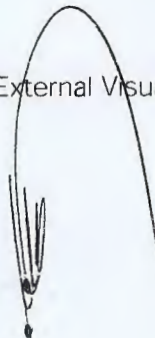
Appendix C, "Maintaining the System," in the *User's Guide* provides information about backing up data.

2. **Ask the user to try to duplicate the problem by repeating the operations he or she was performing at the time the problem occurred.**

Can the user duplicate the problem?

Yes. Proceed to step 3.

No. Proceed to the next section, "External Visual Inspection."



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3. **Observe the user to determine if he or she is making an error, such as typing an incorrect key combination or entering a command incorrectly.**

Is the problem a result of user error?

Yes. Instruct the user in the proper procedure, or direct him or her to the appropriate user documentation for the correct procedure.

No. Proceed to the next section, "External Visual Inspection."



External Visual Inspection

The external visual inspection consists of a quick inspection of the exterior of the computer, the monitor, the keyboard, any peripherals, and cables. While performing the visual inspection, make any necessary corrections. To perform the external visual inspection, follow these steps:

1. **Turn off the computer, the monitor, and all peripherals.**
2. **Verify that all power cables are properly connected to the computer, the monitor and peripherals, and their power sources.**
3. **Verify that the keyboard and mouse interface cables are firmly attached to the proper connectors on the back of the computer.**

For a PS/2-compatible mouse, the keyboard and mouse interface cable connectors are identical except for their labels. If needed, see "System Features" in Chapter 1.

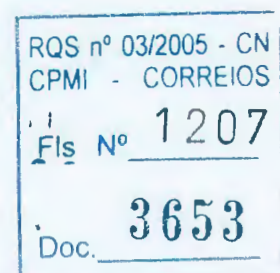
For a serial mouse, the mouse interface cable must be firmly attached to one of the serial port connectors, and its captive screws must be secure enough to ensure a firm connection.

4. **If any network cables are present, verify that they are attached properly.**
5. **Verify that any devices attached to the serial and parallel port connectors are properly connected.**

Each of the serial and parallel port interface cables must be firmly attached to an appropriate connector on the back of the computer as well as to the interface connector on the device. The captive screws that secure these connectors at each end of the interface cable must be secure enough to ensure a firm connection.

6. **Verify that the video interface cable is firmly attached to the video connector on the back panel or to a video expansion card, and also to the connector on the back of the monitor.**

For proper connection of the video monitor, see the documentation for the monitor.



7. Inspect all external monitor controls for any obvious damage or improper settings.

For proper settings of the video monitor controls, see the documentation for the monitor.

8. Inspect the keyboard to ensure that no keys are sticking.

If one or more keys are sticking, it may be necessary to replace the keyboard.

9. Inspect the exterior of the computer, including all controls and indicators, and all user-accessible data storage devices for any signs of physical damage.

Does the inspection reveal any problems?

Yes. Proceed to the appropriate procedure in Chapter 4, "Removing and Replacing Parts."

No. Proceed to the next section, "Observing the Boot Routine."

Observing the Boot Routine

After you have performed an external visual inspection as described in the previous section, you should boot the system and, while the boot routine is running, observe the system for any indications of problems.



NOTES: Most of the steps in this procedure require observation of system functions and indications, some of which can occur simultaneously. It may be necessary to reboot the system several times in order to complete all of these steps.

To perform the following procedure, you need a Dell Diagnostics Diskette created from the Dell Server Assistant CD. If such a diskette is not available, you can create it as described in "Create Diskettes" in Chapter 2 of the User's Guide.

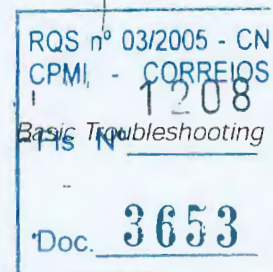
To observe problem indications during the boot routine, follow these steps:

- 1. If the system is off, turn on all peripherals and the computer. Insert the Dell Diagnostics Diskette into the diskette drive and reboot the system.**
- 2. Check each power supply fan.**

Does the fan run normally?

Yes. Proceed to step 3.

No. Troubleshoot the system power supply.



- 3. Watch the Num Lock, Caps Lock, and Scroll Lock indicators on the upper-right corner of the keyboard. After all three indicators flash momentarily, and following a long pause (approximately 30 seconds), the Num Lock indicator should light up and remain on (unless the Num Lock option is set to Off in the System Setup program).**

Do these indicators flash on and off within approximately 10 seconds after the boot routine starts?

Yes. Proceed to step 4.

No. Troubleshoot the system power supplies. If the troubleshooting procedure indicates that the system power supplies are operational, troubleshoot the memory.

- 4. During the boot routine, observe the system for any of the following:**

- *Beep codes:* A beep code is a series of beeps that indicates an error condition. If the system emits a beep code, see Table 3-1 later in this manual.
- *System error messages:* These messages can indicate problems or provide status information. If a system error message is displayed, see Table 3-2 later in this manual.
- *Diskette-drive and hard-disk drive access indicators:* These indicators light up in response to data being transferred to or from the drives. If either of these indicators fails to light up during the boot routine, troubleshoot the diskette drive or hard-disk drive subsystem, as appropriate.

- 5. Observe the monitor screen for the Diagnostics Menu.**

Does the Diagnostics Menu appear?

Yes. See "Running the Dell Diagnostics" found later in this chapter.

No. Proceed to step 6.

- 6. Insert another copy of the Dell Diagnostics Diskette into the diskette drive, and reboot the system.**

Does the Diagnostics Menu appear?

Yes. See "Running the Dell Diagnostics" found later in this chapter.

No. Proceed to the next section, "Internal Visual Inspection."



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Internal Visual Inspection



WARNING: The power supplies in this computer system produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the computer cover and access any of the components inside the computer.



CAUTION: Before you proceed with the internal visual inspection described in this section, ensure that the user has saved all open files and exited all open applications if possible.

A simple visual inspection of a computer's interior hardware can often lead to the source of a problem, such as a loose expansion card, cable connector, or mounting screw. When you perform the visual inspection, refer to "System Features" in Chapter 1 to locate components in the inspection procedure.

To perform the internal visual inspection, follow these steps:

1. **Turn off the system, including any attached peripherals, and disconnect all the AC power cables from their power sources.**



WARNING: Before beginning to work inside the computer, disconnect the power supply from the power source and the power supply cables from the power supply.

2. **Remove the computer's right side cover as described in "Computer Cover" in Chapter 4.**
3. **Verify that the chips, DIMMs, expansion cards, and SEC cartridge and heat sink assembly(ies) are fully seated in their sockets or connectors.**



WARNING: The SEC cartridge and heat sink assembly can get extremely hot during system operations. Be sure that it has had sufficient time to cool before touching it.



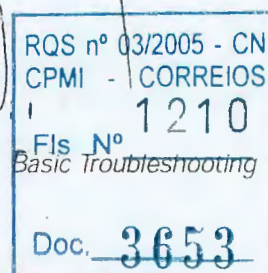
WARNING: When handling the SEC cartridge and heat sink assembly, take care to avoid sharp edges on the heat sink.

To ensure that the chips are fully seated in their sockets, press firmly on the top of each chip.

To reseat the SEC cartridge and heat sink assembly(ies), remove and re-install it as described in "SEC Cartridge and Heat Sink Assembly" in Chapter 4.

To reseat a DIMM, remove it from its socket and reinstall it as described in "DIMMs" in Chapter 4.

If you need to reseat an expansion card, remove the card as described in "Expansion Cards" in Chapter 4, and then reinsert the card in its connector, and carefully push it in until fully seated.



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4. Verify that all jumpers are set correctly.

For information about these jumpers, see "System Board Jumpers" in Chapter 1.

5. Check all cable connectors inside the computer to verify that they are firmly attached to their appropriate connectors.

6. Reinstall the computer cover.

7. Reconnect the computer and any attached peripherals to their power sources, and turn them on.

Does the problem appear to be resolved?

Yes. No further steps are necessary.

No. Proceed to the next section, "Eliminating Resource Conflicts," and to "Getting Help" found later in this chapter.

Eliminating Resource Conflicts

Devices within the computer may require dedicated memory spaces, interrupt levels, or DMA channels, all of which must be allocated during installation of the devices. Because devices may be installed at different times, it is possible that the same resource is assigned to two or more devices.

Resource conflicts can result in disorderly or erratic system operation or system failure. If you suspect that resource conflicts might exist, check the system and reassign the resources as necessary.

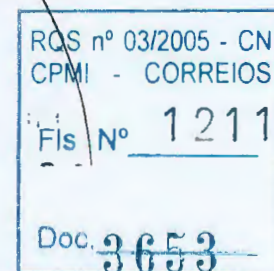
For additional information, see Chapter 5, "Using the Resource Configuration Utility," in the *User's Guide* or "Interrupt Assignments" and "DMA Channel Assignments" in Chapter 1 of this manual.

Running the Dell Diagnostics

The Dell Diagnostics contains tests that aid in troubleshooting all major components of the computer system. To run the tests, you must first create a diagnostics diskette using the *Dell Server Assistant* CD as described in "Create Diskettes" in Chapter 2 of the *User's Guide*.

To start the Dell Diagnostics, turn off the system, insert a diagnostics diskette into drive A, and then turn on the system.

Starting the diagnostics causes the Dell logo screen to appear on the monitor screen, followed by a message indicating that the diagnostics is loading. Before the diagnostics loads, a program tests the portion of main memory (RAM) required for loading the diagnostics. If a RAM error is detected, a message appears on the screen telling you which DIMM has failed.



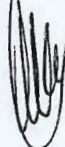
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If no errors are found in RAM, the diagnostics loads and the Diagnostics Menu appears. This menu lets you choose the following options or exit the Dell Diagnostics:

- Run All Tests — Runs all tests for a thorough check of the system
- Run Quick Tests — Runs selected tests from all test groups to quickly locate a failure or to indicate where further testing is needed to isolate a failure
- Run Specific Tests — Tests a particular area or subsystem

Getting Help

If none of the troubleshooting procedures in this chapter or the tests in the Dell Diagnostics reveals the source of the problem or leads to the proper troubleshooting steps for determining the source of the problem, call Dell for technical assistance. For instructions, see the chapter titled, "Getting Help," in the *Installation and Troubleshooting Guide*.

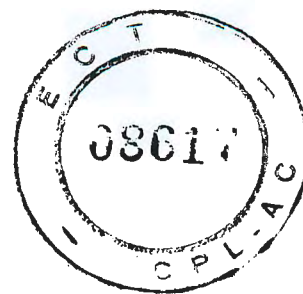


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CHAPTER 3

Codes and Messages



This chapter describes beep codes, system messages, alert messages from the Dell OpenManage HIP application, and SCSI hard-disk drive indicator codes that can occur during POST or during normal system operation. Tables 3-1 and 3-2 list faults that can cause a beep code or system message to occur and the probable causes of the fault in each case. Table 3-3 explains the hard-disk drive indicator patterns.

If a faulty system does not emit beep codes or display system messages to indicate a failure, you should use the Dell Diagnostics to run the appropriate tests to help isolate the source of the problem. See Chapter 5, "Running the Dell Diagnostics," in the *Installation and Troubleshooting Guide*.

POST Beep Codes

If the monitor cannot display error messages during the POST, the system may emit a series of beeps that identifies the problem or that can help you identify a faulty component or assembly. Table 3-1 lists the beep codes that may be generated during the POST. Most beep codes indicate a fatal error that prevents the system from completing the boot routine until the indicated condition is corrected.

When the system emits a beep code, record the code and then find it in Table 3-1. If the table does not lead to the source of the problem, run the appropriate tests in the Dell Diagnostics to assist in troubleshooting the problem.

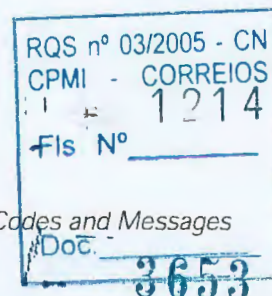
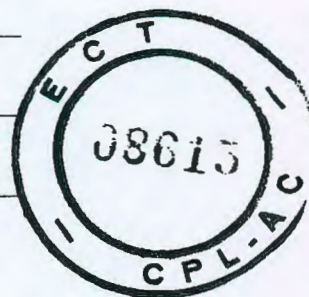


Table 3-1. System Beep Codes

Code	Cause	Corrective Action
1-1-3	NVRAM write/read failure	Replace the system board.
1-1-4	BIOS checksum failure	This fatal error usually requires that you reflash the BIOS firmware.
1-2-1	Programmable interval-timer failure	Replace the system board.
1-2-2	DMA initialization failure	
1-2-3	DMA page register write/read failure	
1-3-1	Main-memory refresh verification failure	Remove and reseal the DIMMs. If the problem persists, replace the system board.
1-3-2	No memory installed	Remove and reseal the DIMMs. Reboot the system. If the problem persists, replace the system board.
1-3-3	Chip or data line failure in the first 64 KB of main memory	Remove and reseal the DIMMs. Reboot the system. If the problem persists, replace the system board.
1-3-4	Odd/even logic failure in the first 64 KB of main memory	
1-4-1	Address line failure in the first 64 KB of main memory	
1-4-2	Parity failure in the first 64 KB of main memory	
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	



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Table 3-1. System Beep Codes (continued)

Code	Cause	Corrective Action
3-1-1	Slave DMA-register failure	Replace the system board.
3-1-2	Master DMA-register failure	
3-1-3	Master interrupt-mask register failure	
3-1-4	Slave interrupt-mask register failure	
3-2-4	Keyboard-controller test failure	Check the keyboard cable and connector for proper connection. If the problem persists, run the Keyboard Test Group in the Dell Diagnostics to determine whether the keyboard or keyboard controller is faulty. If the keyboard controller is faulty, replace the system board.
3-3-1	CMOS failure	Run the System Set Test Group in the Dell Diagnostics to isolate the problem.
3-3-2	System configuration check failure	Replace the system board.
3-3-3	Keyboard controller not detected	Replace the system board.
3-3-4	Screen initialization failure	Ensure that the monitor cable is correctly connected. If the problem persists, replace the system board.
3-4-1	Screen-retrace test failure	Run the Video Test Group in the Dell Diagnostics.
3-4-2	Search for video ROM failure	Ensure that the monitor cable is correctly connected. If the problem persists, replace the system board.
4-2-1	No timer tick	Replace the system board.
4-2-2	Shutdown failure	
4-2-3	Gate A20 failure	Replace the system board.
4-2-4	Unexpected interrupt in protected mode	Ensure that all expansion cards are properly seated, and then reboot the system.

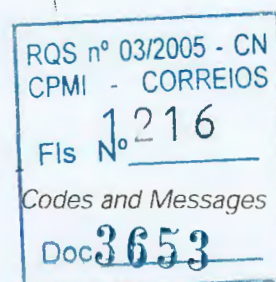


Table 3-1. System Beep Codes (continued)

Code	Cause	Corrective Action
4-3-1	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, or a faulty or improperly seated memory module	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseal the DIMMs or the memory module. If the problem persists, replace the DIMMs or the memory module.
4-3-3	Defective system board	Replace the system board.
4-3-4	Time-of-day clock stopped	Replace the battery. If the problem persists, replace the system board.
4-4-1	Faulty I/O chip Super I/O controller failure	Replace the system board.
4-4-2	Parallel-port test failure (defective system board)	Replace the system board.
4-4-3	Math coprocessor failure (defective microprocessor)	Replace the microprocessor.
4-4-4	Cache test failure (defective microprocessor)	Replace the microprocessor.



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System Messages

Table 3-2 lists (in alphabetical order) system messages that can appear on the monitor screen. These messages can help you find the source of a problem. Some of these messages indicate fatal errors. When a fatal error occurs, the system cannot usually be rebooted until an appropriate hardware change has been made.

Table 3-2. System Messages

Message	Cause	Corrective Action
Address mark not found	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board.
Attachment failed to respond	Diskette drive or hard-disk drive controller cannot send data to associated drive	Replace the drive's interface cable.
Auxiliary device failure	Mouse cable connector loose or improperly connected, defective mouse	Check the mouse cable connection. If the problem persists, replace the mouse.
Bad error-correction code (ECC) on disk read Controller has failed	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board.
Data error	Faulty diskette, diskette drive, or hard-disk drive	Replace the diskette, diskette drive, or hard-disk drive.
Decreasing available memory	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, or a faulty or improperly seated memory module	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseat the DIMMs or the memory module. If the problem persists, replace the DIMMs or the memory module.

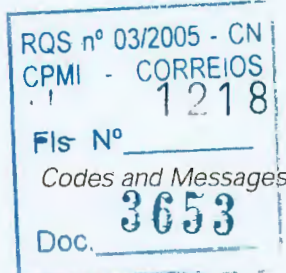


Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
Diskette drive 0 seek failure	Faulty or improperly inserted diskette, incorrect configuration settings in System Setup program, loose diskette/tape drive interface cable, or loose power cable	Replace the diskette. Run the System Setup program to correct the diskette drive type. Check the diskette/tape drive interface cable and power cable connections to the drive.
Diskette drive 1 seek failure		
Diskette read failure	Faulty diskette, faulty or improperly connected diskette/tape drive interface cable, or loose power cable	Check the diskette/tape drive interface cable and power cable connections to the drive. Replace the diskette drive interface cable.
Diskette subsystem reset failed	Faulty diskette/tape drive controller (defective system board)	Replace the system board.
Diskette write protected	Diskette write-protect feature activated	Move the write-protect tab on the diskette.
Drive not ready	Diskette missing from or improperly inserted in diskette drive	Reinsert or replace the diskette.
ECC host bus parity interrupt at address	Defective system board	Replace the system board.
ECC memory parity interrupt at address	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, a faulty or improperly seated memory module, or a defective system board	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseat the DIMMs and then the memory module. If the problem persists, replace the DIMMs or the memory module. If the problem still persists, replace the system board.

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Table 3-2. System Messages (continued)

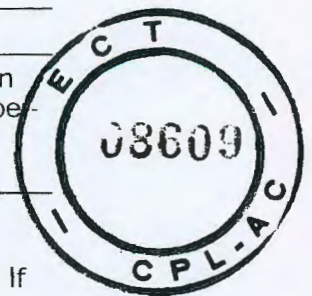
Message	Cause	Corrective Action
Embedded server management error	Embedded server management memory may be temporarily corrupted	Shut down the system to clear the memory, and then restart the system.
Embedded server management is not present		
Gate A20 failure	Faulty keyboard controller (defective system board)	Replace the system board.
General failure	Operating system corrupted or not installed properly	Reinstall the operating system.
Hard disk controller failure	Incorrect configuration settings in System Setup program, improperly connected hard-disk drive, faulty hard-disk drive controller subsystem (defective system board), or loose power cable	Check the primary and secondary SCSI configuration settings in the System Setup program. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. If the problem still persists, replace the system board.
Hard disk drive read failure		
Hard disk failure		
Invalid configuration information - please run SETUP program	Incorrect ISA_CLR jumper configuration, incorrect configuration settings in System Setup program, or faulty battery	Remove the plug from the ISA_CLR jumper. Check the System Setup configuration settings. Replace the battery.
Invalid CPU speed detected - check jumpers	Incorrect microprocessor jumper configuration	Check the microprocessor speed jumper.
Invalid NVRAM configuration, resource reallocated	System detected and corrected a resource conflict when system resources were allocated using the RCU	No action is required.



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Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
I/O parity interrupt at address	Expansion card improperly installed or faulty	Reinstall the expansion cards. If the problem persists, replace the expansion card.
Keyboard clock line failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board.
Keyboard failure		
Keyboard controller failure	Defective keyboard/mouse controller (defective system board)	Replace the system board.
Keyboard data line failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board.
Keyboard stuck key failure		



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Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
Memory address line failure at address, read value expecting value	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, a faulty or improperly seated memory module, or a defective system board	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseat the DIMMs and then the memory module. If the problem persists, replace the DIMMs or the memory module. If the problem still persists, replace the system board.
Memory double word logic failure at address, read value expecting value		
Memory odd/even logic failure at address, read value expecting value		
Memory write/read failure at address, read value expecting value		
Memory allocation error	Faulty application	Restart the application.
Memory parity interrupt at address	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, or a faulty or improperly seated memory module	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseat the DIMMs or the memory module. If the problem persists, replace the DIMMs or the memory module.
Memory tests terminated by keystroke	POST memory test terminated by pressing <Spacebar>	No action is required.



Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
No boot device available	Faulty diskette, diskette/tape drive subsystem, hard-disk drive, hard-disk drive subsystem, or no boot disk in drive A	Replace the diskette or hard-disk drive. If the problem persists, replace the system board.
No boot sector on hard-disk drive	Incorrect configuration settings on the drive controller, or no operating system on hard-disk drive	Check the configuration settings on the controller using the hot-key combination displayed on the screen during POST. See the controller documentation for more information on using the hot-key combination.
No timer tick interrupt	Defective system board	Replace the system board.
Non-system disk or disk error	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem	Replace the diskette or hard-disk drive. If the problem persists, replace the system board.
Not a boot diskette	No operating system on diskette	Use a bootable diskette.
Plug & Play Configuration error	Plug and Play or PCI resource configuration failure	Run the RCU to identify the resource conflict and then reallocate system resources accordingly.
Processor or terminator card not installed!	No microprocessor or terminator card installed in one or more of the microprocessor connectors	Ensure that each microprocessor connector has either a terminator card or a microprocessor installed.
Read fault Requested sector not found	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem (defective system board)	Replace the diskette or hard-disk drive. If the problem persists, replace the system board.

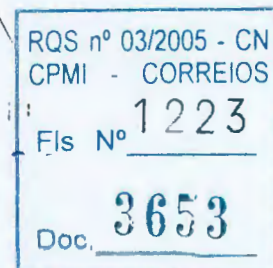


Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
Reset failed	Improperly connected diskette/tape drive, hard-disk drive, or power cable	Check the diskette/tape drive interface cable and power cable connections to the diskette drive. Replace the diskette drive interface cable. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board.
ROM bad checksum = address	Expansion card improperly installed or faulty	Reinstall the expansion cards. If the problem persists, replace the expansion card.
Sector not found	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek error	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek operation failed	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Shutdown failure	Defective battery	Replace the battery.
Time-of-day clock stopped	Defective battery or faulty chip (defective system board)	Replace the battery. If the problem persists, replace the system board.
Time-of-day not set	Incorrect Time or Date settings or defective system battery	Check the Time and Date settings. If the problem persists, replace the battery.
Timer chip counter 2 failed	Defective system board	Replace the system board.

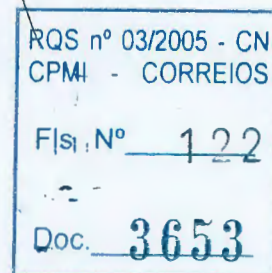
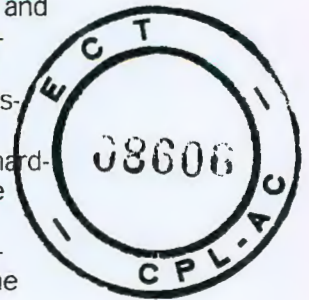
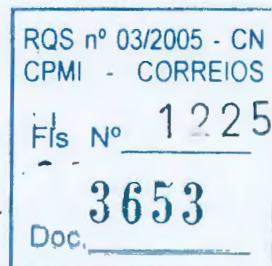
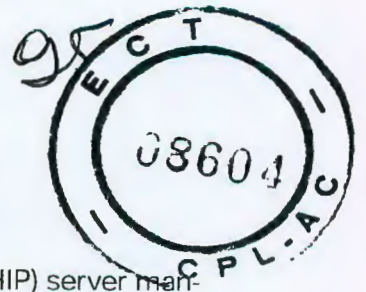


Table 3-2. System Messages (continued)

Message	Cause	Corrective Action
Unexpected interrupt in protected mode	Faulty or improperly seated DIMM, DIMMs not installed in sets of four, a faulty or improperly seated memory module, or a defective system board	Be sure that the DIMMs are installed in sets of four and in the proper sockets for each memory bank in use. If this does not resolve the problem, remove and reseat the DIMMs and then the memory module. If the problem persists, replace the DIMMs or the memory module. If the problem still persists, replace the system board.
Unsupported CPU detected in SLOT <i>n</i>	Microprocessor not supported by system	Install a correct version of the microprocessor in the specified microprocessor connector.
Unsupported CPU speed in CMOS	Microprocessor not supported by BIOS	Upgrade the BIOS.
Warning: Firmware is out-of-date, please update ...	Some portion of system firmware is out of date, possibly as result of power being removed from the system while servicing the battery, PSPB, system board, or SCSI backplane.	Reflash the system firmware from the <i>Dell Server Assistant</i> CD (if available) or from the Dell website.
Write fault Write fault on selected drive	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.



Alert Messages from the Dell OpenManage HIP Application



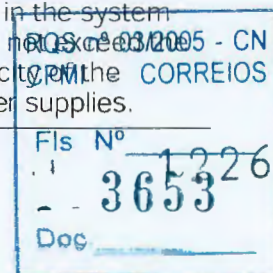
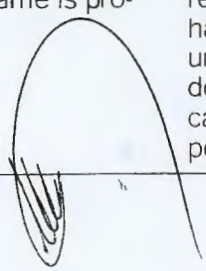
The Dell OpenManage Hardware Instrumentation Package (HIP) server management application generates alert messages that appear in the simple network management protocol (SNMP) trap log file. To see the trap log, select any enterprise under the SNMP trap log icon.

Alert log messages consist of information, status, warning, and failure messages for drive, temperature, fan, and power conditions. They can assist you with identifying a problem and may provide you with information to help you resolve the problem.

Table 3-3 lists some of the alert log messages from the Dell OpenManage HIP application.

Table 3-3. Dell OpenManage HIP Application Alert Log Messages

Message	Cause	Corrective Action
Automatic management notification has occurred	The server stopped functioning and called the notification number specified in the DC Console Actions tab.	The server will reboot if the Reset or Power Cycle option was selected in the Action on Hung Server Notification section of the System Console System tab. If neither option was selected, the system can be reset using the Remote Management feature in the Dell Remote Assistant Card utility.
Chassis intrusion detected	The chassis of an attached system has been opened.	Check to make sure the system chassis is closed.
Current sensor detected a failure	The system is consuming more power than the power supplies are rated to output. The power supply name is provided.	Verify that all of the expansion cards in the system are functioning properly. Verify that the load requirements of the hardware configured in the system does not exceed the capacity of the power supplies.



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Table 3-3. Dell OpenManage HIP Application Alert Log Messages (continued)

Message	Cause	Corrective Action
Current sensor warning detected	The system is consuming more power than the power supplies are rated to output. The power supply name is provided.	Verify that all of the expansion cards in the system are functioning properly. Verify that the load requirements of the hardware configured in the system does not exceed the capacity of the power supplies.
Fan sensor detected a failure	A failure of one or more fans was detected by the thermal-monitoring facility in the specified server. If possible, the chassis number and fan number are provided.	Check for a possible blockage of or inadequate ventilation around the fan. If the fan is not blocked and ventilation is adequate, check fan connections.
Fan sensor warning detected	A fan sensor reading on the specified server has exceeded the user-settable warning thresholds. If possible, the chassis number and fan number are provided.	Check for a possible blockage of or inadequate ventilation around the fan. If the fan is not blocked and ventilation is adequate, check fan connections.
ECC memory fault	An ECC error has occurred in system memory.	Run the appropriate memory test(s) from the Dell Diagnostics.



Table 3-3. Dell OpenManage HIP Application Alert Log Messages (continued)

Message	Cause	Corrective Action
Power supply lost redundancy detected	The system has detected that one of the three power supplies has failed and thus lost power supply redundancy. If a second power supply fails, the system will be inoperable.	Check the power supply indicators for a power supply failure. Check to make sure the latch switch on each power supply is enabled. Check each connection to the power source. If a power supply failure is confirmed, replace the failed power supply as soon as possible. (The system's default configuration is redundant power. Although it will run with only two functioning power supplies, redundancy will be lost.)
Power supply degraded redundancy detected	A power supply may be failing or a power utilization warning threshold has been exceeded. The system will function normally in this configuration and is still redundant.	Check the power supply indicators for a power supply failure. Check to make sure the latch switch on each power supply is enabled. Check each connection to the power source. Check the power utilization warning thresholds to verify they are valid values.
Power supply detected a failure	The power supply sensor detected a failure in one of the power supplies. If possible, the power supply number is provided.	Check the power supply indicators for a power supply failure. Check to make sure the latch switch on each power supply is enabled. Check each connection to the power source.

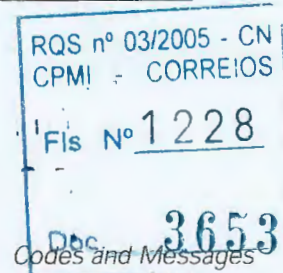
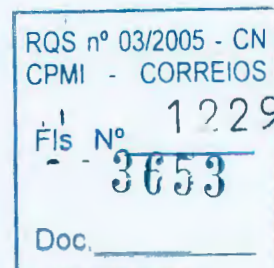


Table 3-3. Dell OpenManage HIP Application Alert Log Messages (continued)

Message	Cause	Corrective Action
Temperature sensor detected a failure	A temperature probe on the backplane board, system board, or drive carrier in the specified server has exceeded its temperature failure range. If possible, the chassis number and probe number are provided.	Check for a fan failure. If needed, replace the fan or fan assembly.
Temperature sensor warning detected	A temperature probe on the backplane board, system board, or drive carrier in the specified server has exceeded its temperature warning range. If possible, the chassis number and probe number are provided.	Make sure the fan thresholds are set in a reasonable range. Check for a fan failure. Make sure the computer cover is properly installed.
Voltage sensor detected a failure	A failure has occurred with the system power supply or voltage probe(s) on the system board. If possible, the chassis number and probe number are provided.	Check the power supply and backplane board connections.
Voltage sensor warning detected	The voltage probe on the backplane board, system board, or power supply for the specified server has exceeded its warning range. If possible, the chassis number and probe number are provided.	Make sure the user-settable voltage thresholds are set correctly. If the problem persists, check the power supply and backplane board connections.



SCSI Hard-Disk Drive Indicator Codes

Three indicator lights in each SCSI hard-disk drive carrier provide information on the status of the SCSI hard-disk drives (see Figure 3-1). The SCSI backplane firmware controls the drive online and drive failure indicators.

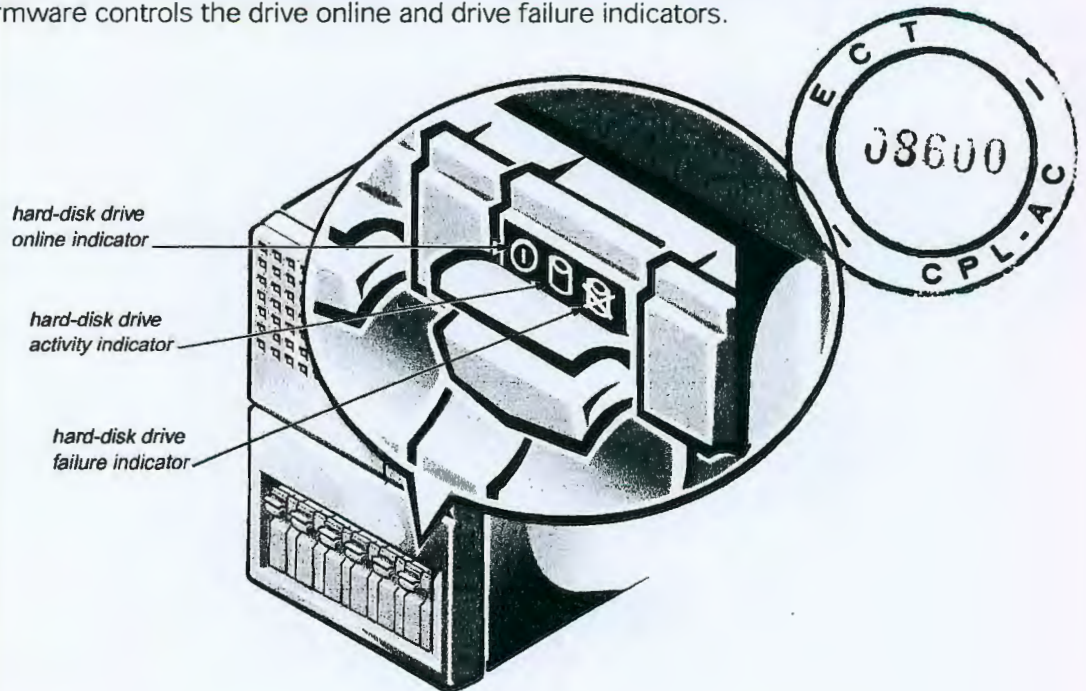


Figure 3-1. Hard-Disk Drive Indicators

Table 3-4 lists the drive indicator patterns established by the SCSI backplane firmware. Different patterns are displayed as drive events occur in the system. For example, in the event of a hard-disk drive failure, the *drive failed* pattern appears. After the drive is selected for removal, the *drive being prepared for removal* pattern appears, followed by the *drive ready for insertion or removal* pattern. After the replacement drive is installed, the *drive being prepared for operation* pattern appears, followed by the *drive online* pattern.

NOTE: If you do not have a Dell PowerEdge Expandable RAID Controller host adapter card installed, you will see only the drive online and drive bay empty indicator patterns.

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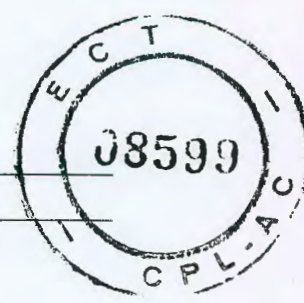
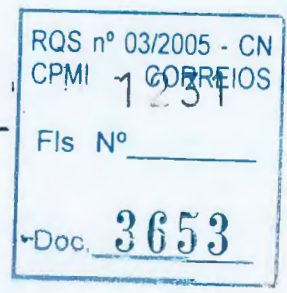
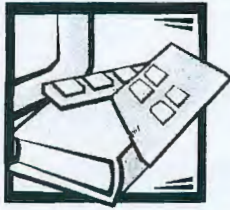


Table 3-4. SCSI Hard-Disk Drive Indicator Patterns

Condition	Indicator Pattern
Identify drive	All three drive status indicators blink simultaneously.
Drive being prepared for removal	The three drive status indicators flash sequentially.
Drive ready for insertion or removal	All three drive status indicators are off.
Drive being prepared for operation	The drive online indicator is on. The drive activity light may flash briefly.
Drive bay empty	All three drive status indicators are off.
Drive predicted failure	The drive online indicator is on. The drive failure indicator blinks on briefly each second.
Drive failed	The drive online indicator turns off. The drive failure indicator blinks off briefly each second.
Drive rebuilding	The drive online indicator blinks rapidly.
Drive online	The drive online indicator is on.





CHAPTER 4

Removing and Replacing Parts



This chapter provides procedures for removing the components, assemblies, and subassemblies in the computer. Unless otherwise noted, each procedure assumes the following:

- You have performed the steps in "Precautionary Measures" found later in this chapter.
- You have removed the computer cover and/or front bezel as necessary.
- You can replace or reinstall a part by performing the removal procedure in reverse order unless additional information is provided.



WARNING: The power supplies in this computer system produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the computer cover and access any of the components inside the computer.

Recommended Tools

The PowerEdge 6300 has been designed for greater manual serviceability; most of the procedures in this chapter do not require the use of tools. Exceptions are the following:

- Removing/replacing the processor guide bracket assemblies requires a T25 Torx driver.
- Removing/replacing hard-disk drives in the external drive bay insert requires a small flat-blade screwdriver.

Also, use a wrist grounding strap as explained in the next section, "Precautionary Measures."



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Precautionary Measures

Before you perform any of the procedures in this chapter, take a few moments to read the following warning for your personal safety and to prevent damage to the computer system from ESD.



WARNING FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT

Before you start to work on the computer, perform the following steps in the sequence listed:

1. Turn off the computer and any attached peripherals.
2. Disconnect the computer and any attached peripherals from their power sources to reduce the potential for personal injury.
3. Disconnect any communications cables.
4. Wear a wrist grounding strap, and clip it to any unpainted metal surface on the computer chassis.

If a wrist grounding strap is not available, touch any unpainted metal surface on the back of the computer chassis to discharge any static charge from your body.



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Computer Cover

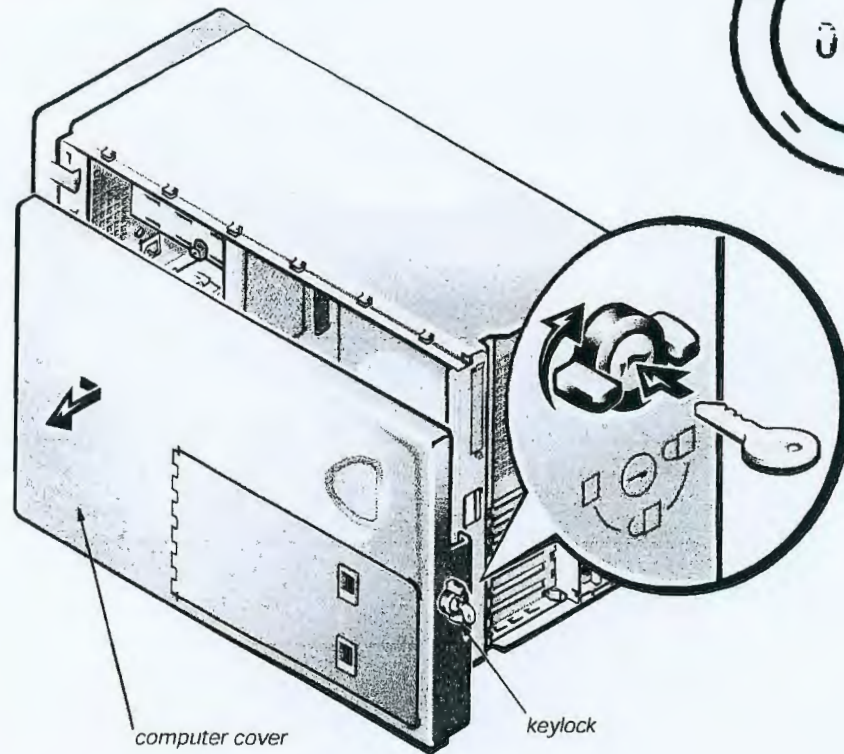
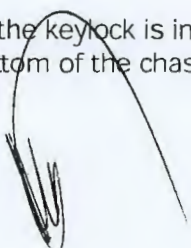


Figure 4-1. Computer Cover Removal

To remove the computer cover, follow these steps:

- 1. Turn the keylock on the back edge of the cover clockwise to the unlocked position (see Figure 4-1).**
- 2. Slide the cover a half-inch (about a centimeter) or so toward the back of the computer.**
- 3. Grasping the top of the cover at both ends, lift it away from the chassis.**

To replace the cover, make sure the keylock is in the unlocked position. Fit the cover over the side rail at the bottom of the chassis and slide it closed.



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Front Bezel

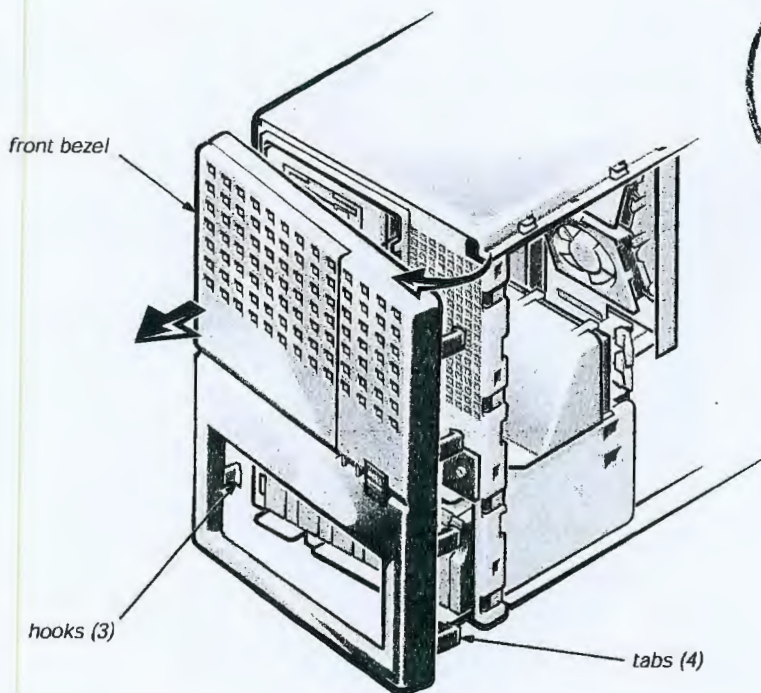
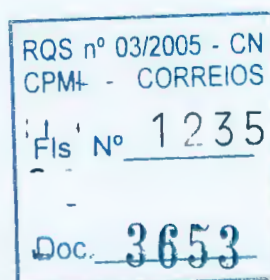


Figure 4-2. Front Bezel Removal

To remove the front bezel, follow these steps:

- 1. Remove the computer cover.**
- 2. Gently pry the four tabs along the right edge of the bezel loose, and then disengage the three hooks on the opposite edge from the chassis (see Figure 4-2).**
- 3. Rotate the bezel to the left to disengage it.**

To replace the bezel, align the three hooks on the edge of the bezel and press the bezel into place until the tabs on the opposite edge of the bezel snap into place.



Control Panel Assembly

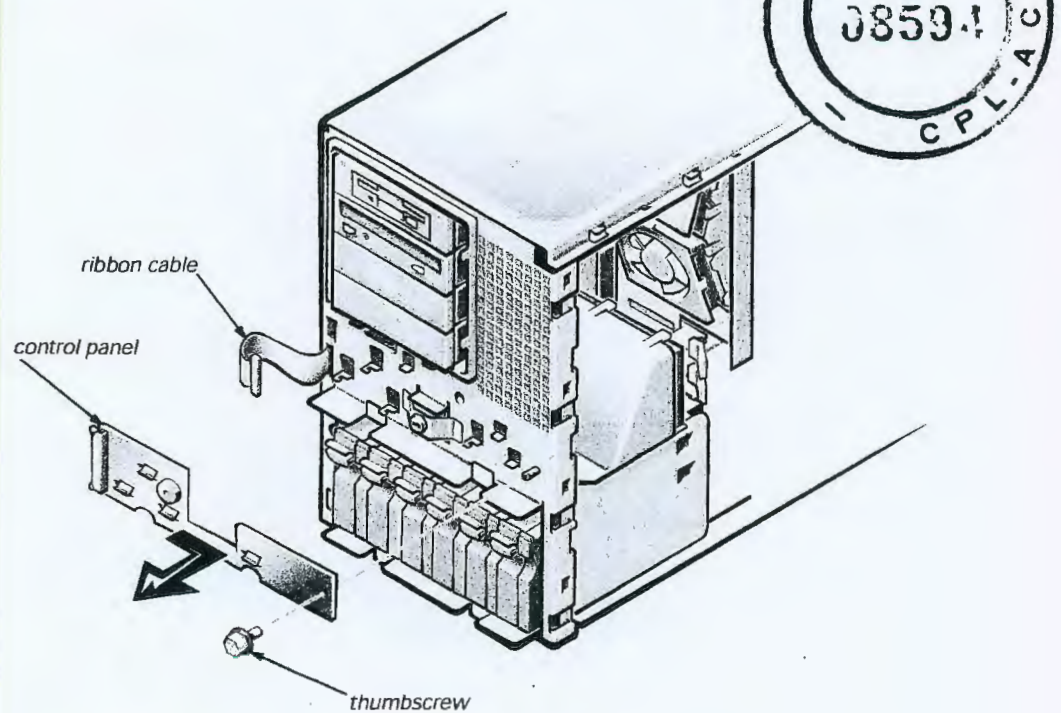


Figure 4-3. Control-Panel Assembly Removal

To remove the control panel assembly, follow these steps:

1. **Disconnect the ribbon cable from its connector on the left side of the control panel assembly (see Figure 4-3).**
2. **Loosen the thumbscrew securing the control panel assembly to the front of the chassis.**
3. **Slide the control panel assembly to the right (or up if system is in rack-mount position) to disengage the card from the chassis hooks.**



NOTE: The ribbon cable that attaches to the control panel assembly connects to the PLANAR connector on the SCSI backplane and then continues on to the BACKPLANE connector on the system board.

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Drives

Figure 4-4 shows an example of drive hardware that can be installed in the computer. Refer to this figure when you perform any of the procedures in the following subsections.

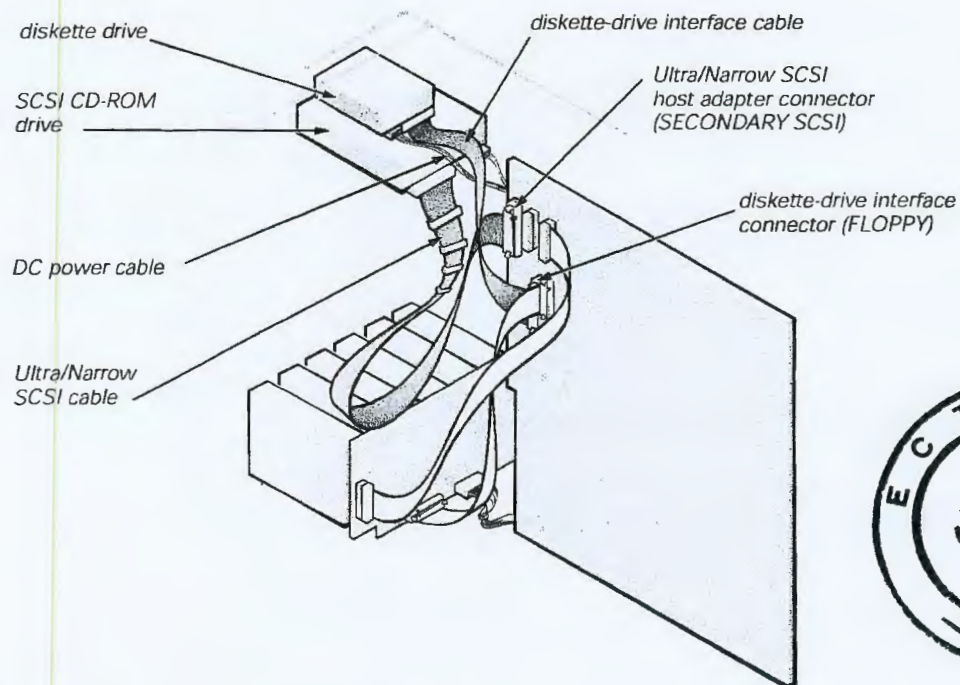


Figure 4-4. Drive Hardware



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Externally Accessible Drives

The chassis provides three bays for 5.25-inch externally accessible drives and a bay dedicated to a 3.5-inch diskette drive.

Front-Panel Inserts

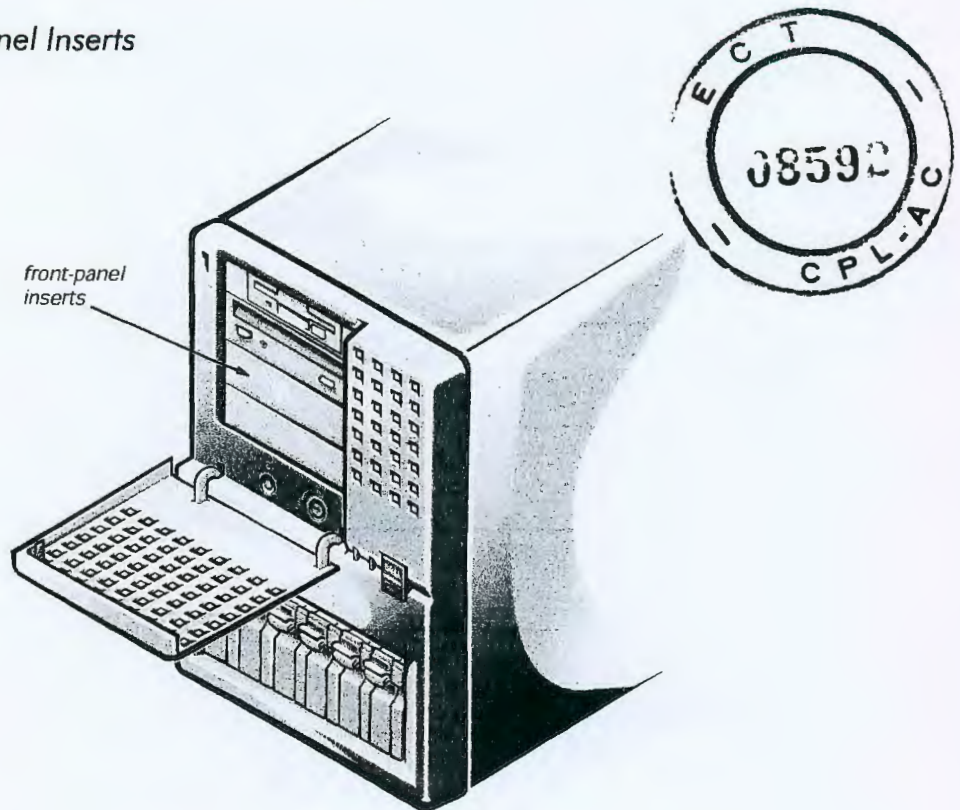


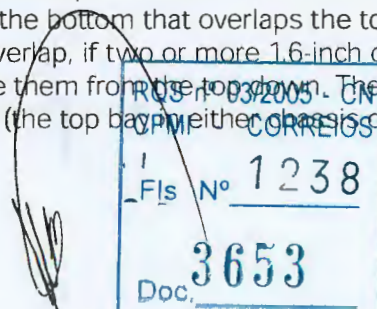
Figure 4-5. Front-Panel Inserts

To remove the front-panel insert that covers an unused bay (see Figure 4-5), first remove the front bezel. Then, facing the inside of the front bezel, press one of the securing tabs (located at each end of the bezel) while pressing against the center of the insert until it springs free from the bezel.

To replace a front-panel insert, from inside the chassis place the insert into the bay opening and press it into place until the tabs on each end of the insert snap into the latches on the inside of the bezel.

Close-Out Panels

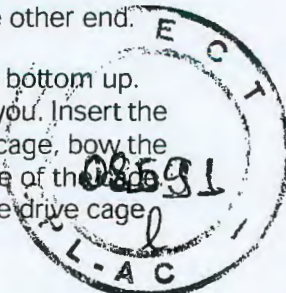
Metal close-out panels that fit into the drive-bay openings in the chassis provide extra EMI shielding under the plastic front-panel inserts. The close-out panel for a 1.6-inch bay has a raised lip at the bottom that overlaps the top of a panel beneath it, if any. Because of the overlap, if two or more 1.6-inch close-out panels are installed, you must remove them from the top down. The close-out panel for the 1-inch diskette-drive bay (the top bay in either chassis orientation) is narrower and has no overlap lip.



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To remove a close-out panel, pry the bottom of the panel outward at the center until you can unhook a securing tab at one end and work out the other end.

When installing close-out panels, install 1.6-inch panels from the bottom up. Make sure the overlap lip is at the bottom and projecting toward you. Insert the tab on one side of the panel into the appropriate slot in the drive cage, bow the panel slightly, and fit the second tab into the slot in the other side of the drive cage. Make sure the sides of the panel fit flush against the sides of the drive cage.



Reorienting the External Drive Cage

To accommodate a change in computer orientation (for example, from an upright to a rack configuration), you can reconfigure the external drive bays to remain horizontal as follows:

- 1. Remove the front-panel inserts from the front bezel.**
- 2. Reposition the plastic frame surrounding the drive opening in the front bezel:**
 - a. Facing the inside of the front bezel, press against the center of the frame with your thumbs until the frame bows sufficiently to loosen the tabs on the sides of the insert. Pull the frame out of the bezel.
 - b. Rotate the frame 90 degrees to match the new orientation of the drives.
 - c. Replace the frame in the front bezel and carefully press it into place.
- 3. Reinstall the front-panel inserts to match the new drive orientation.**
- 4. Remove the computer cover and slide the system board tray out to the service position.**
- 5. Remove the external drives from the drive bays (noting all cable connections); remove any metal inserts covering empty drive bays.**
- 6. Reinstall the external drives to match the new system orientation, and reconnect cables as appropriate.**
- 7. Close the system board tray.**
- 8. Replace the front bezel and computer cover.**



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5.25- and 3.5-Inch Drives

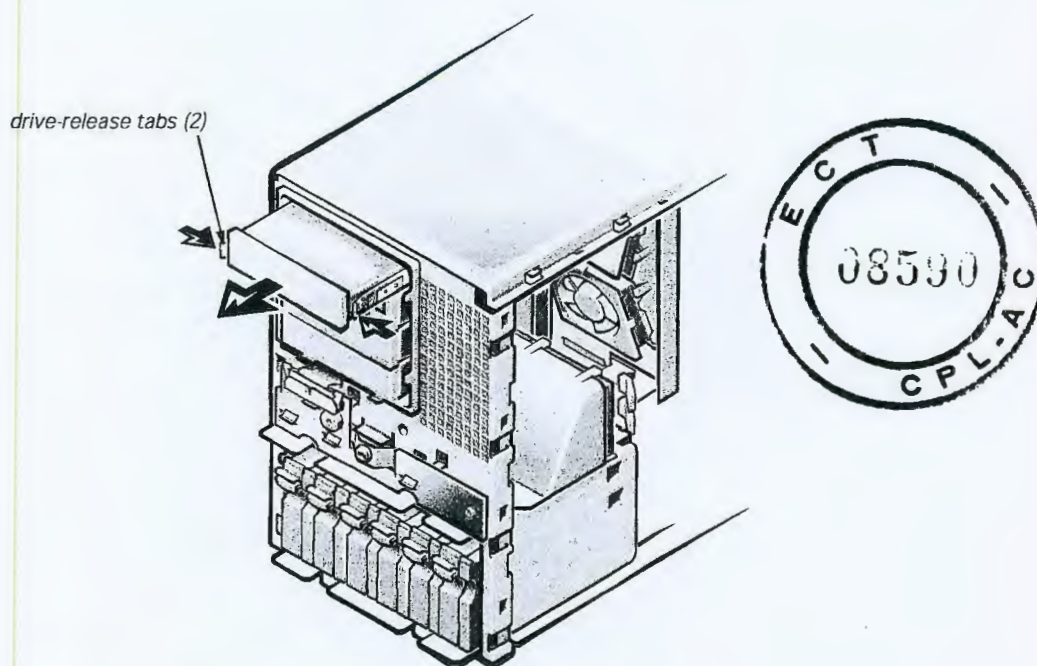


Figure 4-6. Externally Accessible Drive Removal

To remove a 5.25-inch drive assembly from one of the externally accessible drive bays, follow these steps:

1. **Press the two drive-release tabs toward the center of the drive, and slide the drive out the front of the bay (see Figure 4-6).**
2. **Disconnect the DC power cable and the interface cable from the back of the drive.**

Be sure to record the power connector number and the location of the interface cable connector.

3. **Remove the drive-mounting rails from the drive (see Figure 4-7).**

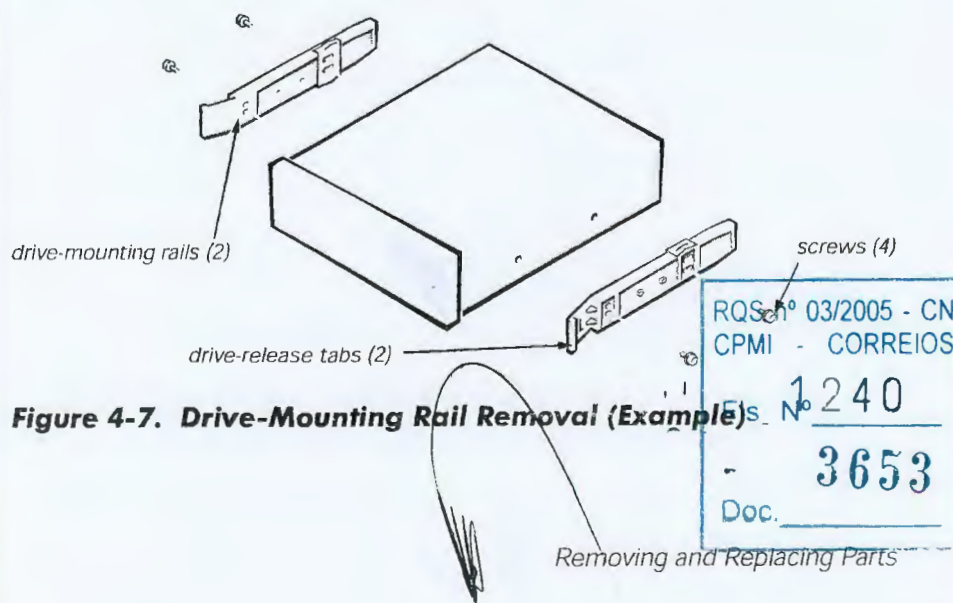


Figure 4-7. Drive-Mounting Rail Removal (Example)

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4. If the drive is a SCSI drive, record the setting of the SCSI address jumpers and SCSI bus termination jumper.
5. If the drive is a SCSI drive, remove the 50-pin-to-68-pin adapter from the SCSI connector on the back of the drive (if present).

Some drives use a 50-pin-to-68-pin adapter between the SCSI cable and the drive connector. Check the back of the drive for an adapter, if present; remove it and retain it for use on the new drive.



NOTES: When you install a 5.25-inch drive, install drive rails and slide the drive into its bay until the rails snap securely into place.

When you reinstall a SCSI drive, set the SCSI address jumpers and the SCSI bus termination jumpers to the settings you recorded.



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Hard-Disk Drives in External Bay

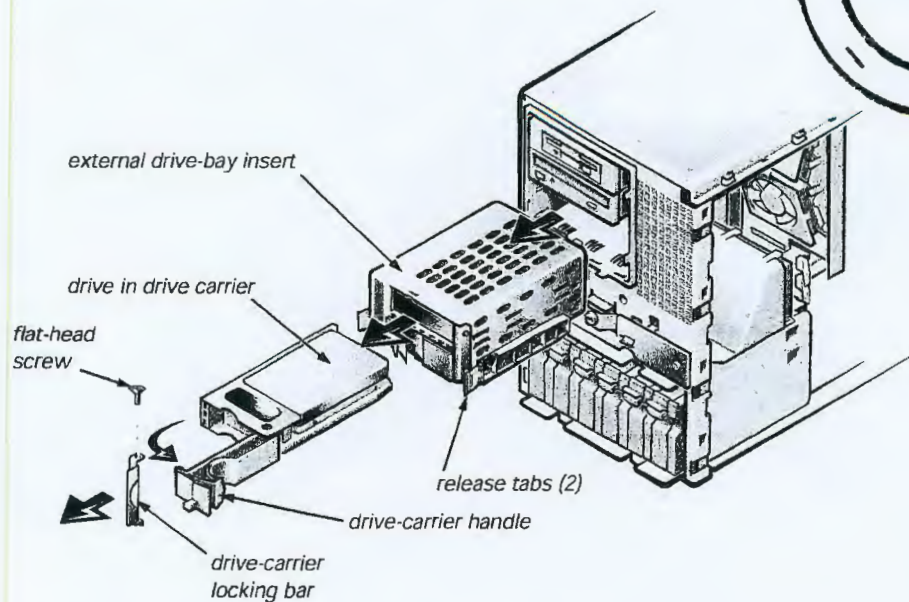


Figure 4-8. Hard-Disk Drives in External Bay

Two SCSI hard-disk drives can be installed in the external bay using the hard-disk drive carrier insert (see Figure 4-8). Drives mate to a small backplane board on the back of the insert; from there, they can be connected via a two-device ribbon cable either to a redundant arrays of independent disks (RAID) controller or to one of the Ultra2/LVD SCSI connectors on the system board.



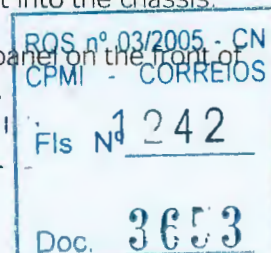
CAUTION: Hot-pluggable drive installation and removal is *not* supported for hard-disk drives installed in the external drive bay. Removing a drive while the system is turned on will result in a loss of data.

Remove a SCSI hard-disk drive from the external drive bay as follows:

1. **Press inward on the two release tabs on the drive bay insert, and pull the insert about one inch out of the external bay.**
2. **Use a flat-blade screwdriver to remove the screw that secures the locking bar on the front of the insert, and remove the locking bar.**
3. **Open the drive-carrier handle to release the carrier, and slide the carrier toward you out of the insert.**

When installing a drive in the insert, slide the drive in with the handle open until it stops, and then push the handle closed and slide the drive in the rest of the way. Replace the locking bar before installing the insert into the chassis.

If you are not replacing the drive, install a metal close-out panel on the front of the external bay and a front-panel insert on the front bezel.



Hard-Disk Drives

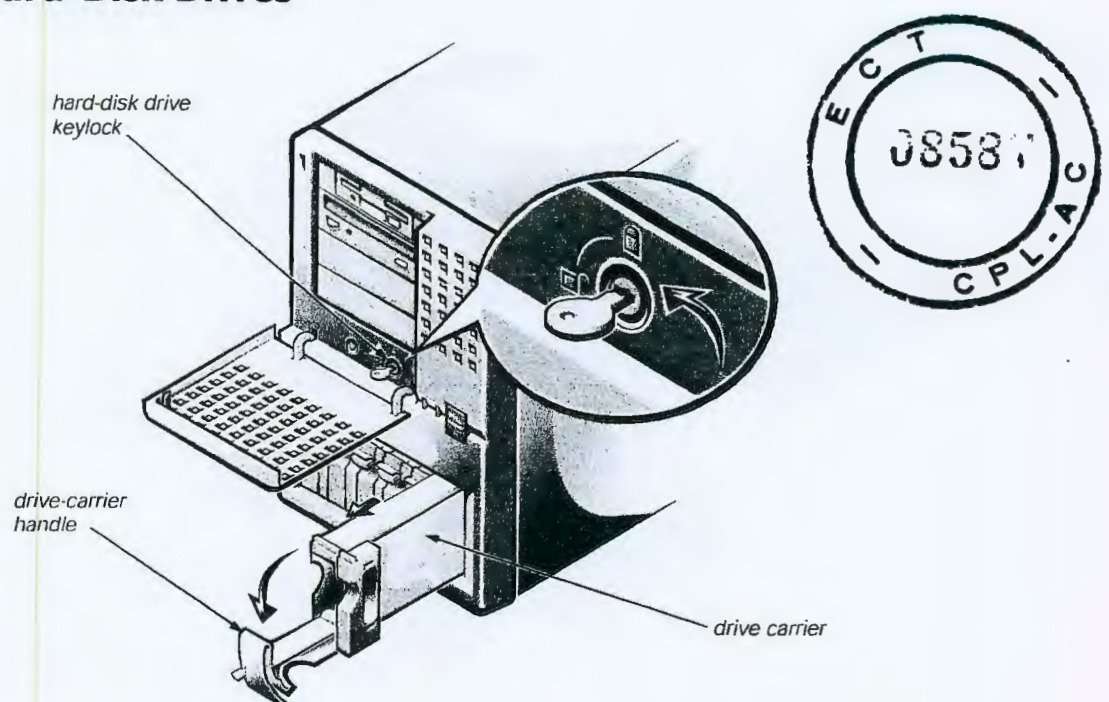


Figure 4-9. Hard-Disk Drive Removal

Remove a SCSI hard-disk drive from an internal drive bay as follows:

1. If the system does not have a PowerEdge Expandable RAID Controller installed, shut down the system and go to step 3.

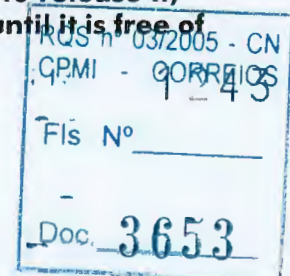


CAUTION: Hot-pluggable drive installation and removal is *not* supported for systems without a Dell PowerEdge Expandable RAID Controller host adapter card. Removing a drive without turning the system off in this situation will result in a loss of data.

2. For systems with PowerEdge Expandable RAID Controllers, refer to your RAID controller documentation for information on preparing the drive for removal. When the drive has been powered down, wait until the drive status indicators adjacent to the drive bay signal that the drive may be removed safely.

If the drive has been online, the drive status indicators flash sequentially as the drive is powered down. When all indicators are turned off, the drive is ready for removal.

3. Unlock the hard-disk drive keylock (see Figure 4-9).
4. Squeeze the open side of the drive-carrier handle to release it, open the handle, and slide the carrier toward you until it is free of the drive bay.



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5. Remove the drive from its carrier by removing the four screws (two on each side) that secure it in the carrier.

Before installing a new drive, set all jumpers and remove termination from the drive. When installing the drive, raise the carrier handle until it latches to ensure that the drive is fully seated in the backplane board.



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SCSI Backplane Board

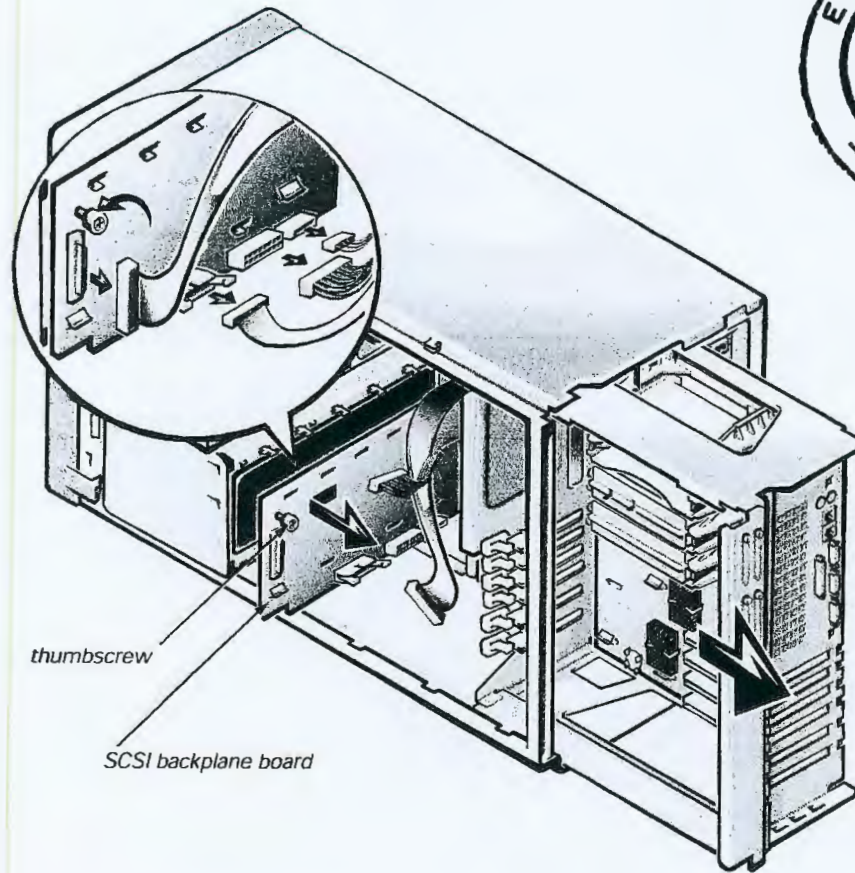


Figure 4-10. Removing a SCSI Backplane Board

To remove a SCSI backplane board, follow these steps:

- 1. Slide the system board tray out to the service position.**
See "Accessing the Interior of the System" in Chapter 1 for instructions.
- 2. Remove the hard-disk drives.**
- 3. Disconnect all cables from the SCSI backplane board, noting where cables connected.**
- 4. Loosen the thumbscrew on the backplane board (see Figure 4-10).**
- 5. Slide the backplane board away from the power-supply paralleling board (PSPB) about a quarter inch, and lift it off the L-shaped mounting tabs on the hard-disk drive cage.**

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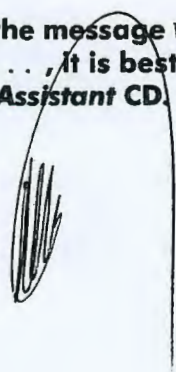
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CAUTION: Should you remove power from the SCSI backplane board (either by removing the power cable or during replacement of the system board battery), you may need to reflash your system's firmware.

The original firmware on the SCSI backplane is stored in EEPROM. However, if the SCSI backplane firmware is ever updated, the update is stored in volatile RAM. If power is removed from an updated backplane board, the update will be lost and the board will revert to its original firmware in EEPROM.

If at system startup you receive the message Warning: Firmware is out-of-date, please update..., it is best to reflash all system firmware from your *Dell Server Assistant CD*.



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System Power Supply

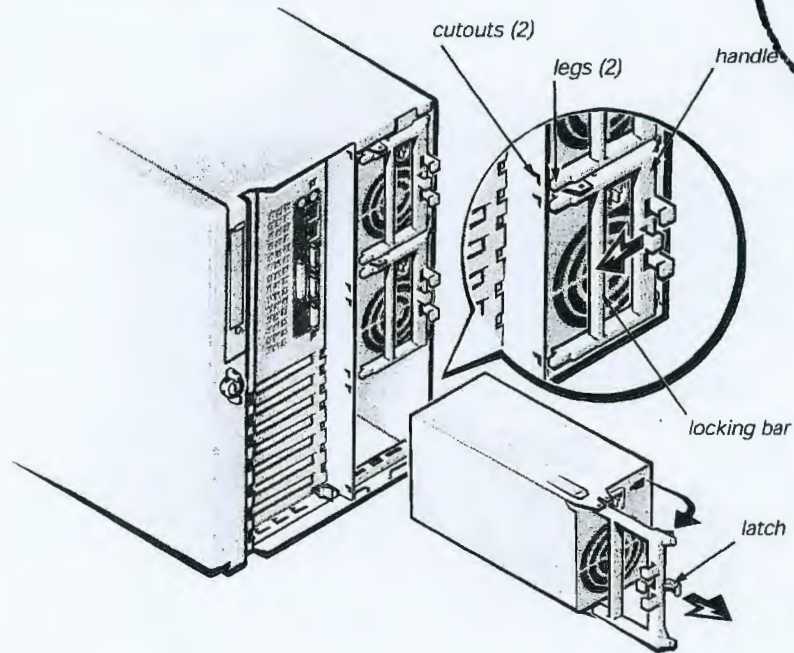


Figure 4-11. Power Supply Removal

To remove a power supply, follow these steps:

1. **Disconnect the AC power cable from the electrical outlet, and then disconnect the other end of the cable from the power supply.**
2. **Press the locking bar in the power supply handle to the left (or up if the system is in rack-mount position) until the latch disengages from the chassis (see Figure 4-11).**
3. **Rotate the handle outward (forcing the power supply partially out of its bay) and pull the power supply the rest of the way out by the handle.**

When installing a power supply, make sure the handle is all the way out (at a right angle to the back of the power supply). Slide the power supply *almost* all the way into its bay, letting it extend out about a quarter-inch. Rotate the handle back toward the power supply while fitting the two legs of the handle into the cutouts in the chassis wall, at the same time pressing the power supply the rest of the way into the bay. Then push the locking bar to the right (or down if the system is in rack-mount position) until the latch snaps into place, securing the power supply.



CAUTION: The power supply will not operate unless the handle is snapped all the way into the securing position.

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Power-Supply Paralleling Board

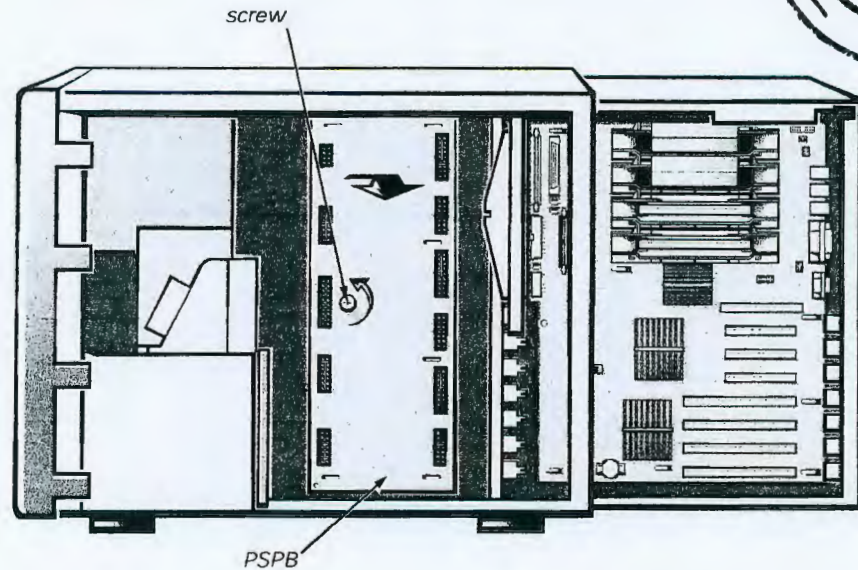


Figure 4-12. Power-Supply Paralleling Board

Remove the PSPB as follows:

- 1. Slide the system board tray out to the service position.**
See "Accessing the Interior of the System" in Chapter 1 for instructions.
- 2. Disconnect all power harnesses and cables from the PSPB.**
- 3. Loosen the captive screw securing the PSPB to the chassis wall (see Figure 4-12).**
- 4. Slide the PSPB toward the power supplies about a quarter of an inch until it disengages from the hooked tabs in the chassis wall, and lift it out.**

When installing a replacement PSPB, position the PSPB against the chassis wall so that the tabs on the chassis wall fit through the corresponding slots in the PSPB, slide the PSPB toward the front of the chassis until it is firmly engaged in the tabs, and tighten the screw.

When replacing the power harnesses and cables, refer to "PSPB and System Power Supplies" in Chapter 1 for cable routing information.



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System Cooling Fans

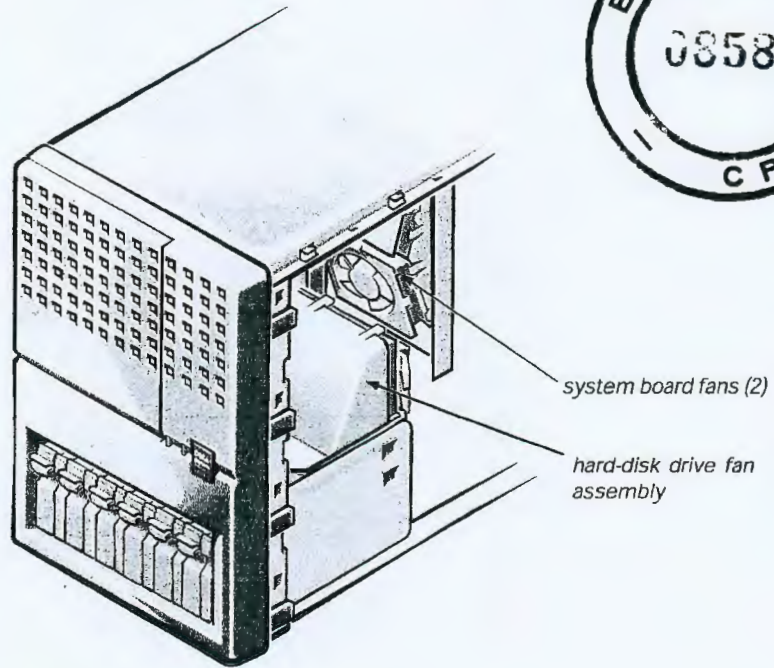
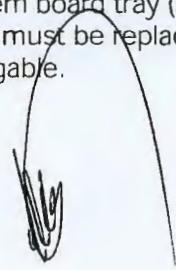


Figure 4-13. System Cooling Fans

Five cooling fans are installed in the Dell PowerEdge 6300 chassis. The drive fan assembly consists of three fans mounted in a carrier above the hard-disk drive enclosure; the system-board fan assembly consists of two fans mounted in a carrier on the inner wall of the system board tray (see Figure 4-13). The drive fan assembly is hot-pluggable and must be replaced as a unit. The system board fans are individually hot-pluggable.



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Hard-Disk Drive Fan Assembly

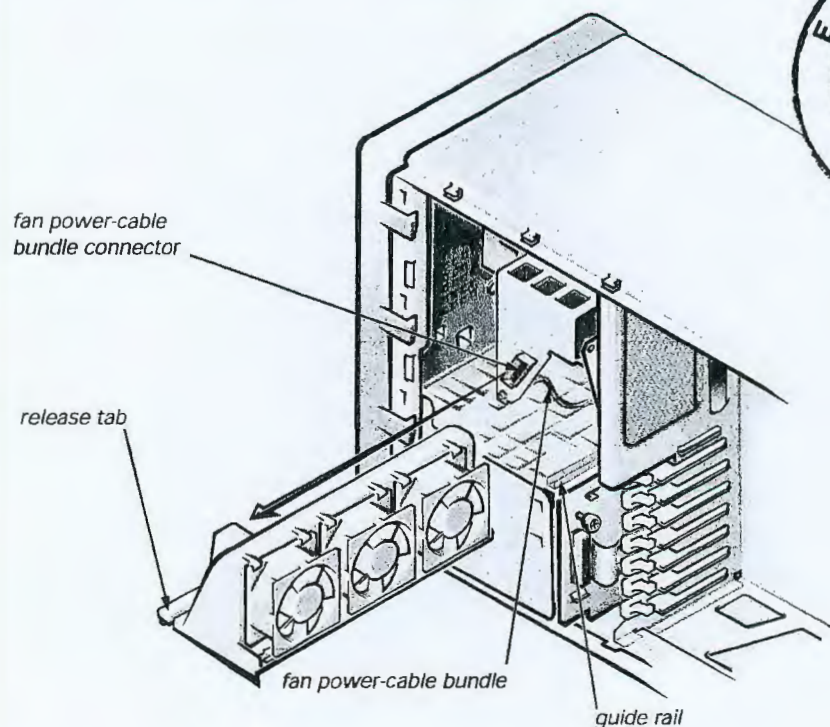


Figure 4-14. Hard-Disk Drive Fan Assembly

The drive fan assembly is hot-pluggable and can be quickly replaced while the system is running.

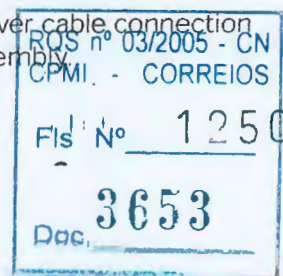
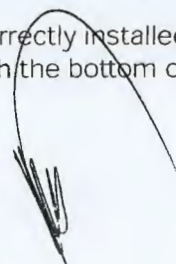


WARNING: If replacing this assembly while the system is running, make sure you have the new assembly handy, and perform the procedure quickly to avoid overheating the drives.

Follow these steps to remove a drive fan assembly:

1. If replacing the drive fan assembly while the system is running, have the new fan assembly ready.
2. Press the release tab on the fan carrier (see Figure 4-14) up away from the hard-disk drive bay, and slide the fan assembly out of the chassis.
3. To install the replacement drive fan assembly, fit the fan assembly over the guide rail and slide it into place, seating it firmly.

When the fan assembly is correctly installed, the power cable connection is made automatically through the bottom of the assembly.



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Fan Power-Cable Bundle



NOTE: This is **not** a hot-pluggable procedure.

To remove the power cable bundle that mates to the bottom of the drive fan assembly, follow these steps:

1. **Remove the drive fan assembly.**
2. **Squeeze the ends of the power-cable bundle connector (see Figure 4-14) while pulling the cable from it from under the metal support bracket.**
3. **Disconnect the other end of the cable from the FAN connector on the SCSI backplane.**

Drive Fan

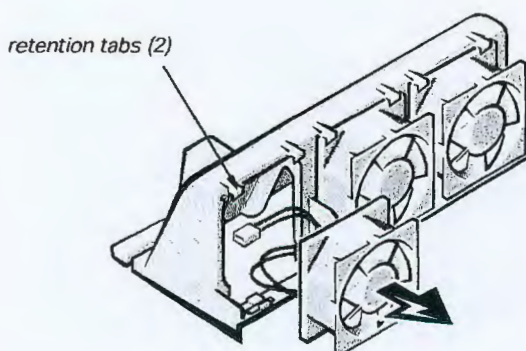


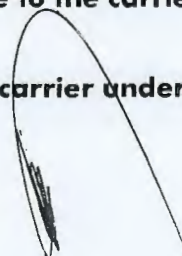
Figure 4-15. Drive Fan Removal



NOTE: This is **not** a hot-pluggable procedure.

To replace a faulty fan in a drive fan assembly before storing the assembly for future use, follow these steps:

1. **Remove the faulty fan from the fan carrier by releasing the two retention tabs that secure the fan in the carrier (see Figure 4-15), and working the fan out of the carrier.**
2. **Remove the fan's power cable from the carrier's power harness bundle.**
3. **Use the push fasteners that came with the new fan to install the metal finger guard on the fan. Install the guard so that the fan's airflow arrow points toward the guard.**
4. **Connect the new fan's cable to the carrier's power harness bundle.**
5. **Insert the new fan into the carrier under the two retention tabs.**



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System Board Fans

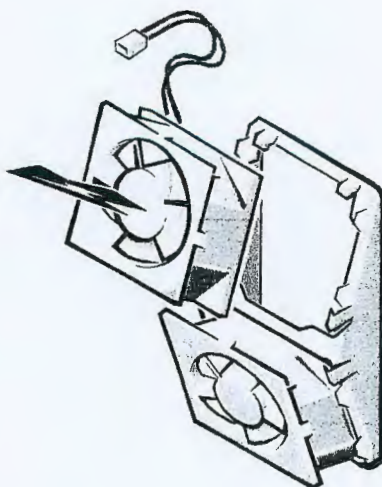


Figure 4-16. System Board Fans

The system board fans are hot-pluggable and can be quickly replaced (see Figure 4-16) while the system is running.



WARNING: If replacing this assembly while the system is running, make sure you have the new fan assembled and handy, and perform the procedure quickly to avoid overheating the microprocessor(s).

1. Assemble the new fan.

Use the push fasteners that came with the new fan to install the finger guard on the fan. Install the guard so that the fan's airflow arrow points away from the guard.

2. Slide the system board tray out to the service position.

See "Accessing the Interior of the System" in Chapter 1 for instructions.

3. For the fan to be replaced, disconnect its cable from the extension cable attached to the appropriate fan connector (FAN1 or FAN2) on the system board.

4. Pull outward on the fan-retention tabs to disengage the fan.

To install the new fan, slide the fan into the fan housing, align the holes in the corners of the fan with the studs in the housing, and snap the fan into place. Connect the fan to the appropriate extension cable.

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System Board Components

The subsections that follow contain procedures for removing system board components. Refer to Figure 4-17 for the location of components.

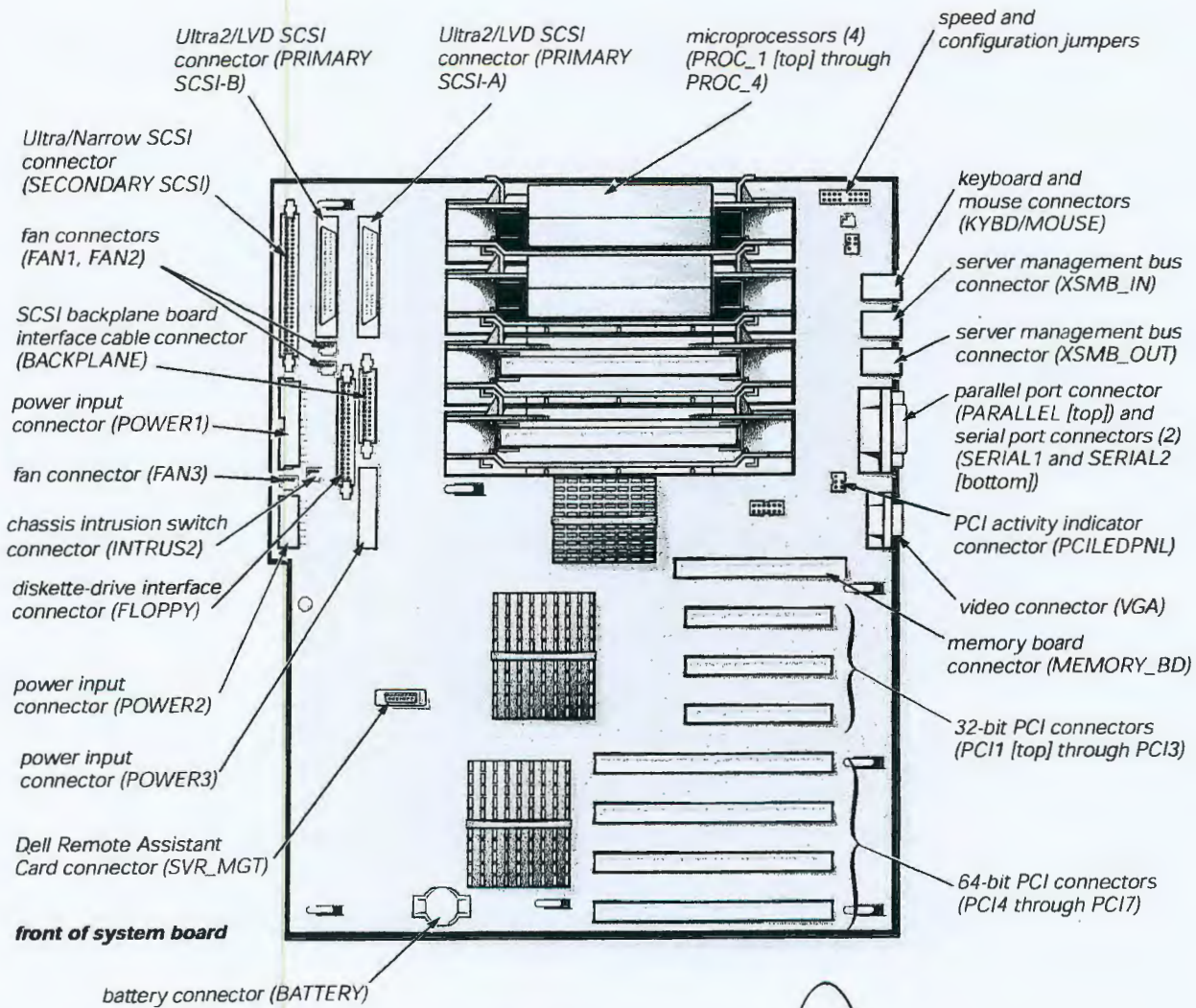


Figure 4-17. System Board Components

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Expansion Cards

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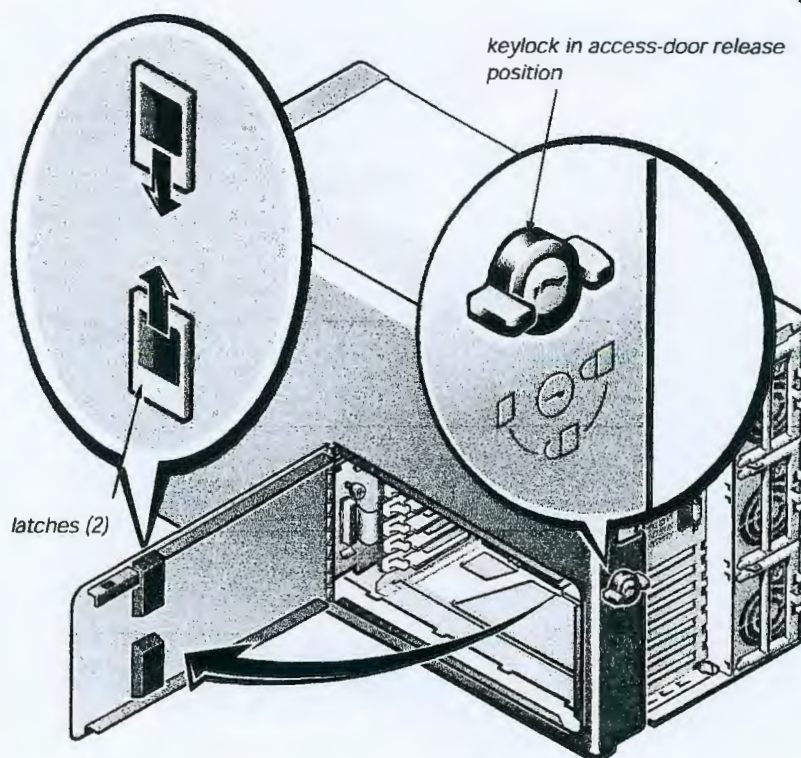


Figure 4-18. Expansion-Card Access Door

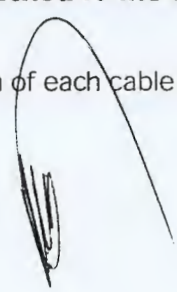


NOTE: PCI cards are **not** hot-pluggable under Microsoft® Windows® 95 or Windows NT® 4.x operating systems. They will become hot-pluggable under Windows NT 5.0, when available.

To remove an expansion card, follow these steps:

1. **Unlock the keylock, remove the key, and then turn the keylock to the access door release position (see Figure 4-18).**
2. **Squeeze the dual latches on the access door to open the door, exposing the expansion-card compartment.**
3. **Disconnect any cables attached to the expansion card you want to remove.**

Be sure to record the location of each cable before you disconnect it.



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4. For the card you want to remove, press in and hold the clip on the back of the computer. At the same time, from inside the computer, press the curved release lever in the middle of the expansion-card latch toward the bottom of the card. After the release lever clicks into the latch cutout, rotate the latch away from the expansion-card bracket (see Figure 4-19).



CAUTION: Do not use a tool to force the latch open.

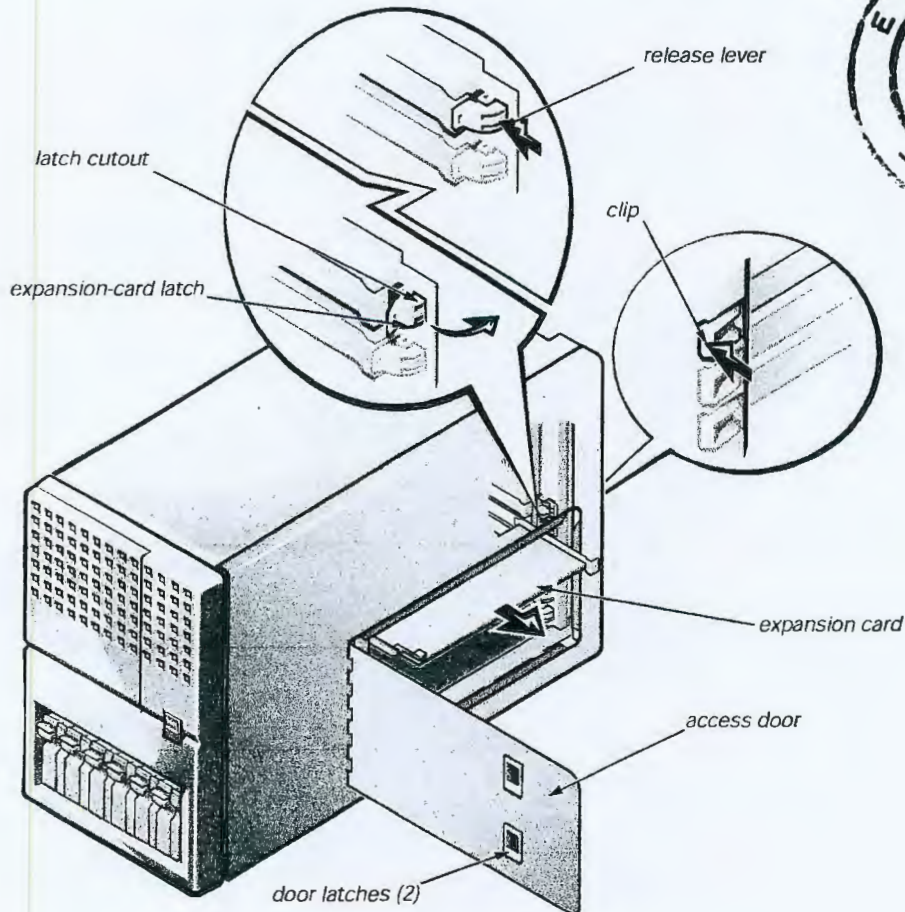
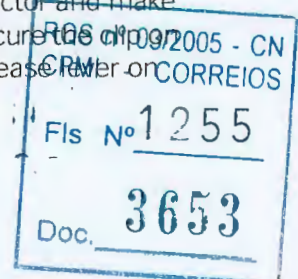


Figure 4-19. Expansion Card Removal

5. Release the inner end of the expansion card by pressing outward on the latch at the inner corner of the card.
6. Grasp the expansion card by its corners, and carefully remove it from the expansion-card connector.

To install an expansion card, insert the card firmly into its connector and make sure the securing clips on both ends of the card are in place. Secure the card on the back of the computer by pressing firmly inward until the release lever on the inside clicks into place.



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Interior Support Panel

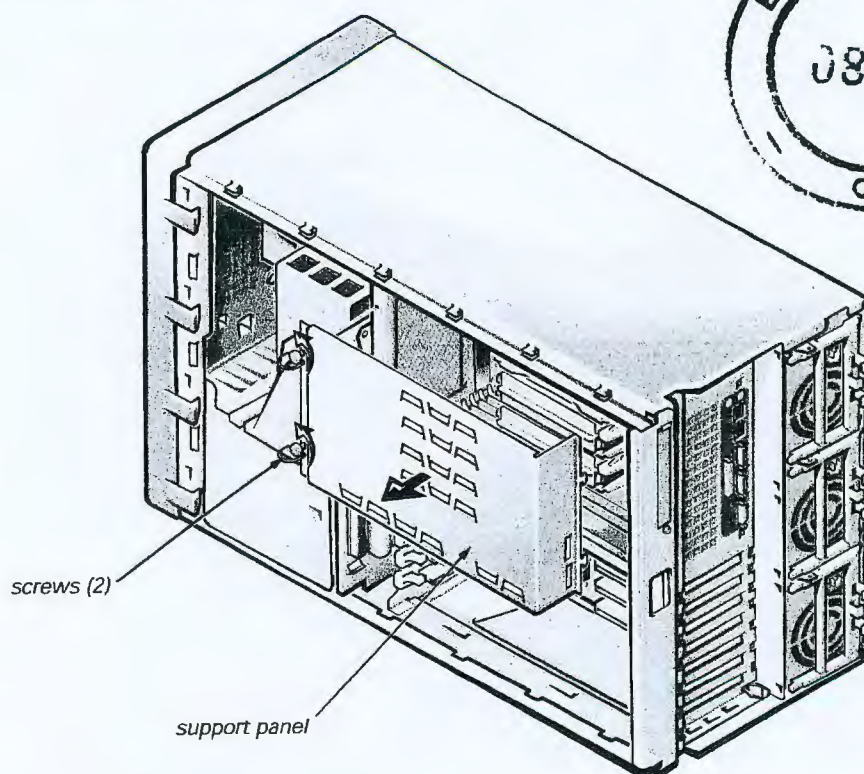


Figure 4-20. Interior Support Panel Removal

To access the microprocessors or the memory module, you must remove the interior support panel as follows:

1. Loosen the thumbscrews on the left side of the panel (see Figure 4-20).
2. Rotate the panel outward slightly, and lift the hinge side of the panel to clear the tabs from the hinge slot.



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DIMMs

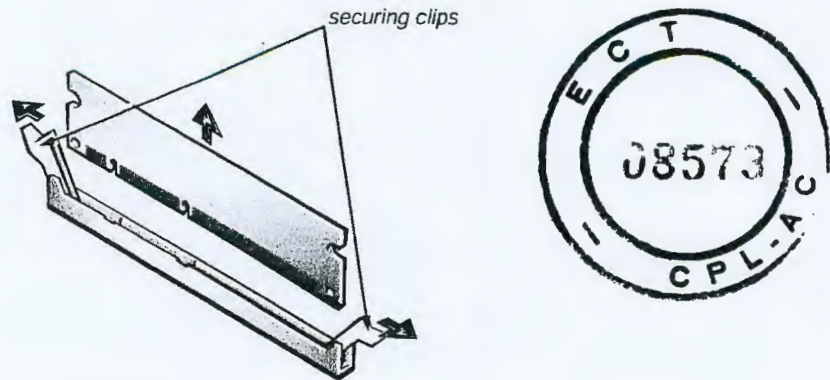


Figure 4-21. DIMM Removal

To remove a DIMM, follow these steps:

- 1. Remove the interior support panel.**
- 2. Remove the memory module by grasping it by the corners and pulling it from its connector.**
- 3. Press outward on the socket's securing clips until the DIMM pops free of the socket (see Figure 4-21).**

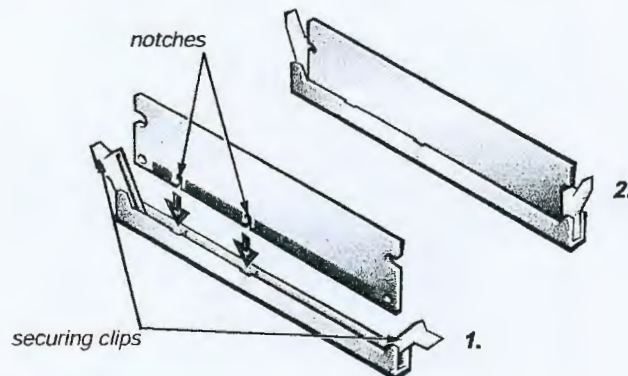


Figure 4-22. DIMM Installation

To replace a DIMM, press outward on the securing clips until they snap open (step 1 in Figure 4-22). Align the notches in the DIMM to the crossbars in the socket, and press down on the outer edges of the DIMM while pulling up on the securing clips until the clips lock around the ends of the DIMM (step 2 in Figure 4-22).



SEC Cartridge and Heat Sink Assembly

To remove an SEC cartridge and heat sink assembly, follow these steps:



WARNING: The SEC cartridge and heat sink assembly can get extremely hot during system operations. Be sure that it has had sufficient time to cool before touching it.



WARNING: When handling the SEC cartridge and heat sink assembly, take care to avoid sharp edges on the heat sink.

1. For the unit to be removed, press outward on the two SEC cartridge release latches until they snap into the open position (see Figure 4-23).

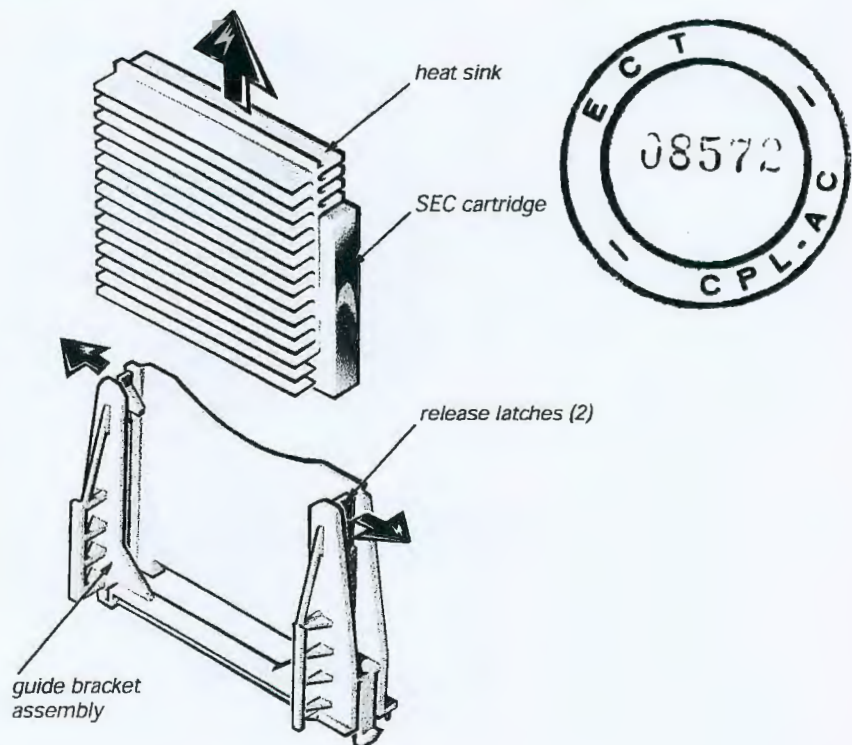
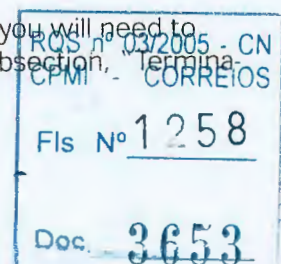


Figure 4-23. SEC Cartridge Release Latches

2. Pull the SEC cartridge straight up out of the connector and guide bracket assembly (some force may be required).

To replace an SEC cartridge, make sure the cartridge release latches are in the open position, orient the new SEC cartridge in the guide bracket assembly as shown in Figure 4-23, seat it firmly, and then snap the release latches back into place.

To install an SEC cartridge where there was none before, you will need to remove the installed terminator cartridge (see the next subsection, "Terminator Cartridge").



Terminator Cartridge

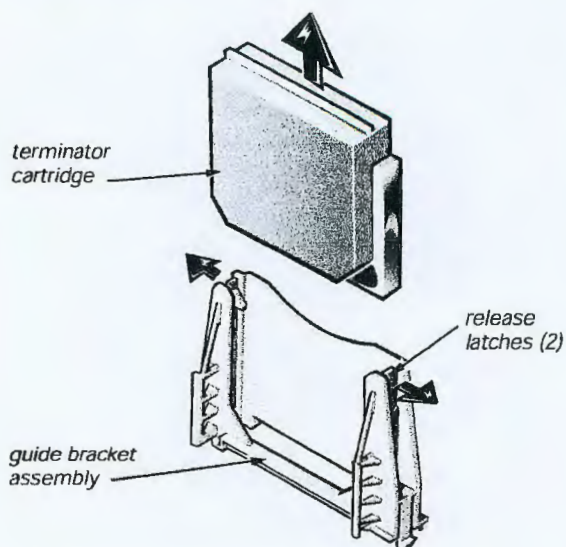


Figure 4-24. Terminator Cartridge Removal

To remove a terminator cartridge, follow these steps:

- 1. Remove the interior support panel.**
- 2. Press outward on the two SEC cartridge release latches until they snap into the open position (see Figure 4-24).**
- 3. Pull the terminator cartridge straight up out of the connector and guide bracket assembly (some force may be required).**

To install a terminator cartridge, make sure the cartridge release latches are in the open position, orient the terminator cartridge in the guide bracket assembly as shown in Figure 4-24, seat it firmly, and then snap the release latches back into place.



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System Battery

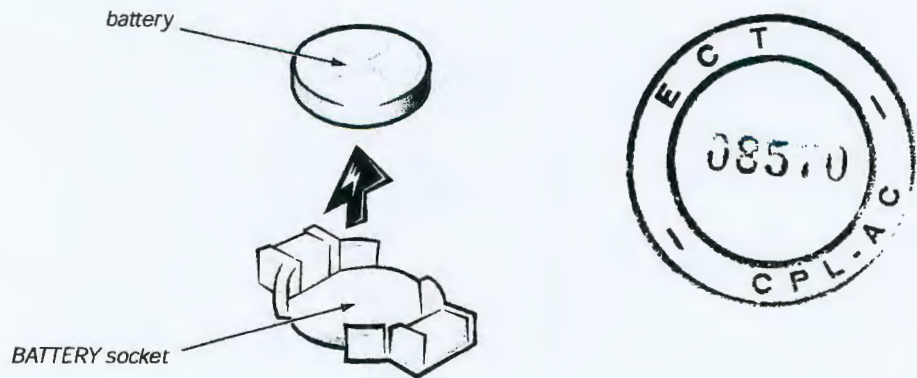


Figure 4-25. System Battery Removal

WARNING

There is a danger of the new battery exploding if incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

To remove the system battery, follow these steps:

- 1. Before turning off the system, if possible enter the System Setup program and make a printed copy of the System Setup screens (see Appendix A).**
- 2. Remove any expansion cards that block access to the battery.**
- 3. Remove the battery (see Figure 4-25) by prying it out of its socket with your fingers or with a blunt, nonconducting object, such as a plastic screwdriver.**

To replace the system battery, orient the new battery with the "+" facing up. Insert the battery into its socket and snap it into place. After system boot, compare the system configuration information with the copy of the system configuration settings you made in step 1. Restore any system configuration information that was lost while the battery was replaced.



NOTE: As a result of the power loss while replacing the battery, you may lose portions of the current system firmware. If, after replacing the system battery, you receive the message **Warning: Firmware is out-of-date, please update...**, reflash the system firmware from the Dell Server Assistant CD (if available) or download it from the Dell website.



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System Board Assembly

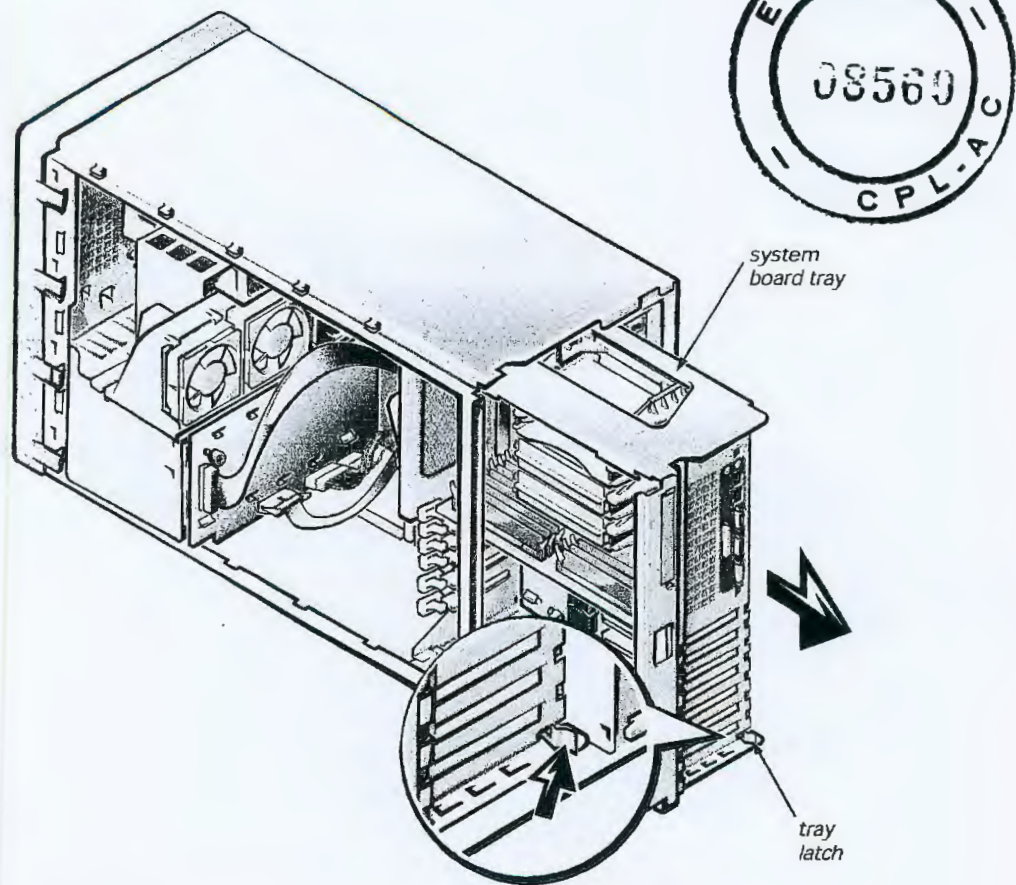


Figure 4-26. System-Board Assembly Removal

The system board assembly consists of the system board and a mounting plate. The system board is held to the mounting plate with screws and mounting clips.

To remove the system board assembly follow these steps:

1. Disconnect all cables from the system board.

Be sure to record where each cable is attached.

- 2. To remove the system board tray, first release the tray latch at the back lower corner of the tray (see Figure 4-26) and pull the tray open to the service position. Then depress the latch again and pull the tray out of the chassis.**



System Board

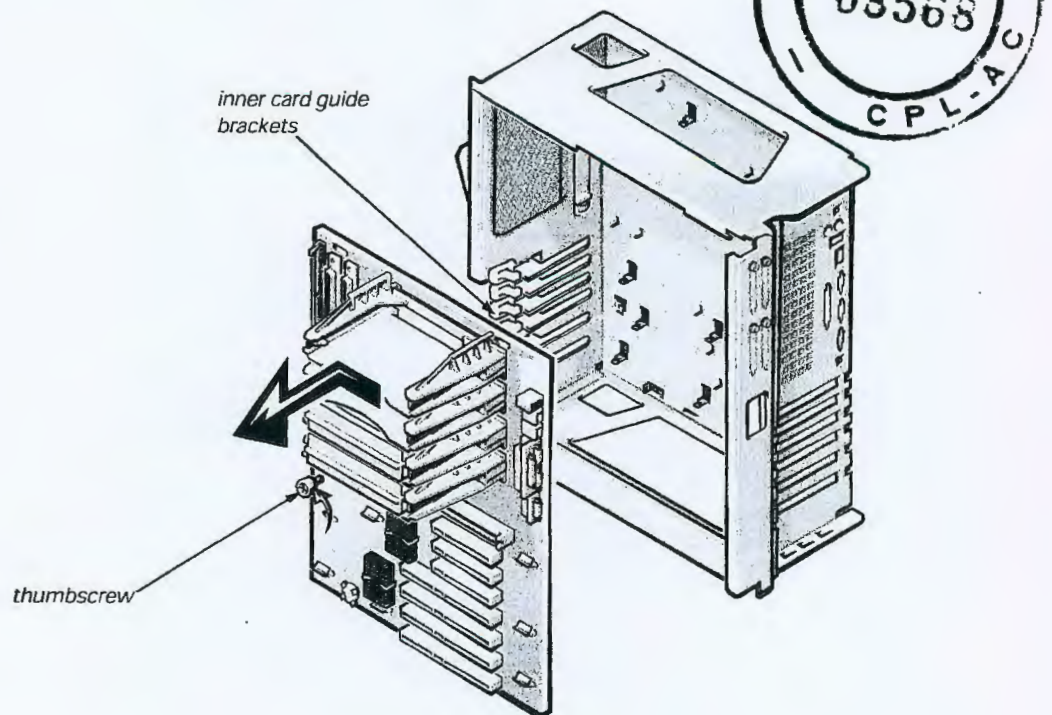


Figure 4-27. System Board Removal

To remove the system board from the system board tray, perform the following steps. (If you are replacing the system board, you may want to remove the expansion cards, memory, processors, and processor guides and install them on the replacement system board.)

1. **Remove the system board assembly (optional).**
2. **Note the slot numbers of any PCI cards you are migrating to the new system board so that you can install them in the same slots on the new board.**
3. **Remove the system board components you are migrating to the new system board.**
4. **Loosen the thumbscrew securing the system board to the tray (see Figure 4-27).**
5. **Slide the system board to the left as shown in Figure 4-27 (toward the *inner expansion-card guide brackets*) about a half inch to clear the chassis hooks, and remove the board.**

If you are replacing the system board, install any components you removed from the old system board onto the replacement board. To retain the same system configuration and appropriate resource sharing, install PCI expansion cards in the same slots they were in on the old system board. Verify that the jumper settings on the new system board are correct.

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Guide Bracket Assembly

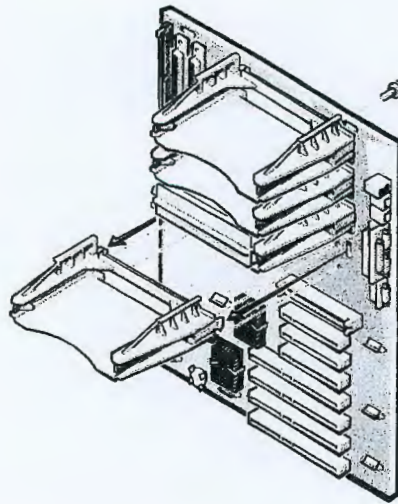


Figure 4-28. Guide-Bracket Assembly Removal

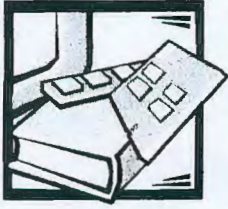
To remove the guide bracket assembly, follow these steps:

- 1. Remove the system board assembly.**
- 2. Remove the system board from the system board tray.**
- 3. Remove terminator card and SEC cartridge heat sink assemblies if necessary.**
- 4. From the underside of the system board, use a T25 Torx driver to remove the screws at each end of the bracket(s) (see Figure 4-28).**
- 5. For each guide bracket, squeeze the bracket retaining tabs on the underside of the system board to release the bracket, and pull the bracket away from the system board.**



NOTE: Because of the way the guide brackets overlap each other, the guide bracket assembly must be removed in the following order: PROC_4 (the bottom bracket when system is standing upright), PROC_3, PROC_2, PROC_1. Reinstall them in reverse order.

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APPENDIX A

System Setup Program



This appendix describes the System Setup program, which is used to change the system configuration information stored in NVRAM on the system board. For in-depth information, refer to Chapter 4, "Using the System Setup Program" in the *Dell PowerEdge 6300 Systems User's Guide*.

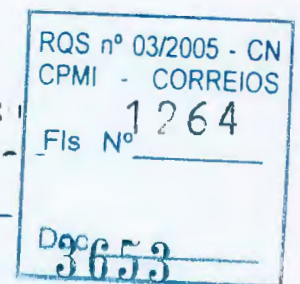
To enter the System Setup program, follow these steps:

1. **Turn on (or reboot) the system.**
2. **Press <F2> immediately after you see the message** Press <F2> **for System Setup.**

If you wait too long, the operating system begins to load into memory, the message disappears, and you cannot enter the System Setup program. *Let the system complete the load operation*, then shut down the system and try again.



NOTE: To ensure an orderly system shutdown, consult the documentation that accompanied the operating system.



System Setup Screens

Figure A-1 illustrates the System Setup program screens, and Table A-1 briefly describes each setup option.

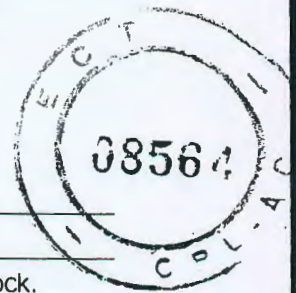
Dell Computer Corporation (www.dell.com)	
Page 1 of 2	System PowerEdge 6300/400 Setup BIOS Version: XXX
Time: 13:17:02 Date: Wed Apr 8, 1998 Diskette Drive A: 3.5 inch, 1.44 MB Diskette Drive B: Not Installed Cache: On Num Lock: On Speaker: On Processor 1: Revision B0 Processor 2: Not Installed Processor 3: Not Installed Processor 4: Not Installed	This category sets the time in 24-hour format (hours:minutes:seconds) for the internal clock/calendar. To change the value in a field, enter a number or use the left- or right-arrow key. Changes take effect immediately.
Pentium® II Processor 400 MHz Level 2 Cache: 512 KB Integrated System Memory: 128 MB ECC DRAM Video Memory: 2 MB SGRAM Service Tag: XXXXX Asset Tag: XXXXXXXXXXXX	
Tab, Shift-Tab change fields ←, → change values Alt-P next Esc exit Alt-B reboot	

Dell Computer Corporation (www.dell.com)	
Page 2 of 2	System PowerEdge 6300/400 Setup BIOS Version: XXX
Keyboard Errors: Report Boot Sequence: Diskette First Scan Sequence: Slots first (H/L) System Password: Not Enabled Password Status: Unlocked Setup Password: Not Enabled ——— Integrated Devices ——— Mouse: On Serial Port 1: Auto Serial Port 2: Auto Parallel Port: 378h Parallel Mode: PS/2 Diskette: Auto Primary SCSI A: On Primary SCSI B: On Secondary SCSI: On	This category sets whether keyboard-related error messages are reported at system startup.
Pentium® II Processor 400 MHz Level 2 Cache: 512 KB Integrated System Memory: 128 MB ECC DRAM Video Memory: 2 MB SGRAM Service Tag: XXXXX Asset Tag: XXXXXXXXXXXX	
Tab, Shift-Tab change fields ←, → change values Alt-P next Esc exit Alt-B reboot	

Figure A-1. System Setup Screens



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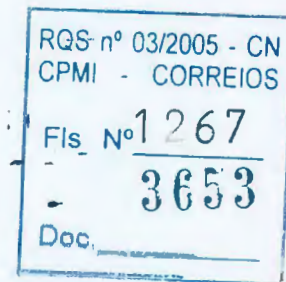
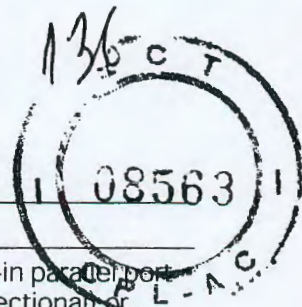
**Table A-1. System Setup Options**

Option	Function
Time	Resets time on computer's internal clock.
Date	Resets date on computer's internal calendar.
Diskette Drive A Diskette Drive B	Identifies type of diskette drives installed. Tape drives are <i>not</i> reflected in these categories.
Cache	Sets the state of the processor cache to On (default) or Off.
Num Lock	On 101- and 102-key keyboards, determines whether system boots with Num Lock activated (does not apply to 84-key keyboards).
Speaker	Determines whether the built-in speaker is On (default) or Off.
Processor 1 Processor 2 Processor 3 Processor 4	Displays version or stepping number of the microprocessor in each processor slot on the system board.
Keyboard Errors	Enables or disables reporting of keyboard errors during POST.
Boot Sequence	Determines whether system boots from diskette (if present) or hard-disk drive.
Scan Sequence	Determines the order in which the PCI devices are scanned by the system.
System Password	Displays current status of system's password security feature. Also used to assign and verify a new password.
Password Status	If set to Locked, prevents the system password from being changed or disabled. Requires that Setup Password category be Enabled.
Setup Password	Restricts access to System Setup program.
Mouse	Enables or disables the built-in PS/2-compatible mouse port.
Serial Port 1 Serial Port 2	Configures system's built-in serial ports. These categories may be set to Auto (default) to automatically configure a port, to a specific designation (COM1 [3F8h] or COM3 [3E8h] for Serial Port 1; COM2 [2F8h] or COM4 [2E8h] for Serial Port 2), or to Off.
Parallel Port	Configures system's built-in parallel port. The port's I/O address may be set to 378h (default), 278h, 3BCh, or to Off to disable the port.

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Table A-1. System Setup Options (continued)

Option	Function
Parallel Mode	Controls whether system's built-in parallel port acts as an AT-compatible (unidirectional) or PS/2-compatible (bidirectional) port.
Diskette	Controls operation of the system's built-in diskette controller.
Primary SCSI A Primary SCSI B Secondary SCSI	Turns the respective SCSI controllers on (default) or off. Selecting On enables a controller and allows scanning of the devices connected to it, allowing the device with the lowest SCSI ID to function as a boot device (unless a boot device has already been detected connected to an enabled controller higher in the scan sequence). Selecting OFF causes the BIOS to mask the presence of a controller.
Processor field	Displays microprocessor type and speed.
Level 2 Cache	Displays size of integrated cache.
System Memory	Displays entire amount of installed memory detected in system, except for memory on EMS expansion cards.
Video Memory	Displays amount of video memory detected.
Service Tag	Displays system's five-character service tag number.
Asset Tag	Displays the asset tag number up to ten characters if one is assigned.





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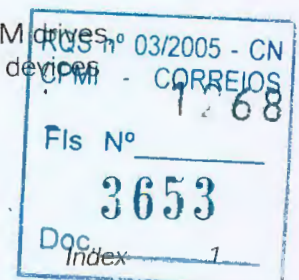
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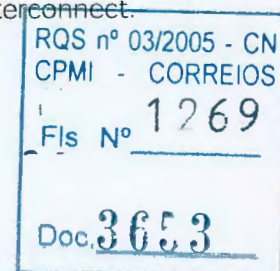
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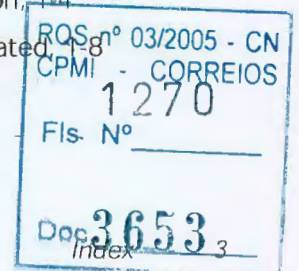
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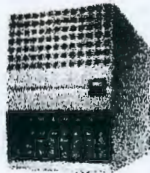
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SYSTEM SPECIFICATIONS

PowerEdge 4400

Rich with high performance and enterprise-level availability features, the PowerEdge™ 4400 is designed help make your department much more productive. With support for up to two Intel® Pentium® III Xeon™ processors, 133MHz front side bus, a maximum of 4GB memory and embedded NIC, dual-channel Ultra3 (Ultra160) SCSI controllers and optional RAID controller, the PowerEdge 4400 helps you deliver the critical data your users need quickly and efficiently.

Customize & Price

Processors

- Up to 2 Intel® Pentium® III Xeon™ processors, 600MHz - 800MHz
- 133MHz front side bus
- 32KB level 1 cache (16KB instruction cache and 16KB two-way write-back data cache)
- 256KB full-speed, level 2 cache
- Quad-peer PCI Architecture that supports 64-bit/66MHz PCI



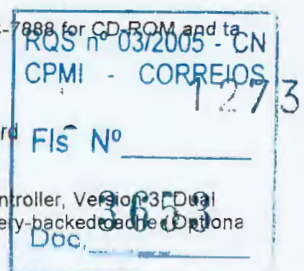
Memory

- 128MB - 4GB ECC 133MHz SDRAM memory
- 8 DIMM sockets on systemboard

Storage

SCSI:

- Dual integrated Adaptec® AIC-7899 Ultra3 (Ultra160) SCSI controller at 160MB/s (used when RAID Enabler kit is added along with PERC 3/Di)
- Integrated Ultra/Narrow SCSI-3 Adaptec AIC-7888 for CD-ROM and tape backup devices
- Optional Adaptec Ultra-2/LVD SCSI 2940 card
- Integrated PowerEdge Expandable RAID Controller, Version 3.0 Dual Channel (PERC 3/Di) with up to 128MB battery-backed cache (Optional RAID Enabler Kit)



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- Optional PowerEdge Expandable RAID Controller, Version 2, Dual Channel (PERC 2/DC)

- Optional PowerVault™200S and 201S SCSI external storage system

- 9GB¹, 18GB high-performance Ultra3 (Ultra160) SCSI (7,200 and 10,000 rpm) hard drives

Fibre Channel:

- Optional PowerVault 650F, 651F, 630F fibre channel RAID system

- 9GB, 18GB, 36GB fibre channel (10,000 rpm) hard drives

Removable Media and Tape Backup:

- Up to 40X max. SCSI CD-ROM

- Standard 3.5" 1.44MB diskette drive

- Optional PowerVault 100T-DDS3-I tape drive (12GB/24GB)

- Optional PowerVault 100T-DDS4 I tape drive (20GB/40GB)

- Optional PowerVault 110T-DLT4-I / DLT4-E tape drive (20GB/40GB)

- Optional PowerVault 110T-DLT7-I / DLT7-E tape drive (35GB/70GB)

- Optional PowerVault 120T-DDS3-I autoloader (96GB/192GB)

- Optional PowerVault 120T-DLT4-E autoloader (140GB/280GB)

- Optional PowerVault 120T-DLT7-E autoloader (245GB/490GB)

- Optional PowerVault 130T-DLT4-E library (166GB/1.05TB)

- Optional PowerVault 130T-DLT4-E library (166GB/1.05TB)



Graphics

- Integrated VGA-compatible, ATI-Rage IIc controller

I/O Slots

Quad-peer, 64-bit architecture: 7 PCI slots

- 2x64-bit/66MHz (hot-plug)

- 2x64-bit/33MHz (hot-plug)

- 2x64-bit/33MHz

- 1x32-bit/33MHz



Drive Bays



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- * Hot-pluggable Hard Drive Bays: Six 1.6" or eight 1.0" hard drive bays
- * Externally accessible removable media bays: Three 5.25" half-height bays for one CD-ROM, two available, dedicated 3.5" diskette bays
- * Optional: Two, hot-plug 1" hard drives can be installed in multi-media bays

I/O Ports

- * PS/2 keyboard, PS/2 mouse, 2 serial, parallel, video ports
- * System management bus optional through cables

Communications

- * Integrated Intel Pro/100+ Server Adapter
- * Intel Pro/100+ Server Adapter
- * Intel Pro/100+ Dual Port Server Adapter
- * Intel Pro/1000 Gigabit Server Adapter
- * 56K² V.90 WinModem supported under Windows NT[®] Server only
- * 128K 4-port, PCI BRI ISDN modem



Input Devices

- * Windows SpaceSaver 101-key
- * Windows Performance 101-key
- * Dell PS/2-style

Optional Software

- * Novell[®] NetWare[®] Version 5.0 (non-factory install only)
- * Microsoft Windows NT Server, Version 4.0, Terminal Server, and Enterprise editions (Microsoft Cluster Server certified)
- * Microsoft Windows 2000 Server
- * Microsoft Windows 2000 Advanced Server
- * Red Hat[®] Linux 6.1



- * Dell OpenManage[™] PowerSuites for Veritas[®] Backup Exec[™]
- * Dell OpenManage[™] PowerSuites for Computer Associates[®] ARCserve[™]



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Self-Open/Manage - Enhances for Computer Associates, Veritas

- Legato® NetWorker
- Veritas® NetBackup (NDMP)
- Tivoli® Storage Manager



Chassis

- Full-tower Chassis - 16.75" (h) x 12.25" (w) x 25.5" (d)
- 7U rack height
- Weight 80 lb.

Power

- Hot-pluggable: Two 320W standard; optional third redundant power su
- PowerSupply Distribution Board (PSDB) provides hot-pluggability and proper load-balancing
- Individual, hot-pluggable, redundant cooling fans
- 110/220 Volts

Warranty

- Three-year limited warranty³: 3 years of Next Business Day On-Site⁴ replacement and 1 year of Next Business Day On-Site Labor Service
- 30-day "Getting Started" NOS helpline provides free telephone support help get you up and running quickly (when operating system is also purchased from Dell)
- 7-day/24-hour hardware technical support standard for as long as you your computer
- 4-hour same⁷ business day response upgrades [5x10⁵ and 7x24⁶ optio

- DirectLine™ network operating system support (12 month contract for to 5 encounters) and upgrades available

- Pre-Failure Alert

Management

- Fault monitoring of voltage, fan, and thermal conditions to help ensure notification in case of potential problems
- Management of drive array under optional PowerEdge Expandable RAID Controller

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- * Tracks memory errors that have been corrected by the ECC memory
- * Automatic Server Recovery will reboot and restart the server if the OS hangs without user intervention
- * User-definable OS thresholds can be set, allowing administrators to tune systems and eliminate bottlenecks to performance
- * Console alerting through HP® OpenView® Network Node Manager Special Edition keeps administrators informed of server performance or potential problems
- * Asset management features allow customers to inventory server configuration, CPU, memory and disk
- * Dell OpenManage™ Server Assistant CD included with every server to get your PowerEdge server up and running
- * Dell OpenManage Resolution Assistant directly integrates Dell Service Center technical support with PowerEdge server environments
- * Optional Dell Remote Assistant Card Version 2.0
- * HP OpenView Network ManageX® Special Edition

Environmental

- * Operating Temperature: 10° C to 35° C (50° F to 95° F)
- * Storage Temperature: -40° C to 65° C (-40° F to 149° F)
- * Relative humidity 8% to 80% non-condensing
- * Operating Vibration: 0.25G at 3Hz to 300Hz for 15 minutes
- * Storage Vibration: 0.5G at 3Hz to 300Hz for 15 minutes
- * Operating Shock: 5G for 11ms
- * Storage Shock: 20G with a velocity change of 1397mm/sec.
- * Operating Altitude: -16m to 3,048m (-50 ft to 10,000 ft)
- * Storage Altitude: -16m to 10,600m (-50 ft to 35,000 ft)

Regulatory

- * FCC (U.S. only) Class B
- * DOC (Canada) Class B

* CE EN 55022, IEC 801-2, EN50082-1, IEC 801-3, IEC 801-4

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* VCCI Class II

* UL 1950

* CSA 950

* EN 60950

* IEC 60950

* CE



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¹ For hard drives, GB means 1 billion bytes; total accessible capacity varies depending on operating environment.

² Download speeds limited to 53 Kbps. Upload speeds are less (in the 30 Kbps range) and vary by mode manufacturer. Speeds also vary depending on line conditions. Analog phone line and compatible server equipment required.

³ For a complete copy of our Guarantees or Limited Warranties, please write Dell, USA, L.P., One Dell V Round Rock, TX 78682.

⁴ On-site service may be provided by a third-party provider under contract with Dell, and is not available certain areas. Technician will be dispatched if necessary following phone-based troubleshooting.

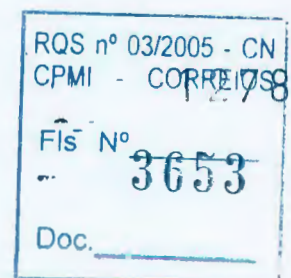
⁵ The service technician may not arrive until the following business day if dispatched after 4:00pm. Dell v dispatch a technician to the customer site within 4 hours of determining the hardware problem. Service n be provided by a third-party provider under contract with Dell. Technician will be dispatched if necessary following phone-based troubleshooting.

⁶ For 7x24 service, Dell will dispatch a service technician within 4 hours of determining the hardware problem. Service may be provided by a third-party provider under contract with Dell. Technician will be dispatched if necessary following phone-based troubleshooting.

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Your System Information

Model: **PowerEdge 4400****YR 2000**

System Year 2000 Assessment

Your system is Year 2000 compliant.

No further changes are required. All released BIOS versions for this model are Y2K compliant. For more information on the Year 2000 problem and how Dell systems handle it.

Note: The Dell Readiness Advisor assesses the readiness of the system hardware only, configured as it was originally shipped to. If your hardware has been upgraded or altered since purchasing your system from Dell, the Dell Product Readiness Advisor will not provide an accurate assessment.

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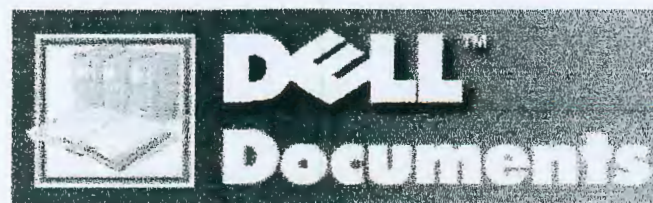


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DELL POWEREDGE 4400



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Dell™ PowerEdge™ 4400 Systems Service Manual

- Preface
- System Overview
- Checking the Basics
- Codes and Error Messages
- Removing and Replacing Parts
- Jumpers, Switches, and Connectors
- Using the System Setup Program

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Preface: Dell™ PowerEdge™ 4400 Systems Service Manual

- [Read This First](#)
- [Other Documentation You May Need](#)
- [Notes, Notices, Cautions, and Warnings](#)
- [Typographical Conventions](#)

Read This First

A prerequisite for using this manual to service Dell computer systems is a basic knowledge of IBM® -compatible PCs and prior training in IBM-compatible PC troubleshooting techniques. In addition to information provided in this manual and in the *Dell PowerEdge 4400 Systems User's Guide* that came with the system, Dell provides the *Dell PowerEdge 4400 Systems Installation and Troubleshooting Guide* for troubleshooting procedures and instructions on using Dell Diagnostics to test the computer system.

The chapters and appendixes are summarized as follows:

- [System Overview](#) — Overview of the system's service features.
- [Basic Troubleshooting](#) — Initial checks and procedures used to solve basic system problems and information on more detailed troubleshooting procedures to solve more complex problems.
- [Codes and Error Messages](#) — POST beep codes, system messages, system codes, warning messages, diagnostics messages, alert log messages, and SCSI hard-disk drive indicator codes.
- [Removing and Replacing Parts](#) — Removal and replacement of all field-replaceable parts, such as DIMMs, microprocessors, expansion cards, and SCSI devices.
- [Jumpers, Switches, and Connectors](#) — Jumper or switch settings to change when troubleshooting and servicing the system.
- [Using the System Setup Program](#) — The System Setup program is used to change the system configuration information stored in NVRAM on the system board.

Notes, Notices, Cautions, and Warnings

Throughout this manual, there may be blocks of text printed in bold type or in italic type. These blocks are notes, notices, cautions, and warnings and they are used as follows:



 **NOTE:** A NOTE indicates important information that helps you make better use of your system.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **CAUTION:** A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 **WARNING:** A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious bodily injury.

Other Documentation You May Need

The following documents are included with your system:

- The *Dell PowerEdge 4400 Systems User's Guide*, which describes system features and technical specifications, video and SCSI device drivers, the System Setup program, software support utilities, and the System Setup Utility.
- The *Dell PowerEdge 4400 Systems Installation and Troubleshooting Guide* provides instructions for installing system hardware and includes troubleshooting and diagnostic procedures for testing your system.
- The *HP OpenView NNM Special Edition With Dell OpenManage HIP User's Guide*, which describes the features, requirements, installation, and basic operation of the server management software. Refer to the software's online help for information about the alert messages issued by the software.

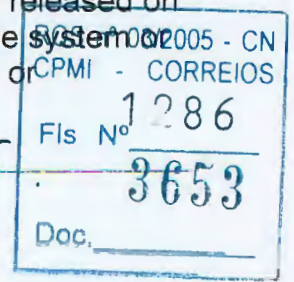
You may also have one or more of the following documents.

 **NOTE:** Documentation updates are sometimes included with the system to describe changes to the system or software. Always read these updates before consulting any other documentation because the updates often contain information that supersedes the information in the other documents.

- Operating system documentation is included with the system if you ordered the operating system software from Dell. This documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation is included with any options you purchase separately from the system. This documentation includes information that you need to configure and install these options in your Dell computer.
- Technical information files—sometimes called "readme" files—may be released on diskettes to provide last-minute updates about technical changes to the system or advanced technical reference material intended for experienced users or technicians.



Typographical Conventions



The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- *Interface components* are window titles, button and icon names, menu names and selections, and other options that appear on the monitor screen or display. They are presented in bold.

Example: Click **OK**.

- *Keycaps* are labels that appear on the keys on a keyboard. They are enclosed in angle brackets.

Example: <Enter>

- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.

Example: <Ctrl><Alt><Enter>

- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.

Example: "Use the **format** command to . . ."

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: "Type **format a:** to format the diskette in drive A."

- *Filenames* and *directory names* are presented in lowercase bold.

Examples: **autoexec.bat** and **c:\windows**

- *Syntax lines* consist of a command and all its possible parameters. Commands are presented in lowercase bold; variable parameters (those for which you substitute a value) are presented in lowercase italics; constant parameters are presented in lowercase bold. The brackets indicate items that are optional.

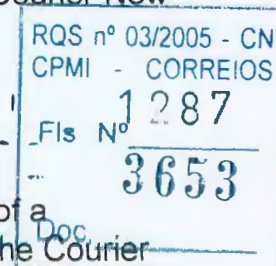
Example: **del** [*drive:*] [*path*] *filename* [*lp*]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

Example: **del c:\myfile.doc**

- *Screen text* is a message or text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

Example: The following message appears on your screen:



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No boot device available

Example: "Type md c:\programs and press <Enter>."

- *Variables* are placeholders for which you substitute a value. They are presented in italics.

Example: DIMM_x (where x represents the DIMM socket designation).

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System Overview: Dell™ PowerEdge™ 4400 Systems Service Manual

- | | |
|---|--|
| ● Overview | ● Front-Panel Indicators |
| ● System Features | ● Back-Panel Indicators |
| ● Serviceability Features | ● Preventing Unauthorized Access Inside the Computer |
| ● Standard Software | ● Technical Specifications |
| ● Supported Operating Systems | |

Overview

The Dell PowerEdge 4400, which has an Intel® Pentium® III Xeon™ microprocessor, is a feature-rich, enterprise class server that offers the highest performance, availability, scalability, manageability, and investment protection features. The PowerEdge 4400 includes a hot-pluggable 64-bit/66-megahertz (MHz) Peripheral Component Interconnect (PCI) bus, an integrated Ultra3 small computer system interface (SCSI), and an optional integrated redundant array of independent disks (RAID) with battery back-up cache. The PowerEdge 4400 provides a robust, reliable, rack-optimized platform on which large corporate customers can deploy their mission-critical applications.

This section describes the major hardware and software features of the computer, provides information about the indicators and controls on the computer's front panel, and discusses connecting external devices to the computer.

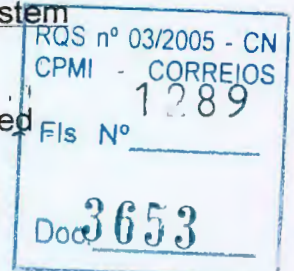
System Features

PowerEdge 4400 systems offer the following major features:

- One or two Pentium III Xeon microprocessors.

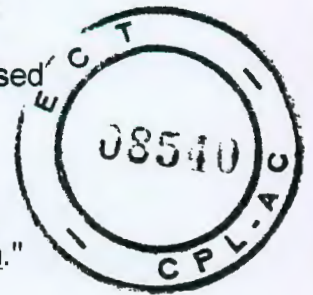
The **Processor Core** option on **Page 1** of the System Setup program lists your system's processor speed. For more information, see "[Using the System Setup Program](#)."

The Pentium III Xeon microprocessor includes MMX™ technology designed to handle complex multimedia and communications software. This microprocessor incorporates new instructions and data types as well as a technique called single instruction, multiple data (SIMD) that allows the microprocessor to process multiple data elements in parallel, thereby improving overall system performance.



A secondary level 2 (L2) cache of static random-access memory (SRAM) is included within the single-edge contact (SEC) cartridge that contains the microprocessor. Math coprocessor functions are provided by the microprocessor. A separate and external math coprocessor chip is not used or required.

The size of the L2 cache is dependent on the processor installed in the system. The first screen of the System Setup program lists the system's cache size. For more information, see "Using the System Setup Program."



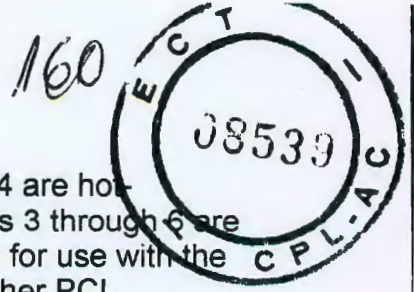
- Front side bus (FSB) with an external bus speed of 133 MHz.
- Support for symmetric multiprocessing (SMP) is available by installing a second Pentium III Xeon microprocessor. SMP greatly improves overall system performance by dividing microprocessor operations between the two independent microprocessors. To take advantage of this feature, you must use an operating system that supports multiprocessing, such as Microsoft® Windows NT® Server 4.0 or Novell® NetWare® 4.2 (and later versions).

 **NOTE:** *If you decide to upgrade your system by installing a second microprocessor, you must order a microprocessor upgrade kit from Dell. Not all versions of the Pentium III Xeon microprocessor work properly as a second microprocessor. The upgrade kit contains the correct version of the microprocessor for use as a second microprocessor as well as instructions for performing the upgrade.*

- A minimum of 128 megabytes (MB) of system memory, upgradable to a maximum of 2 gigabytes (GB) by installing combinations of 64-, 128-, or 256-MB registered synchronous dynamic RAM (SDRAM) dual in-line memory modules (DIMMs) in the eight DIMM sockets on the system board. These DIMMs must be installed in equal pairs.
- A basic input/output system (BIOS) that resides in flash memory on the PCI bus that can be upgraded if required.
- Eight 1-inch or six 1.6-inch, hot-pluggable, SCSI hard-disk drives.
- Two additional 1-inch drives can be installed in the optional removable media bay via a 1 x 2 SCSI backplane board. If this backplane is configured as a split backplane using two SCSI cable connections, these two drives are hot-pluggable.
- A power-supply distribution board to accommodate up to three independent power supplies. Two power supplies are standard; a third can be added to make the system redundant.
- Redundant, hot-pluggable fans that run independently.
- A single, 1.44-MB 3.5-inch diskette drive.
- A 17/40x SCSI CD-ROM drive.

The system board includes the following integrated features:

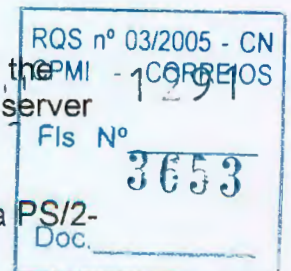
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- Seven PCI slots located on the system board. PCI slots 1 through 4 are hot-pluggable. PCI slots 1 and 2 are 64-bit, 66-MHz PCI slots; PCI slots 3 through 6 are 64-bit, 33-MHz PCI slots. Slot 7 provides a 32-bit, 33-MHz PCI slot for use with the optional Dell OpenManage™ Remote Assistant Card (DRAC) or other PCI accessories.
- An integrated Intel PRO/100+ network interface controller (NIC), which provides an Ethernet interface and failover and load balancing with single and dual ports.
- An integrated Adaptec AIC-7899 dual-channel Ultra3 SCSI host adapter that supports up to ten SCSI hard-disk drives (eight 1-inch hard-disk drives via a SCSI backplane board and two 1-inch hard-disk drives via an external SCSI hard-disk drive media bay). The SCSI backplane automatically configures SCSI ID numbers and SCSI termination on individual hard-disk drives, greatly simplifying drive installation.
- An integrated PowerEdge Expandable RAID Controller (PERC) 3/Di that supports RAID levels 0, 1, 5, and 10. The Ultra3 SCSI host adapter can become RAID capable with the addition of the PERC 3/Di hardware enable kit.
- An integrated Adaptec AIC-7880 Ultra/Wide SCSI secondary host adapter (implemented as Ultra/Narrow) that supports up to three externally accessible SCSI devices in the external hard-disk drive bays (for example, CD-ROM drive, tape drive unit).
- An integrated video graphics array (VGA)-compatible video subsystem with an ATI RAGE IIC video controller. This video subsystem contains 4 MB of synchronous dynamic RAM (SDRAM) video memory (nonupgradable). Maximum resolutions are 1600 x 1200 x 65K colors (noninterlaced). The maximum true-color resolution is 1152 x 864; 16.7 million colors are available for true-color graphics.
- An integrated National Semiconductor PC97317 super input/output (I/O) controller that controls the bidirectional parallel port, two serial ports, keyboard, mouse, and the diskette drive in the externally accessible front bay.

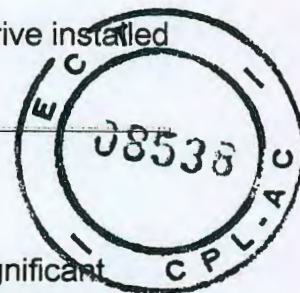
The parallel port can be set to operate in the following modes via the **Parallel Mode** option in the System Setup program: output-only (AT-compatible), bidirectional (Personal System/2 [PS/2]-compatible).

- Integrated server management circuitry that monitors operation of the system fans as well as critical system voltages and temperatures. The integrated server management circuitry works in conjunction with the optional HP OpenView Network Node Manager Special Edition (NNM SE) and the Dell OpenManage Hardware Instrumentation Package (HIP) software package.
- System board support for the Dell OpenManage Remote Assistant when the optional DRAC 2 is installed, which provides additional local and remote server management.
- A PS/2-style keyboard port, dual Universal Serial Bus (USB) ports, and a PS/2-compatible mouse port.



Standard PowerEdge 4400 systems include a 3.5-inch diskette drive and a SCSI CD-

ROM drive installed in the externally accessible bays and a SCSI hard-disk drive installed in slot 0.



Serviceability Features

Dell PowerEdge 4400 computer systems are high-speed servers that offer significant service and upgrade features. These systems include the following service features to make troubleshooting and repair easy and effective:

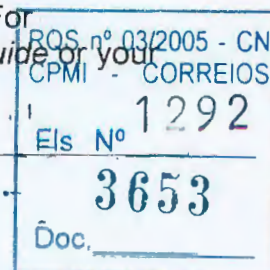
- Dell Diagnostics, which checks for hardware problems (if the system can boot)
- Embedded server management hardware, which monitors temperatures and voltages throughout the system and notifies you if the system overheats, if a system cooling fan malfunctions, or if a power supply fails
- Hot-plug power supplies and cooling fans
- Hot-plug replacement of PCI expansion cards
- Hot-plug replacement of hard-disk drives (if a RAID controller is installed)

Standard Software

The following software is included in your PowerEdge system:

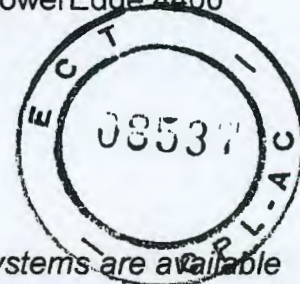
- Video drivers for displaying many popular application programs in high-resolution modes. For more information on these drivers, see your online *User's Guide*.
- SCSI device drivers that allow the operating system to communicate with devices attached to the integrated SCSI subsystem. For more information on these drivers, see your online *User's Guide*.
- The System Setup program for quickly viewing and changing the system configuration information for your computer.
- The Resource Configuration Utility, which allows you to configure installed expansion cards through software rather than on the hardware. For more information, see your online *User's Guide*.
- Enhanced security features available through either the System Setup program or the Resource Configuration Utility, including a user password and a supervisor password.
- Diagnostics for evaluating your computer's components and devices. For information on using the system diagnostics, see your online *User's Guide* or your online *Installation and Troubleshooting Guide*.

Supported Operating Systems



Dell supports the following network operating systems for use on PowerEdge 4400 systems:

- Windows NT Server 4.0, Service Pack 5 or later
- NetWare 4.2 and 5.0

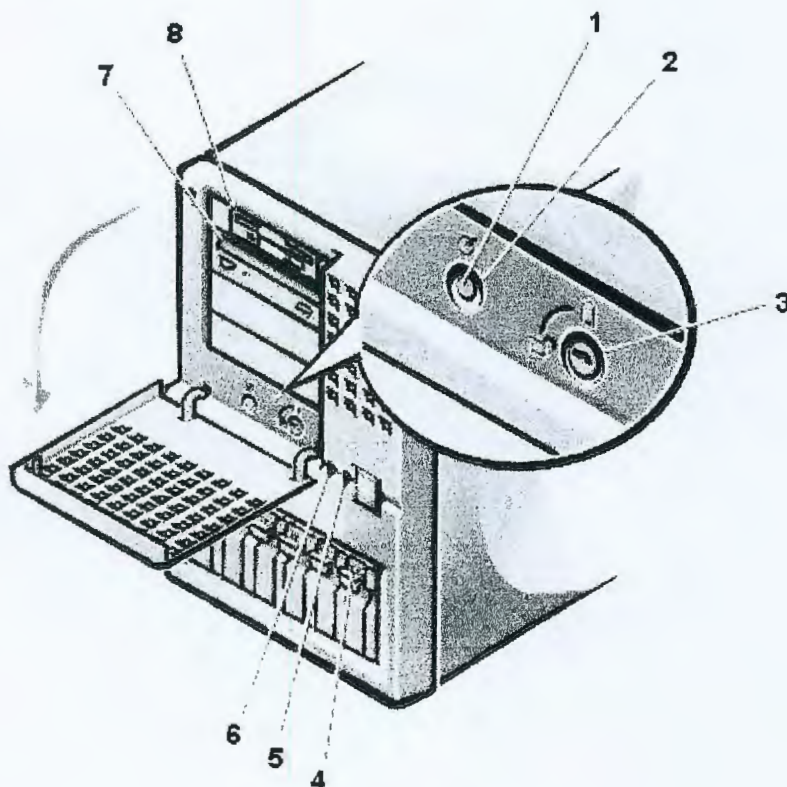


 **NOTE:** Installation service and support for other operating systems are available through Dell Plus. For more information, see "Getting Help" in your Installation and Troubleshooting Guide.

Front-Panel Indicators

The following controls and indicators are behind the external drive door on the computer's front panel (see Figure 1).

Figure 1. Front-Panel Indicators



- 1 Power indicator
- 2 Power button
- 3 Hard-disk drive keylock
- 4 Drive access indicators
- 5 Fan/thermal status indicator
- 6 Power supply status indicator
- 7 CD-ROM drive
- 8 Diskette drive

- The power button on the front panel controls the AC power input to the system's power supply.
- The green power indicator in the center of the power button lights up when the power supply is turned on and the system is receiving DC power.

The following indicators are on the system's front panel.

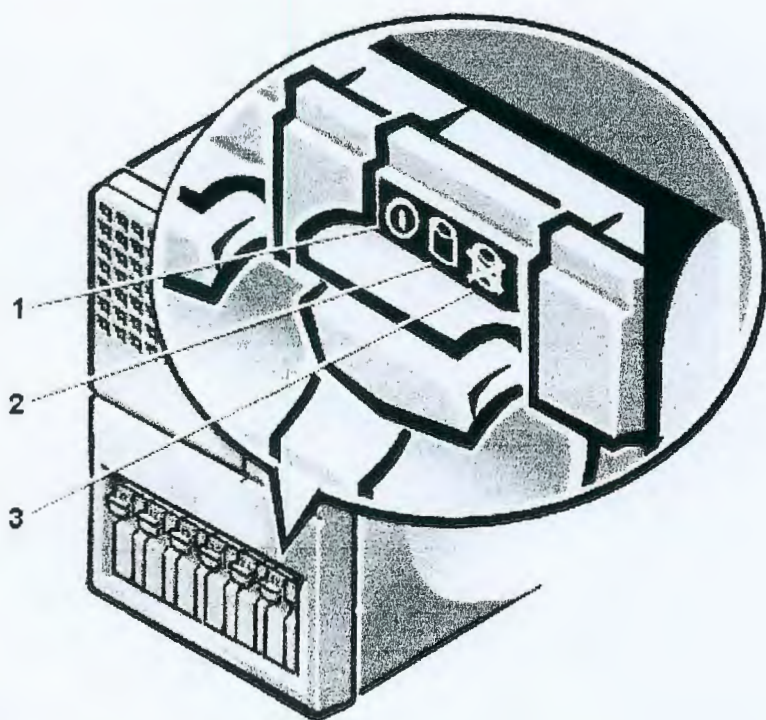
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- The green fan/temperature status indicator blinks amber when a fan failure is detected or temperature is out of bounds.
- The green power supply status indicator blinks amber if a fault is detected with any of the power supplies or any system voltages.

The three indicator lights on each of the SCSI hard-disk drive carriers provide the following information:

- The green hard-disk drive online indicator lights up when the hard-disk drive is receiving power.
- The green hard-disk drive activity indicator lights up when data is being transferred to or from the hard-disk drive.
- The amber hard-disk drive failure indicator blinks if a hard-disk drive failure is detected.

Figure 2. Hard-Disk Drive Indicators



- 1 Hard-disk drive online indicator
- 2 Hard-disk drive activity indicator
- 3 Hard-disk drive failure indicator

Back-Panel Indicators

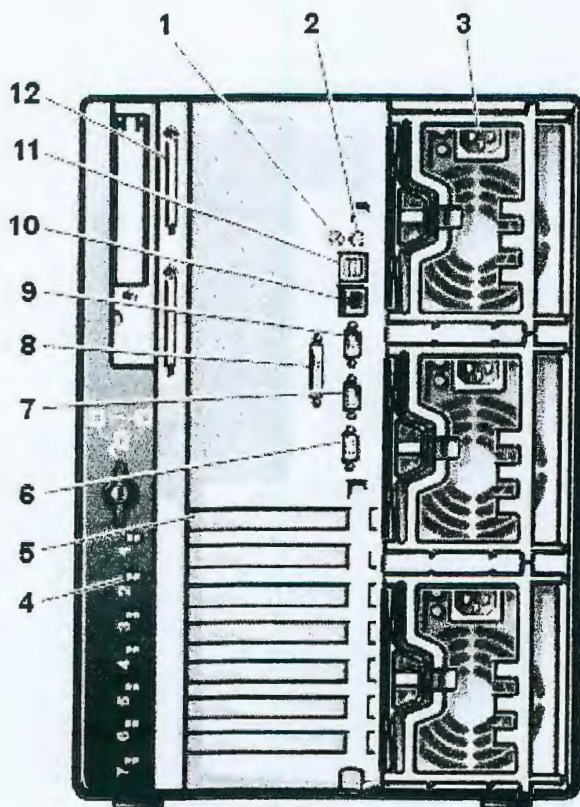
Figure 3 shows the computer's back-panel status indicators, connectors, and power supplies.

Figure 3. Back-Panel Indicators, Connectors, and Power Supplies

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- 1 Mouse connector
- 2 Keyboard connector
- 3 Power supplies (Two are standard; a third is optional. Top supply is the first supply)
- 4 Hot-plug PCI indicators (4) (pushbutton switches are internally accessible)
- 5 Expansion slots (7)
- 6 Video connector
- 7 Serial port 2
- 8 Parallel port connector
- 9 Serial port 1
- 10 NIC connector
- 11 USB connectors (2)
- 12 Optional external SCSI connectors (2)

Preventing Unauthorized Access Inside the Computer

A keylock behind the door on the front bezel prevents unauthorized access to the hot-pluggable hard-disk drives. A second lock on the back of the unit prevents the top cover from being removed.

PowerEdge 4400 systems also include a system intrusion switch that signals appropriate server management software if the top cover is opened.

Technical Specifications

Table 1, Technical Specifications, provides the technical specifications for PowerEdge 4400 systems.

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Table 1. Technical Specifications

Microprocessor

Microprocessor types	dual Intel Pentium III Xeon microprocessors with a minimum internal operating frequency of 600 MHz
Front side bus	133 MHz
Internal cache	internal to microprocessor
Math coprocessor	internal to microprocessor

Expansion Bus

Bus type	PCI bus
Expansion slots	seven full-length dedicated PCI (in addition, PCI7 for use with optional DRAC 2 card only)

Memory

DIMM sockets	72-bit wide 168-pin sockets
DIMM capacities	64-, 128-, or 256-MB registered SDRAM DIMMs; must be rated for 133-MHz operation and installed in equal pairs
Standard RAM (minimum)	128 MB
Maximum RAM	2 GB

Drives

Diskette drive	3.5-inch, 1.44-MB diskette drive included with standard system
Tape drive	20 GB and higher
SCSI hard-disk drives	formatted capacities ranging from 9 GB to 36 GB
SCSI devices	an internal SCSI backplane provides a physical connection, hot-plug capability with RAID controller, termination, and automatic configuration for the internal SCSI hard-disk drives; an integrated Adaptec Ultra3 AIC-7899 SCSI host adapter supporting up to ten SCSI hard-disk drives depending on the installed backplane
	integrated Adaptec AIC-7880 Ultra/Wide SCSI host adapter supporting up to three SCSI devices in externally accessible front bays implemented as Ultra/Narrow
CD-ROM drive	SCSI CD-ROM drive included with standard system

Ports**Externally accessible:**

Serial	two 9-pin connectors
Parallel (bidirectional)	25-pin connector
USB	two 4-pin connectors
RJ45	RJ45 connector for connection to internal embedded NIC (Intel 82559 10/100 Ethernet controller)
Video	15-pin connector
PS/2-style keyboard	6-pin mini-DIN
PS/2-compatible mouse	6-pin mini-DIN

**Internally accessible:**

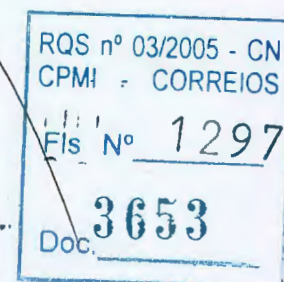
Ultra3 SCSI controller	two 68-pin connectors for internal or external SCSI drives
Ultra/Narrow SCSI controller	50-pin connector for internal CD-ROM or optional tape backup units
Diskette drive	34-pin connector for internal 3.5-inch diskette drive
Embedded 10/100 Ethernet controller	connected to external RJ45 connector
Embedded PowerEdge RAID controller (optional)	integrated Intel i960® RM; provides PCI-to-PCI bridge; two integrated SCSI channels reside on the secondary PCI bus; optional software and unbuffered, 64-MB or 128-MB SDRAM DIMM available; supports RAID 0, 1, 5, and 10

Video

Video type	ATI RAGE IIC PCI video controller; VGA connector
Video memory (standard)	4 MB SDRAM

Power**AC power supply:**

Wattage	320 W per supply
Voltage	100 to 240 V at 60 Hz/230 V at 50 Hz
System battery	CR2032 3-V lithium coin cell



Physical**Rack Mount (7U):**

Height	30.5 cm (12 inches)
Width	44 cm (17.5 inches)
Depth	71.1 cm (28 inches)
Weight	52.2 kg (115 lb)

Tower Chassis:

Height	44 cm (17.5 inches)
Width	30.5 cm (12 inches)
Depth	71.1 cm (28 inches)
Weight	52.2 kg (115 lb)

Environmental**Temperature:**

Operating	10° to 35°C (50° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)

Relative humidity:

Operating	8% to 80% (noncondensing) with a humidity gradation of 10% per hour
Storage	5% to 95% (noncondensing)

Maximum vibration:

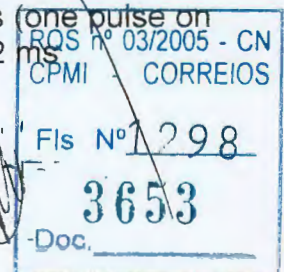
Operating	0.25 G (half-sine wave) at a sweep of 3 to 200 Hz for 15 minutes
Storage	0.5 G at 3 to 200 Hz for 15 minutes

Maximum shock:

Operating	six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 41 G for up to 2 ms
Storage (non-operational)	six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for 2 ms

Altitude:

Operating	-16 to 3048 m (-50 to 10,000 ft)
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Storage

-16 to 10,600 m (-50 to 35,000 ft)

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Checking the Basics: Dell™ PowerEdge™ 4400 Systems Service Manual



- [Overview](#)
- [Backing Up Files](#)
- [Basic Checks](#)
- [Checking Connections and Switches](#)
- [Look and Listen](#)
- [The System Setup Program](#)
- [The Resource Configuration Utility](#)

Overview

If your system is not working as expected, begin troubleshooting using the procedures in this section. This topic guides you through some initial checks and procedures that can solve basic computer problems. It can also direct you to the appropriate section for detailed troubleshooting information and procedures to solve more complex problems.

 **NOTE:** When you see the question "Is the problem resolved?" in a troubleshooting procedure, perform the operation that caused the problem.

Backing Up Files

If the system is behaving erratically, back up the files on the hard-disk drives immediately. See the documentation that came with the operating system for instructions on how to back up the files.

Basic Checks

The following procedure leads you through the checks necessary to solve some basic computer problems:

1. Was an alert message issued by the Dell OpenManage™ Hardware Instrumentation Package (HIP) server management application program?

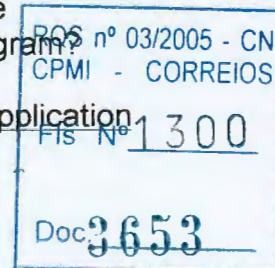
Yes. Go to "Alert Log Messages From the Dell OpenManage HIP Application Program" in "Codes and Error Messages."

No. Go to step 2.

2. Is the computer wet or damaged?

Yes. Go to "Checking Inside the Computer" in your *Installation and Troubleshooting Guide*.

No. Go to step 3.



3. Perform the steps in "Checking Connections and Switches."

Is the problem resolved?

Yes. The power to the computer system was faulty, or the connections to the computer system were loose. You have fixed the problem.

No. Go to step 4.

4. Follow the procedures described in "Look and Listen."

Did the system complete the boot routine?

Yes. Go to step 5.

No. A serious malfunction may have occurred. Go to "Getting Help" in your *Installation and Troubleshooting Guide*.

5. Did you receive a system message or beep code?

Yes. Go to "System Messages."

No. Go to step 6.

6. Verify the settings in the "System Setup program."

Is the problem resolved?

Yes. The system configuration information was incorrect. You have fixed the problem.

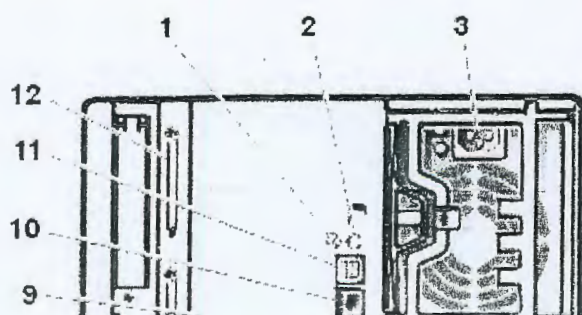
No. Go to step 7.

7. Run the Dell Diagnostics.

Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the computer, monitor, or other peripherals (such as a printer, keyboard, mouse, or other external equipment). A quick check of all the switches, controls, and cable connections can easily solve these problems. Figure 1 shows the back-panel connections on the computer. Figure 2 shows the front-panel controls and indicators on the computer.

Figure 1. Back-Panel Features



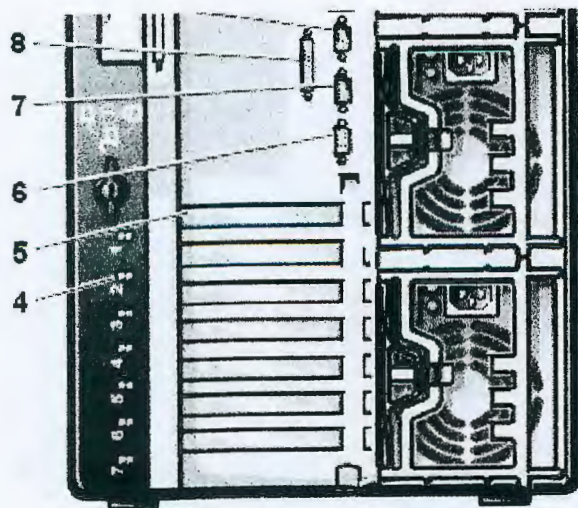
- 1 Mouse connector
- 2 Keyboard connector
- 3 Power supplies (two are standard;

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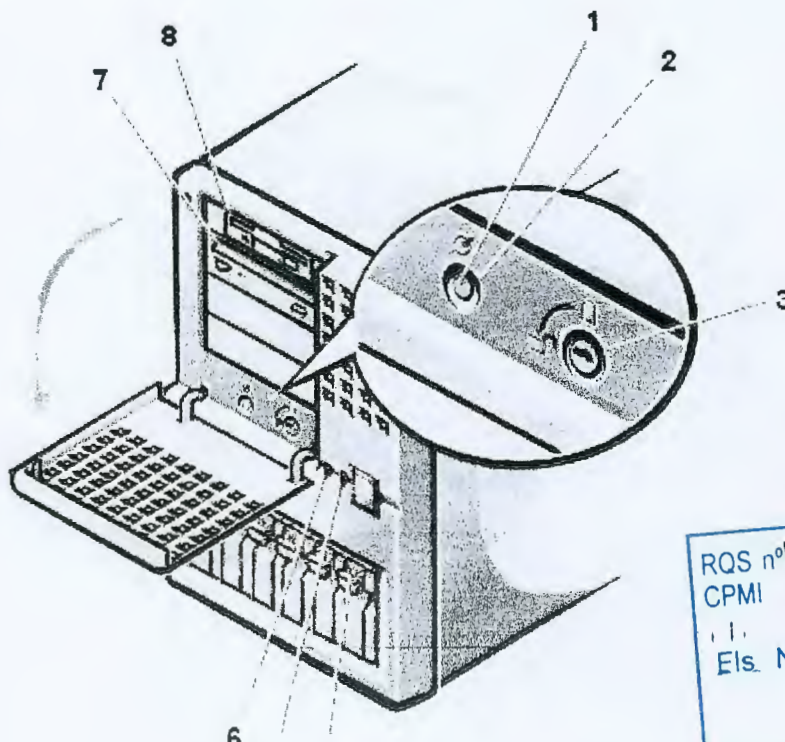
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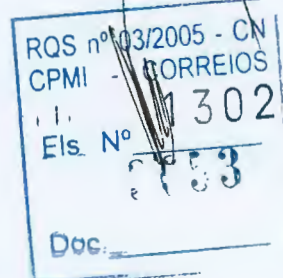


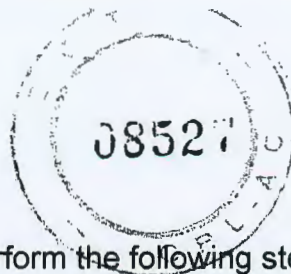
- a third is optional. Top supply is the first supply)
- 4 Hot-plug PCI indicators (4)
- 5 Expansion slots (7)
- 6 Video connector
- 7 Serial port 2
- 8 Parallel port connector
- 9 Serial port 1
- 10 NIC connector
- 11 USB connectors (2)
- 12 External SCSI connectors (2 [optional])

Figure 2. Front-Panel Features



- 1 Power indicator
- 2 Power button
- 3 Hard-disk drive keylock
- 4 Drive access indicator
- 5 Fan/thermal status indicator
- 6 Power supply status indicator
- 7 CD-ROM drive
- 8 Diskette drive





To check all the connections and switches, perform the following steps:

1. Turn off the system, including any attached peripherals (such as the monitor, printer, external drives, scanners, and plotters). Disconnect all the AC power cables from their electrical outlets.
2. If the computer is connected to a power strip (or power distribution unit), turn the power strip off and then on again.

Is the power strip receiving power?

Yes. Go to step 5.

No. Go to step 3.

3. Plug the power strip into another electrical outlet.

Is the system receiving power?

Yes. The original electrical outlet probably does not function. Use a different electrical outlet.

No. Go to step 4.

4. Plug a system that you know works into the electrical outlet.

Does the system receive power?

Yes. The power strip is probably not functioning properly. Use another power strip.

No. Go to step 5.

5. Reconnect the system to the electrical outlet or power strip.

Make sure that all connections fit tightly together.

6. Turn on the system.

Is the problem resolved?

Yes. The connections were loose. You have fixed the problem.

No. Go to step 7.

7. Is the monitor operating properly?

Yes. Go to step 8.

No. Replace the monitor.

8. Is the keyboard operating properly?

Yes. Go to step 9.

No. Replace the keyboard.

9. Are the mouse and printer operating properly?



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Yes. Continue with "Look and Listen" found next in this section.
No. Replace the mouse and/or printer.



Look and Listen

Looking at and listening to the system is important in determining the source of a problem. Look and listen for the indications described in Table 1.

Table 1. Boot Routine Indications

Look/Listen for:	Action
An error message	See <u>Codes and Error Messages</u> .
Alert messages from the Dell OpenManage HIP software	The server management software has detected a problem inside the computer. See <u>Alert Log Messages From the Dell OpenManage HIP Application Program</u> in Messages and Codes.
The monitor's power indicator	Most monitors have a power indicator (usually on the front bezel). If the monitor's power indicator does not come on, see your <i>Installation and Troubleshooting Guide</i> .
The keyboard indicators	Most keyboards have one or more indicators (usually in the upper-right corner). Press the <Num Lock> key, the <Caps Lock> key, or the <Scroll Lock> key to toggle their respective keyboard indicators on and off. If the indicators do not light up, see your <i>Installation and Troubleshooting Guide</i> .
The diskette-drive access indicator	The diskette-drive access indicator should flash on and off when you access data on the diskette drive. If the diskette-drive access indicator does not light up, see your <i>Installation and Troubleshooting Guide</i> .
The hard-disk drive activity indicators	The hard-disk drive activity indicators should quickly flash on and off when you access data on the hard-disk drives. On a system running the Microsoft® Windows NT® operating system, you can test the drive by opening Windows Explorer and clicking the icon for drive C. If the hard-disk drive access indicator does not come on, see "Troubleshooting SCSI Hard-Disk Drives" in your <i>Installation and Troubleshooting Guide</i> .
A series of beeps	See <u>System Beep Codes</u> in Codes and Error Messages.
An unfamiliar constant scraping or grinding sound when you access a drive	The sound could be caused by a hard-disk drive malfunction. See "Troubleshooting SCSI Hard-Disk Drives" in your <i>Installation and Troubleshooting Guide</i> to locate the faulty drive.

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The System Setup Program

You can easily correct certain system problems by verifying the correct settings in the System Setup program. When you boot the system, the system checks the system

configuration information and compares it with the current hardware configuration. If the system hardware configuration does not match the information recorded by the System Setup program, an error message may appear on the screen.

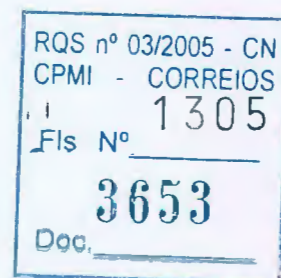
This problem can happen if you changed the system's hardware configuration and forgot to run the System Setup program. To correct this problem, enter the System Setup program, correct the corresponding System Setup setting, and reboot the system. See "Using the System Setup Program" in the *User's Guide* for detailed instructions on using the System Setup program.

The Resource Configuration Utility

If you are experiencing problems with the system, you may have a conflict between the information stored by the System Setup program and the Resource Configuration Utility. Although the Resource Configuration Utility can read changes from the System Setup program, changes are not recorded into configuration memory until you run the Resource Configuration Utility and save the new information. See "Using the Resource Configuration Utility" in the *User's Guide* for detailed instructions on using the Resource Configuration Utility and saving new information.

If after using the Resource Configuration Utility you have not resolved the problem, run the Dell Diagnostics.

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Codes and Error Messages: Dell™ PowerEdge™ 4400 Systems Service Manual



- | | |
|-------------------------------------|---|
| ● Overview | ● Diagnostics Messages |
| ● System Messages | ● Alert Log Messages From the Dell OpenManage HIP Application |
| ● System Beep Codes | ● SCSI Hard-Disk Drive Indicator Codes |
| ● Warning Messages | ● Hot-Plug Expansion Card Error Codes |

Overview

Applications, operating systems, and the computer itself are capable of identifying problems and alerting you to them. When a problem occurs, a message may appear on the monitor screen or a beep code may sound during the boot process before the operating system loads.

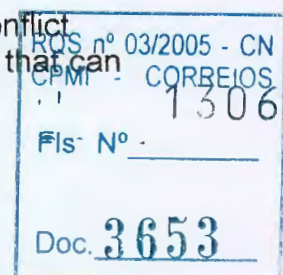
Several different types of messages can indicate when the system is not functioning properly:

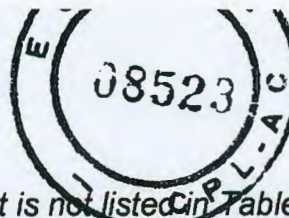
- System messages
- System beep codes
- Warning messages
- Diagnostics messages
- Alert log messages
- Small computer system interface (SCSI) hard-disk drive indicator codes

This topic describes each type of message and code. It also lists the possible causes and actions you can take to resolve any problems indicated by a message.

System Messages

System messages alert you to a possible operating system problem or to a conflict between the software and hardware. [Table 1](#) lists the system error messages that can occur and the probable cause for each message.



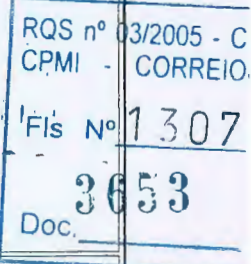


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NOTE: If you receive a system message that is not listed in Table 1, check the documentation for the application program that is running when the message appears or check the operating system documentation for an explanation of the message and recommended action.

Table 1. System Messages

Message	Cause	Corrective Action
Address mark not found	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board.
Alert! Unsupported memory in DIMM slot(s) n	Unsupported DIMM(s) installed in specified slot (s)	Replace one or more DIMMs so that all DIMMs are the correct type. Make sure that the RAID DIMM is not in a system memory slot, and that a system memory DIMM is not in the RAID DIMM slot.
Amount of available memory limited to 256 MB!	The operating system install mode field in System Setup is enabled	Disable the operating system install mode field in System Setup. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions.
Attachment failed to respond	Diskette drive or hard-disk drive controller cannot send data to associated drive	Replace the drive's interface cable.
Auxiliary device failure	Mouse cable connector loose or improperly connected, defective mouse	Check the mouse cable connection. If the problem persists, replace the mouse.
Bad error-correction code(ECC) on disk read Controller has failed	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board.
CPUs with different level 2 cache sizes detected	Two different types of microprocessors are installed.	Install a correct version of the microprocessor so both microprocessors have the same level 2 cache size.
Data error	Faulty diskette, diskette drive, or hard-disk drive	Replace the diskette, diskette drive, or hard-disk drive.
Decreasing available memory	One or more DIMMs improperly seated or faulty	Remove and reseat the DIMMs. If the problem persists, replace the DIMMs.
Diskette drive	Incorrect configuration	Replace the diskette. Run the System



0 seek failure Diskette drive 1 seek failure	settings in System Setup program, loose diskette/tape drive interface cable, or loose power cable	Setup program to correct the diskette drive type. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. Check the diskette/tape drive interface cable and power cable connections to the drive.
Diskette read failure	Faulty diskette, faulty or improperly connected diskette/tape drive interface cable, or loose power cable	Check the diskette/tape drive interface cable and power cable connections to the drive. See " <u>Externally-Accessible Drives.</u> " Replace the diskette drive interface cable.
Diskette subsystem reset failed	Faulty diskette/tape drive controller (defective system board)	Replace the system board.
Diskette write protected	Diskette write-protect feature activated	Move the write-protect tab on the diskette.
Drive not ready	Diskette missing from or improperly inserted in diskette drive	Reinsert or replace the diskette.
Embedded server management error Embedded server management is not present	Embedded server management memory may be temporarily corrupted	Shut down the system to clear the memory, and then restart the system. 
Gate A20 failure	Faulty keyboard controller (defective system board)	Replace the system board.
General failure	Operating system corrupted or not installed properly	Reinstall the operating system.
Hard disk controller failure	Incorrect configuration settings in System Setup program, improperly connected hard-disk drive, faulty hard-disk drive controller	Check the hard-disk drive configuration settings in the System Setup program. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the drive.

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	subsystem (defective system board)	cable and power cable connections to the backplane board. See " <u>SCSI Hard-Disk Drive Replacement</u> ."
Invalid configuration information - please run SETUP program	Incorrect configuration settings in System Setup program, or faulty battery	Remove the plug from the CLEAR NVRAM jumper. See " <u>Jumpers, Switches, and Connectors</u> " for instructions. Check the System Setup configuration settings. See " <u>Using the System Setup Program</u> " in the <i>User's Guide</i> for instructions. Replace the battery. See " <u>Installing System Board Options</u> ."
I/O parity interrupt at address	Expansion card improperly installed or faulty	Reinstall the expansion cards (see " <u>Installing System Board Options</u> "). If the problem persists, replace the expansion card.
Keyboard controller failure	Defective keyboard/mouse controller (defective system board)	Replace the system board.
Keyboard data line failure Keyboard failure Keyboard stuck key failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board. 
Memory address line failure at address, read value expecting value Memory double word logic failure at address, read value expecting value Memory odd/even logic failure at address, read value expecting value	Faulty or improperly seated DIMMs or defective system board	Remove and reseat the DIMMs. If the problem persists, replace the DIMMs. 

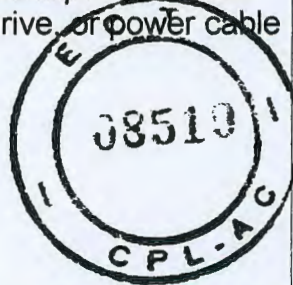
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Memory write/read failure at address, read value expecting value		
Memory allocation error	Faulty application	Restart the application.
Memory parity interrupt at address	Improperly seated or faulty DIMMs	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs.
Memory tests terminated by keystroke	POST memory test terminated by pressing the <spacebar>	No action is required.
No boot device available	Faulty diskette, diskette/tape drive subsystem, hard-disk drive, hard-disk drive subsystem, or no boot disk in drive A	Replace the diskette or hard-disk drive. If the problem persists, replace the system board.
No boot sector on hard-disk drive	Incorrect configuration settings in System Setup program, or no operating system on hard-disk drive	Check the hard-disk drive configuration settings in the System Setup program. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions.
No timer tick interrupt	Defective system board	Replace the system board.
Non-system disk or disk error	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem	Replace the diskette or hard-disk drive. If the problem persists, replace the system board.
Not a boot diskette	No operating system on diskette	Use a bootable diskette.
Processor or terminator card not installed!	No microprocessor or terminator card installed in secondary microprocessor connector	Make sure that you have the latest BIOS update from Dell. Install a terminator card or microprocessor in the secondary microprocessor connector. See "Installing System Board Options" for instructions.
Processors with different speeds detected. System halted!	Microprocessors with different internal operating speeds are installed.	Install a correct version of the microprocessor so all microprocessors have the same internal operating speed.
Read fault	Faulty diskette,	Replace the diskette or hard-disk

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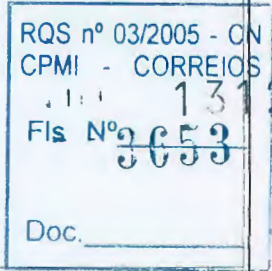
Requested sector not found	diskette/tape drive subsystem, or hard-disk drive subsystem (defective system board)	drive. If the problem persists, replace the system board.
Reset failed	Improperly connected diskette/tape drive, hard-disk drive, or power cable	Check the diskette/tape drive interface cable and power cable connections to the diskette drive. See "Installing Drives in the External Bays." Replace the diskette/tape drive interface cable. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. See "Installing Hard-Disk Drives."
ROM bad checksum = address	Expansion card improperly installed or faulty	Reinstall the expansion cards (see <u>Installing System Board Options</u>). If the problem persists, replace the expansion card.
Sector not found	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek error	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek operation failed	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Shutdown failure	Defective system board.	Replace the system board.
Time-of-day clock stopped	Defective battery or faulty chip (defective system board)	Replace the system battery. If the problem persists, replace the system board.
Time-of-day not set - please run SETUP program	Incorrect Time or Date settings or defective system battery	Check the Time and Date settings. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions. If the problem persists, replace the system battery. If the problem persists, replace the I/O board.
Timer chip counter 2 failed	Defective system board	Replace the system board.
Unexpected interrupt in protected mode	Improperly seated DIMMs or faulty keyboard/mouse controller chip (defective system board)	Remove and reseat the DIMMs. If the problem persists, replace the DIMMs. If the problem still persists, replace the system board.
Unsupported CPU	Two different types of microprocessors are	Install a correct version of the microprocessor so both



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combination. System halted!	installed.	microprocessors are the same type.
Unsupported CPU detected in SLOT n	Microprocessor not supported by system	Install a correct version of the <u>microprocessor</u> in the specified microprocessor connector.
Unsupported CPU speed in CMOS	Microprocessor not supported by BIOS	Upgrade the BIOS. See "Using the System Setup Program" in the <i>User's Guide</i> for instructions.
Unsupported DIMM detected in the RAID DIMM slot!	RAID DIMM not supported by system	Install a correct version of the <u>RAID DIMM</u> . Make sure that the RAID DIMM is not in a system memory slot, and that a system memory DIMM is not in the RAID DIMM slot.
Unsupported RAID key detected!	RAID hardware key not supported by system	Install the <u>RAID hardware key</u> for your specific system.
Utility partition not available.	<F10> key was pressed during POST, but no utility partition exists on the boot hard-disk drive	Create a utility partition on the boot hard-disk drive. See "Using the Dell OpenManage Server Assistant CD" in your <i>User's Guide</i> .
Warning! Detected missing RAID hardware for the embedded RAID channel. Data loss will occur! Press <Y> to switch mode to SCSI, press any other key to disable both channels.	Missing RAID DIMM or RAID hardware key	Install the correct version of the <u>RAID DIMM</u> and <u>RAID hardware key</u> for your specific system. 
Warning! Detected mode switch from RAID to SCSI on channel B of embedded RAID subsystem. Data loss will occur! Press Y to confirm the change; press any other key to cancel.	Type of controller has changed since previous system boot.	Back up information on the drives before changing the type of controller used with the hard-disk drives.  
Warning! Detected mode	Type of controller has changed since previous	Back up information on the drives before changing the type of controller

switch from SCSI to RAID on channel B of embedded RAID subsystem. Data loss will occur! Press Y to confirm the change; press any other key to cancel.	system boot.	used with the hard-disk drives.
Warning: Embedded RAID firmware is not present!	The integrated RAID hardware is not present or is corrupted	Replace the system board.
Write fault Write fault on selected drive	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.



System Beep Codes

When an error that cannot be reported on the monitor occurs during a boot routine, the computer may emit a series of beeps that identify the problem. The beep code is a pattern of sounds; for example, one beep followed by a second beep and then a burst of three beeps (code 1-1-3) means that the computer was unable to read the data in nonvolatile random-access memory (NVRAM). This information is valuable to the Dell technical support representative if you need to call for technical assistance.

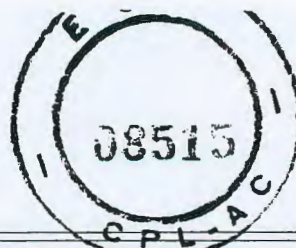
When a beep code is emitted, look it up in [Table 2](#). If you are unable to resolve the problem by looking up the meaning of the beep code, use the Dell Diagnostics to identify a more serious cause (see your *Installation and Troubleshooting Guide* for complete information).

Table 2. System Beep Codes

Code	Cause	Corrective Action
1-1-3	CMOS write/read failure	Replace the system board.
1-1-4	BIOS checksum failure	This fatal error usually requires that you replace the BIOS firmware.
1-2-1	Programmable interval-timer failure	Replace the system board.
1-2-2	DMA initialization failure	
1-2-3	DMA page register write/read failure	
1-3-1	Main-memory refresh	Remove and reseat the DIMMs. If the problem

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	verification failure	persists, replace the DIMMs. If the problem still persists, replace the system board.
1-3-2	No memory installed	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. If the problem still persists, replace the system board.
1-3-3	Chip or data line failure in the first 64 KB of main memory	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. If the problem still persists, replace the system board.
1-3-4	Odd/even logic failure in the first 64 KB of main memory	
1-4-1	Address line failure in the first 64 KB of main memory	
1-4-2	Parity failure in the first 64 KB of main memory	
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	
3-1-1	Slave DMA-register failure	Replace the system board.
3-1-2	Master DMA-register failure	
3-1-3	Master interrupt-mask register failure	
3-1-4	Slave interrupt-mask register failure	
3-2-4	Keyboard-controller test failure	Check the keyboard cable and connector for proper connection. If the problem persists, run the keyboard test in the Dell Diagnostics to determine whether the keyboard or keyboard controller is faulty. If the keyboard controller is faulty, replace the system board.
3-3-1	CMOS failure	Run the system board test in the Dell Diagnostics to isolate the problem.
3-3-2	System configuration check failure	Replace the system board.
3-3-3	Keyboard controller not detected	Replace the system board.
3-3-4	Screen initialization failure	Run the video test in the Dell Diagnostics. 
3-4-1	Screen memory test failure	
3-4-2	Screen-retrace test failure	



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3-4-3	Search for video ROM failure	
4-2-1	No timer tick	Replace the system board.
4-2-2	Shutdown failure	
4-2-3	Gate A20 failure	Replace the system board.
4-2-4	Unexpected interrupt in protected mode	Ensure that all expansion cards are properly seated, and then reboot the system.
4-3-1	Improperly seated or faulty DIMMs	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs.
4-3-3	Defective system board	Replace the system board.
4-3-4	Time-of-day clock stopped	Replace the battery. If the problem persists, replace the system board.
4-4-1	Super I/O chip failure (defective system board)	Replace the system board.
4-4-2	Parallel-port test failure (defective system board)	Replace the system board.
4-4-3	Math coprocessor failure (defective microprocessor)	Remove and reseal the microprocessor(s). If the problem still persists, replace each microprocessor until you find the defective microprocessor.
4-4-4	Cache test failure (defective microprocessor)	Remove and reseal the microprocessor(s). If the problem still persists, replace each microprocessor until you find the defective microprocessor.

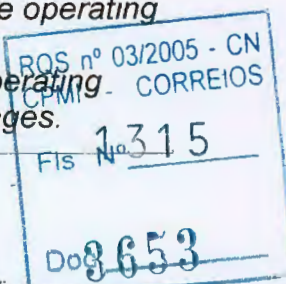
Warning Messages

A warning message alerts you to a possible problem and asks you to take corrective action before the system continues a task. For example, before you format a diskette, a message may warn you that you may lose all data on the diskette, as a way to protect against inadvertently erasing or writing over the data. These warning messages usually interrupt the procedure and require you to respond by typing **y** (yes) or **n** (no).

✓ **NOTE:** Warning messages are generated by either the application or the operating system. See "Finding Software Solutions" in your online Installation and Troubleshooting Guide and the documentation that accompanied the operating system and application program for more information on warning messages.

Diagnostics Messages

When you run a test group or subtest in the Dell Diagnostics, an error message may result. These particular error messages are not covered in this section. Record the message on a copy of the Diagnostics Checklist in your online *Installation and*



Troubleshooting Guide and then follow the instructions in that section for obtaining technical assistance.



Alert Log Messages From the Dell OpenManage HIP Application

The Dell Hardware Instrumentation Package (HIP) server management application generates alert messages that appear in the Simple Network Management Protocol (SNMP) trap log file. To see the trap log, or for more information about the **Alert Log** window and options, see the Dell HIP online help.

Alert log messages consist of information, status, warning, and failure messages for drive, temperature, fan, and power conditions. They can assist you with identifying a problem and may provide you with information to help you resolve the problem.

SCSI Hard-Disk Drive Indicator Codes

If a redundant array of independent disks (RAID) controller such as the integrated PERC 3/Di or PERC 2 controller is activated or installed in the system, three light-emitting diode (LED) indicators on each of the hard-disk drive carriers provide information on the status of the SCSI hard-disk drives (see Figure 1). The SCSI backplane firmware controls the drive online and drive failure indicators.

Figure 1. Hard-Disk Drive Indicators

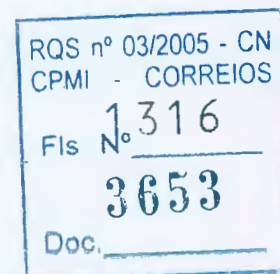
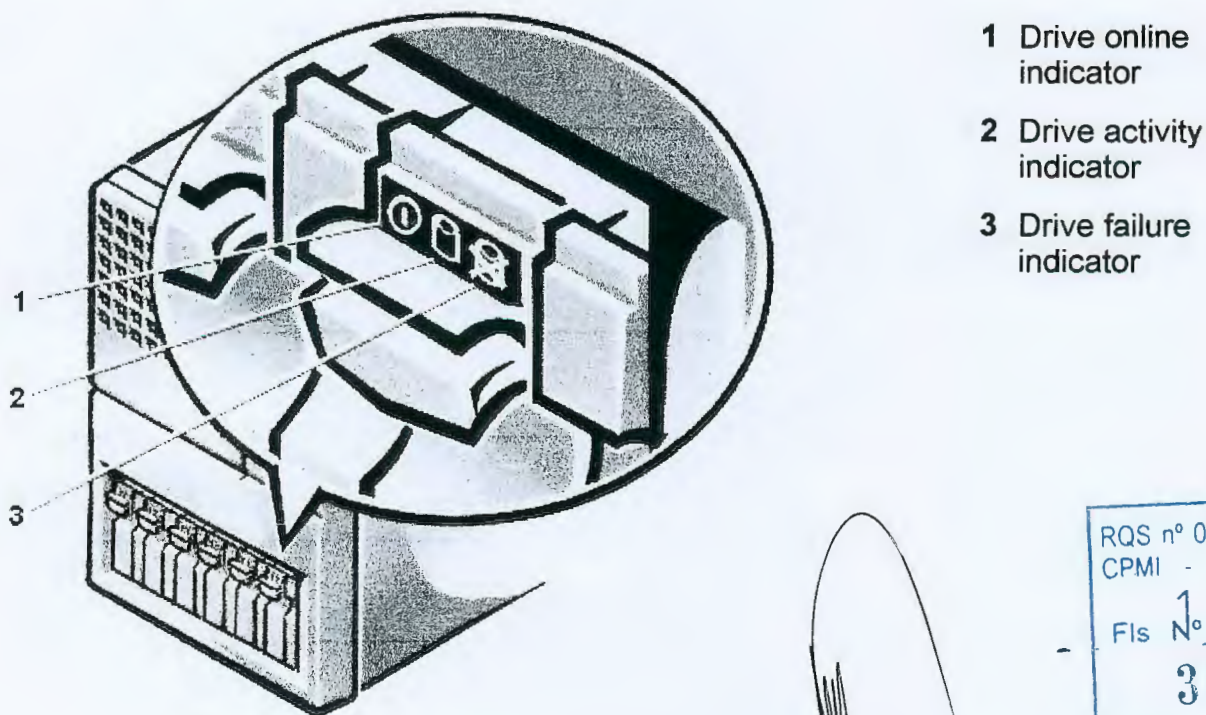


Table 3 lists the drive indicator patterns established by the SCSI backplane firmware. Different patterns are displayed as drive events occur in the system. For example, in the event of a hard-disk drive failure, the "drive failed" pattern appears. After the drive is selected for removal, the "drive being prepared for removal" pattern appears, followed by the "drive ready for insertion or removal" pattern. After the replacement drive is installed,

the "drive being prepared for operation" pattern appears, followed by the "drive online" pattern.

 **NOTE:** If you do not have a RAID controller installed, you will see only the "drive online" and "drive bay empty" indicator patterns.

Table 3. SCSI Hard-Disk Drive Indicator Patterns

Condition	Indicator Code
Identify drive	All three drive status indicators blink simultaneously.
Drive being prepared for removal	The three drive status indicators flash sequentially.
Drive ready for insertion or removal	All three drive status indicators are off.
Drive being prepared for operation	The drive online indicator is on. The drive activity light may flash briefly.
Drive bay empty	All three drive status indicators are off.
Drive predicted failure	The drive online indicator is on. The drive failure indicator blinks on briefly each second.
Drive failed	The drive online indicator turns off. The drive failure indicator blinks off briefly each second.
Drive rebuilding	The drive online indicator blinks rapidly.
Drive online	The drive online indicator is on.

Hot-Plug Expansion Card Error Codes

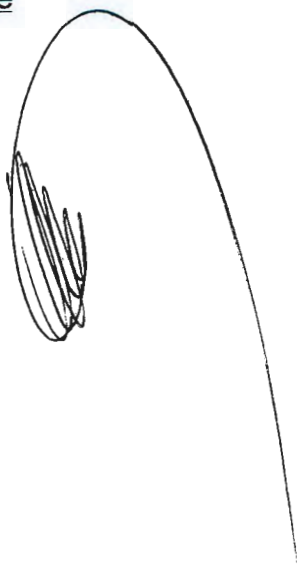
Connectors PCI1 through PCI4 support hot-plug replacement of PCI expansion cards. Pairs of light-emitting diodes (LEDs) adjacent to each expansion slot display the expansion card connectors' current status. Table 4 lists the various codes for the hot-plug LED indicators.

Table 4. Hot-Plug Indicator Patterns

Green LED	Amber LED	Safe to Remove Expansion Card?	Description
Off	Off	Yes	Connector power is off
On	Off	No	Connector power is on
Flash	Off	No	Connector is being powered up or powered down
Off	Flash slow	Yes	Power-up fault
On	Flash fast	No	Identifying a slot by user application or device driver

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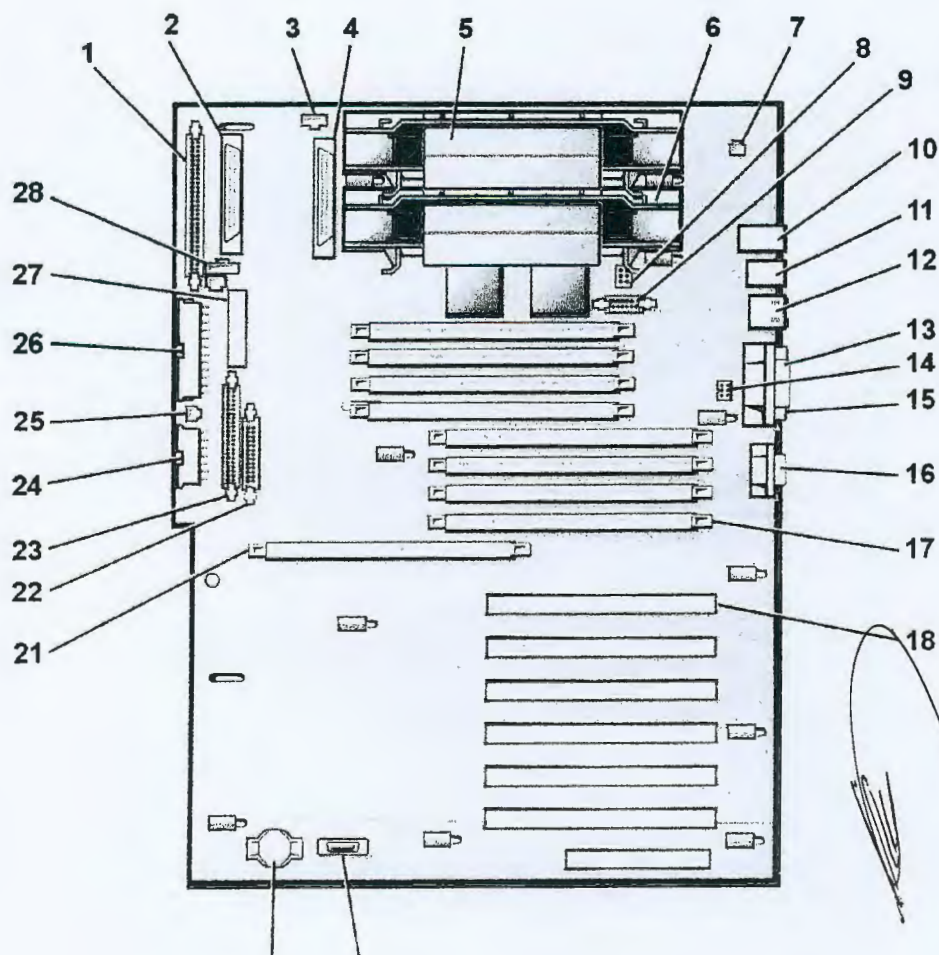


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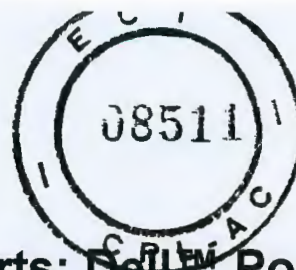
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- 4 Ultra3 SCSI connector (SCSI3)
- 5 Primary microprocess (PROC_1)
- 6 Secondary microprocess (PROC_2)
- 7 Chassis intrusion switch connector (INTRUS1)
- 8 Configuration jumpers
- 9 Integrated RAID hardware key connector (RAID_KEY)
- 10 Mouse (top) and keyboard (bottom) connectors
- 11 USB connectors (2)
- 12 Network interface connector (NIC)
- 13 Parallel port connector (PARALLEL)
- 14 Hot-plug PCI indicator board connector (PCI_LED)
- 15 Serial port connectors (2)
- 16 Video connector (VGA)
- 17 DIMM socket (DIMM_A, DIMM_H)
- 18 PCI connectors (PCI1 [top])



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Removing and Replacing Parts: Dell PowerEdge™ 4400 Systems Service Manual

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| ● Safety First—For You and Your Computer | ● Preparing SCSI Hard-Disk Drives for Installation |
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Overview

This section provides procedures for removing and replacing parts inside the computer. Before you start any of the procedures in this section, perform the following steps:

- Perform the troubleshooting tests outlined in "[Checking Connections and Switches.](#)"
- Perform the procedures described in "[The System Setup Program.](#)"

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- Read the safety instructions in "Safety First—For You and Your Computer."

You need the following items to perform the procedures in this section:

- *Dell OpenManage Server Assistant* CD and a blank, formatted 3.5-inch diskette; the CD contains the two following system user documents in HTML format:
 - *Dell PowerEdge 4400 User's Guide*
 - *Dell PowerEdge 4400 Installation and Troubleshooting Guide*
- Key to the system keylock
- #2 Phillips screwdriver
- 1/4-inch nut driver, preferably with magnetic insert



Safety First—For You and Your Computer

The procedures in this guide require that you remove the cover and work inside the computer. While working inside the computer, do not attempt to service the computer except as explained in this guide and elsewhere in Dell documentation. Always follow the instructions closely.

Working inside the computer is safe—if you observe the following precautions.

- ⚠ WARNING:** This system may have more than one power supply cable. To reduce the risk of electrical shock, a trained service technician must disconnect all power supply cables before servicing the system. For more information, refer to "Safety First—For You and Your Computer."
- ⚠ WARNING:** The power supplies in your computer system may produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the computer covers and access any of the components inside the computer.
- ⚠ WARNING FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT**

Before starting to work on the computer, perform the following steps in the sequence listed:

1. Turn off the computer and all peripherals (unless you are installing or removing a hard-disk drive or hot-plug expansion card).
2. Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside the computer.

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3. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.
4. Disconnect the computer and peripherals from their power sources (unless you are installing or removing a hot-pluggable component such as a hard-disk drive or hot-plug expansion card). Also, disconnect any telephone or telecommunications lines from the computer.

Doing so reduces the potential for personal injury or shock.



Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

The following notice may appear throughout this document to remind you of these precautions:

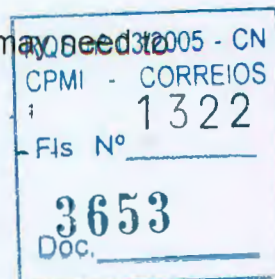
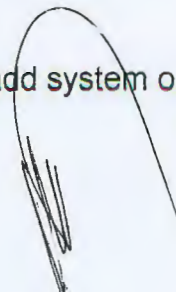
NOTICE: See "Protecting Against Electrostatic Discharge."

In addition, Dell recommends that you periodically review the safety instructions for this system.

Computer Cover

To troubleshoot problems inside the computer or add system options, you may need to remove the cover.

Using the Computer Cover Keylock



The computer cover provides a three-position keylock that allows the following access options to the system's interior (see Figure 1):

- The latch position (denoted by the square icon) allows access to the expansion card compartment through the expansion card door.
- The unlocked position (denoted by the open lock icon) enables the computer cover to be removed.
- The locked position (denoted by the lock icon) locks both the computer cover and the expansion-card access door.

Removing the Computer Cover

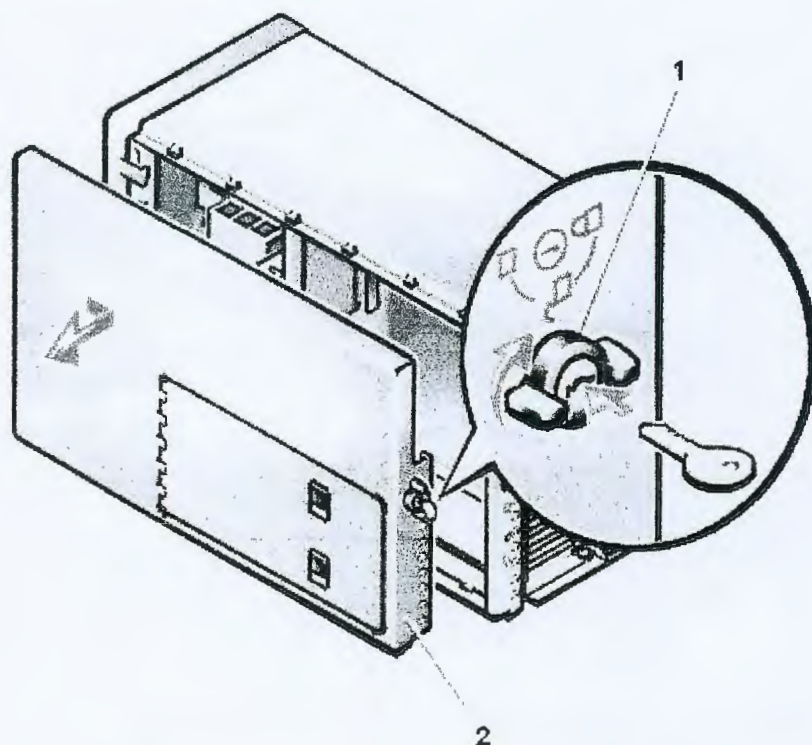
⚠ WARNING: See "Safety First—For You and Your Computer" and observe the safety instructions.

To remove the computer cover, perform the following steps:

1. Turn the keylock on the back edge of the computer to the unlocked position.

If necessary, unlock the keylock using the system key (see Figure 1).

Figure 1. Removing the Computer Cover



1 Keylock

2 Computer cover

2. If the system is installed in a rack, slide the system out of the rack.
3. Slide the cover about 5 centimeters (2 inches) or so toward the back of the computer, and grasp the top of the cover at both ends.

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4. Lift the cover away from the chassis.

Replacing the Computer Cover

To replace a computer cover, perform the following steps:

1. Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not catch on the computer cover.
2. Check that no tools or parts (including screws) are left inside the computer.
3. Make sure that the keylock on the cover is in the unlocked position.
4. Fit the cover over the side rail at the bottom of the chassis, and slide it closed.
5. If the system is installed in a rack, slide the system back into the rack.
6. Secure the cover with the keylock.



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Front Bezel

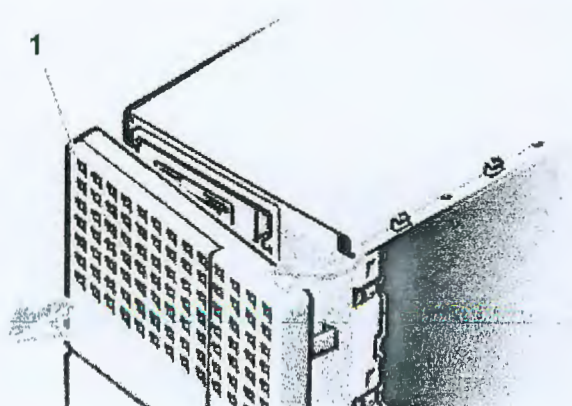
To replace drives in the external drive bays, you may need to remove the front bezel.

Removing the Front Bezel

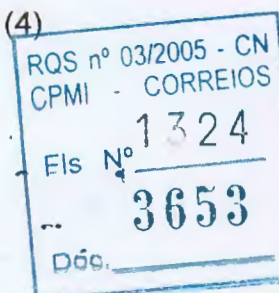
To remove the front bezel of the computer, perform the following steps:

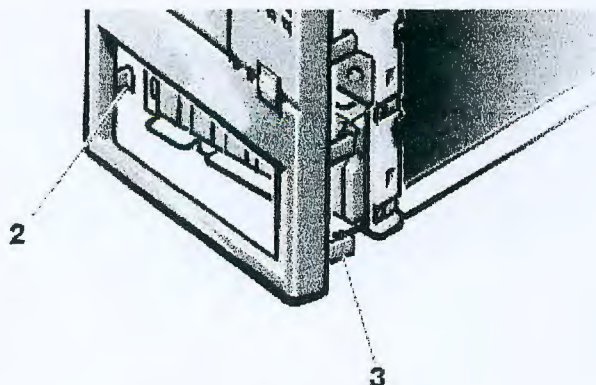
1. Remove the computer cover.
2. With your fingertips, gently pry loose the four tabs along the right edge of the bezel, and disengage the three clips on the opposite edge from the chassis (see [Figure 2](#)).
3. Rotate the bezel to the left to disengage and remove it.

Figure 2. Removing the Front Bezel



- 1 Front bezel
- 2 Clips (3)
- 3 Tabs (4)





Replacing the Front Bezel

To replace the front bezel of the computer, perform the following steps:

1. Align the three clips on the edge of the bezel and press the bezel into place until the four tabs on the opposite edge of the bezel snap into place.
2. Reinstall the computer cover.

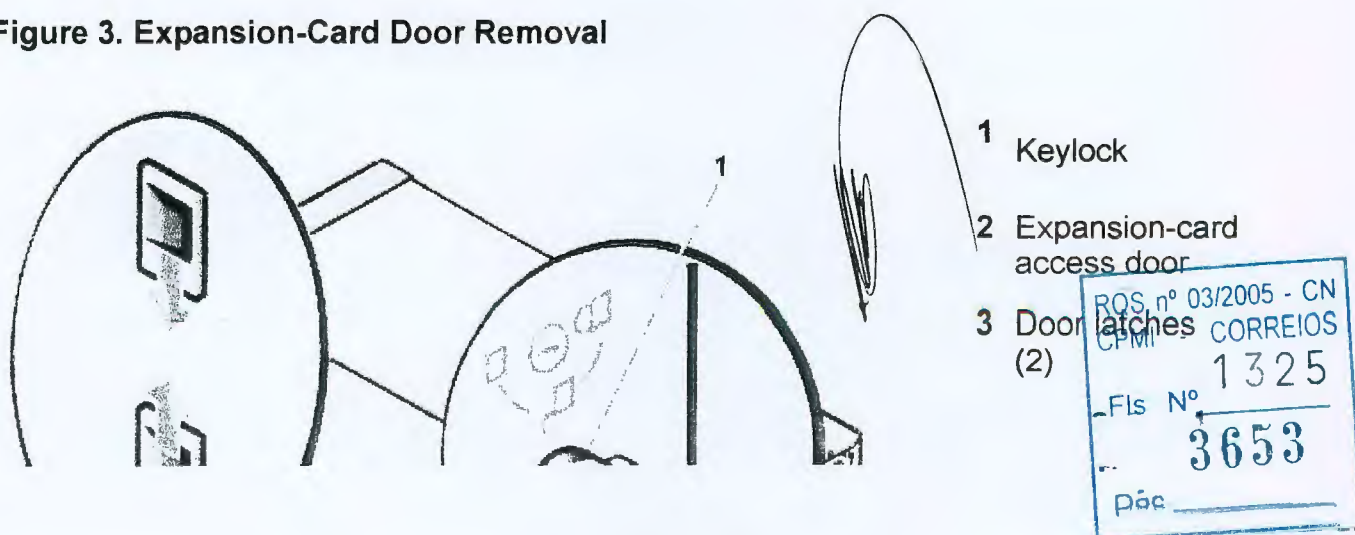
Expansion-Card Door

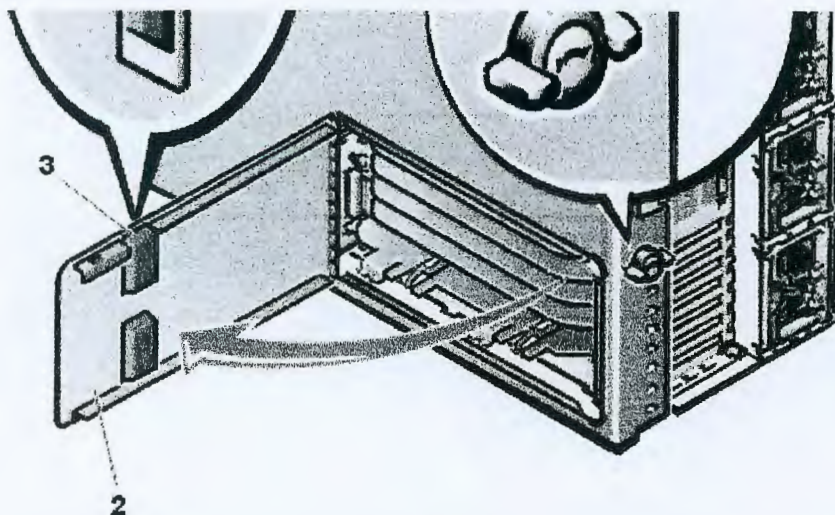
Your system provides an access door to the expansion card compartment (see [Figure 3](#)) for easy installation and removal of the expansion cards. To open the access door, the keylock must be in the latch position (designated by the square icon) or the unlocked position (designated by the open lock icon).

To open the expansion-card door, perform the following steps:

1. Turn the keylock on the back edge of the computer cover to the latch position (denoted by the square icon).
If necessary, unlock the keylock using the system key.
2. If the system is installed in a rack, slide the system out of the rack.
3. Slide the two door latches toward the centerline of the door, and open the door (see [Figure 3](#)).

Figure 3. Expansion-Card Door Removal





Interior Support Panel

To access the microprocessors or the memory module inside the computer, you must remove the interior support panel (see [Figure 4](#)). To remove the support panel, perform the following steps.

NOTICE: See "[Protecting Against Electrostatic Discharge.](#)"

1. If the system is installed in a rack, slide the system out of the rack.
2. Turn off the system, including any attached peripherals, and disconnect the AC power cable from its power source.
3. Remove the computer cover.
4. Turn the two captive fasteners counter-clockwise (see [Figure 4](#)).

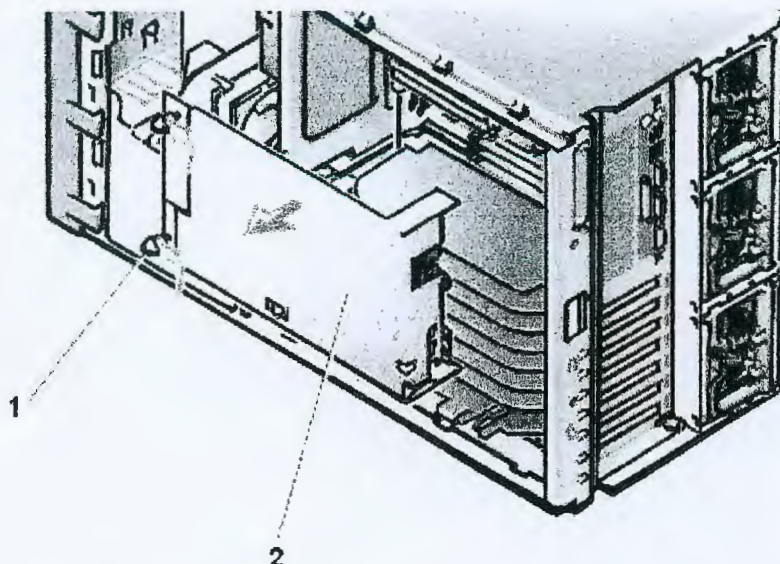
Figure 4. Interior Support Panel Removal



- 1 Captive fastener (2)
- 2 Support panel



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5. Rotate the left side of the panel outward slightly.
6. Lift the hinge side of the panel to clear the tabs from the hinge slots.
7. Remove the panel.

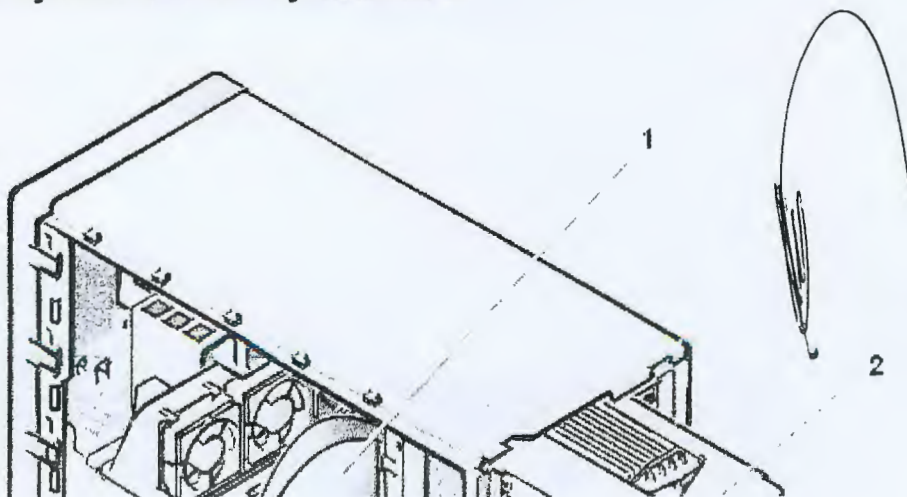
System Board Tray

To access the small computer system interface (SCSI) backplane board or the power supply paralleling board (PSPB), you must open the system board tray to the service position (see Figure 5). To open the system board tray, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the computer cover.
2. Remove the interior support panel.
3. Release the tray latch at the lower-back corner of the tray (see Figure 5).

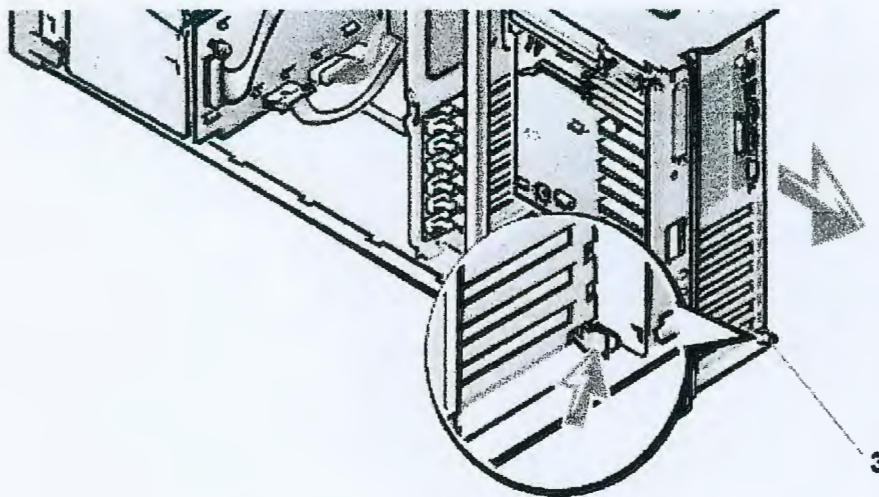
Figure 5. System Board Tray Extended



- 1 SCSI backplane board
- 2 System board tray

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3. Pull the tray open to the first slide position.
4. To remove the tray completely, disconnect all cables connected to the system board. Pull the tray slightly outward (or upward if the system is mounted horizontally) and press the tray latch again, and then pull the tray out of the chassis.

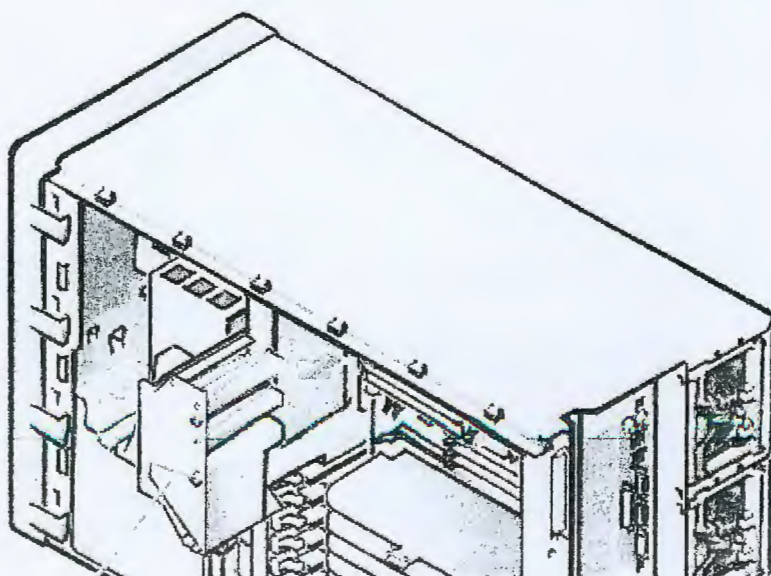
Cooling Shroud

To access the microprocessors, you must remove the plastic cooling shroud adjacent to the microprocessors. To remove the cooling shroud, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the computer cover.
2. Remove the support panel.
3. Lift the cooling shroud directly away from the system chassis (see Figure 6).

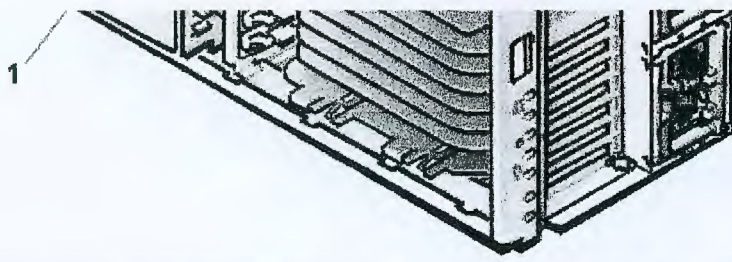
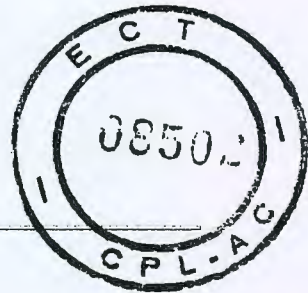
Figure 6. Cooling Shroud Removal



1 Cooling shroud

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Inside the Chassis

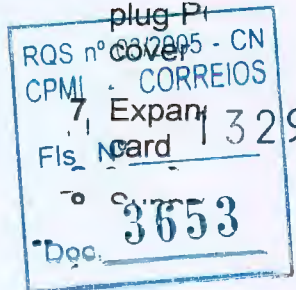
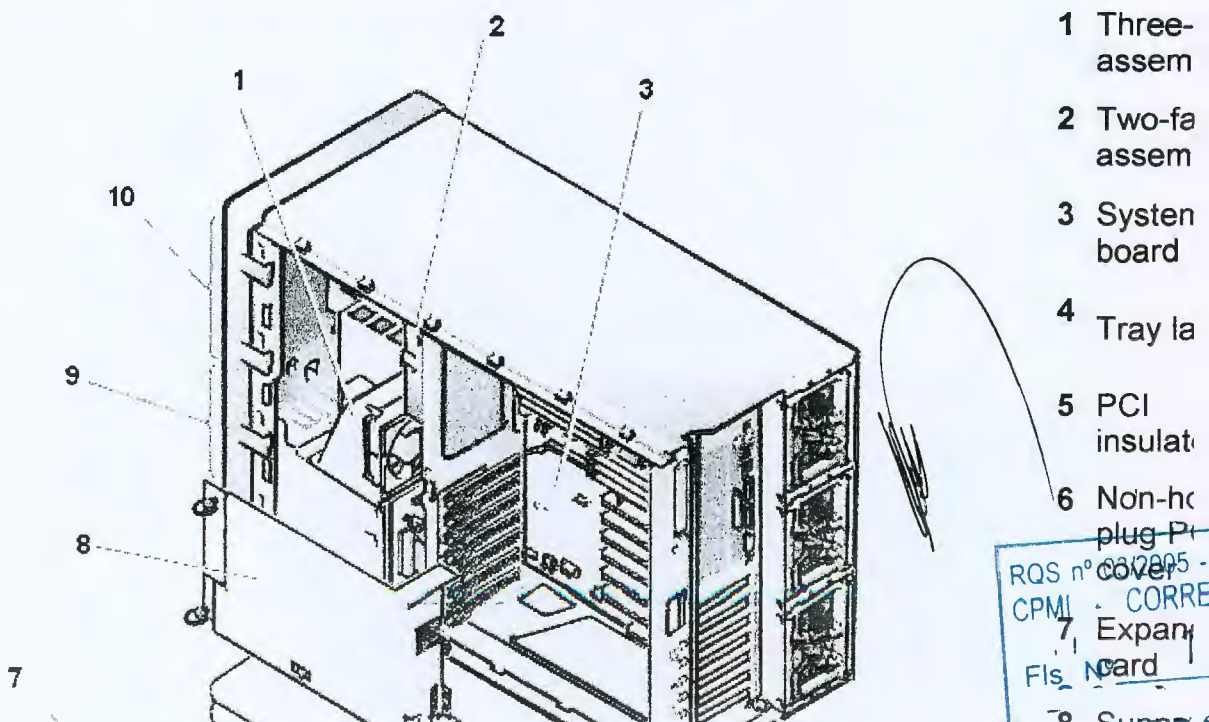
In Figure 7, the computer cover and interior support panel are removed to provide an interior view. Refer to this illustration to locate interior features and components discussed later in this guide.

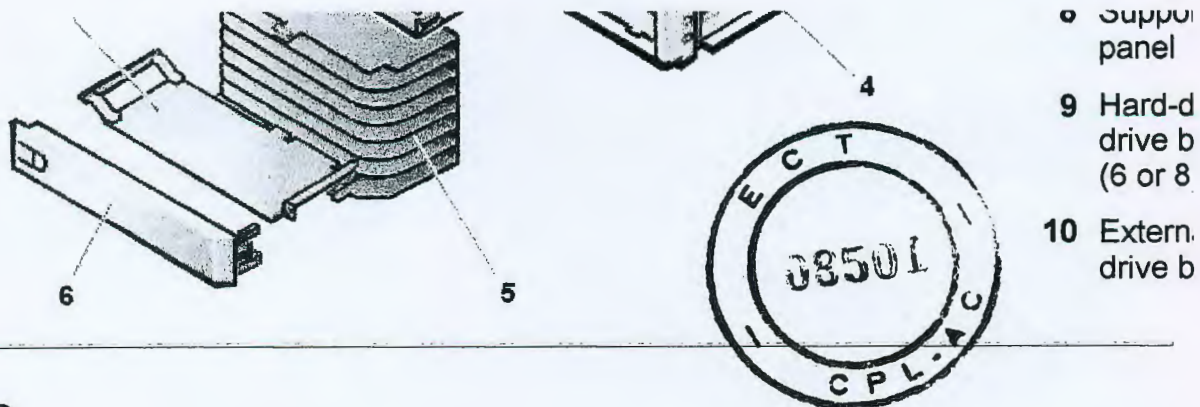
The system board holds the computer's control circuitry and other electronic components. The SCSI backplane board connects the system's hard-disk drives to a SCSI host adapter on the system board or on an expansion card. Power cables leading from the PSPB supply power to the system board, SCSI backplane board, and externally accessible drives.

For non-SCSI drives such as the diskette drive, an interface cable connects each drive to an interface connector on the system board or on an expansion card. For SCSI devices, interface cables connect externally accessible SCSI devices and the SCSI backplane board to a SCSI host adapter either on the system board or on an expansion card. (For more information, see "Drives" and "SCSI Hard-Disk Drives.")

During an installation or troubleshooting procedure, you may be required to change a jumper or switch setting. For information on the system board jumpers, see "Jumpers, Switches, and Connectors."

Figure 7. Inside the System (Right-Side View)

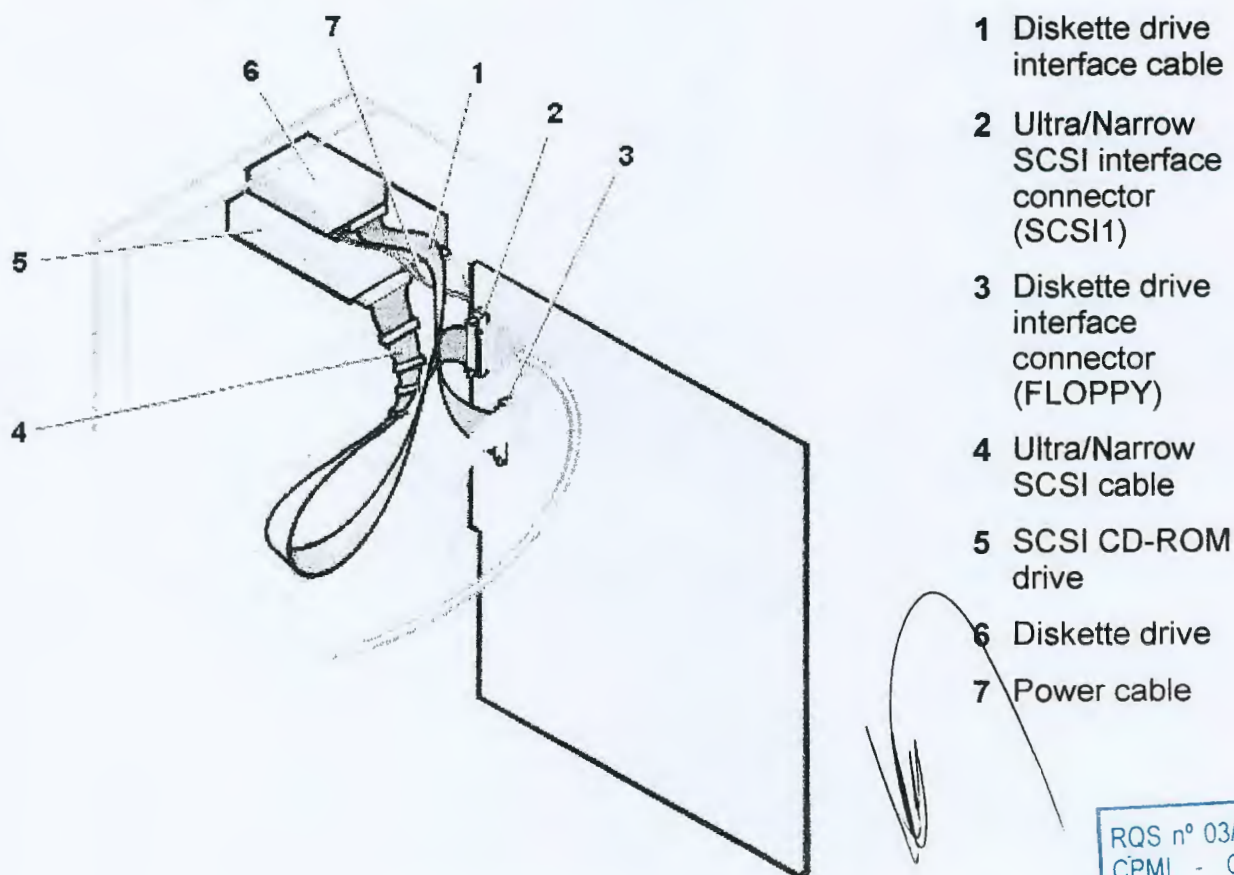




Drives

The external drive bays at the front of your system hold up to three user-accessible, half-height 5.25-inch devices (typically CD-ROM or tape drives). A SCSI CD-ROM drive is standard in the first external drive bay, while two additional devices of your choice can be installed in the next two external drive bays. SCSI devices in the external drive bays may be connected to the Ultra/Narrow or Ultra3 SCSI controller on the system board, or a SCSI controller on an expansion card. A fourth drive bay accommodates a standard 3.5-inch diskette drive, which is controlled by the diskette drive controller on the system board. See Figure 8 for a general view of the various drives, connector cables, and power cables in the external drive bays.

Figure 8. External Drive Bay Hardware



Front-Panel Inserts

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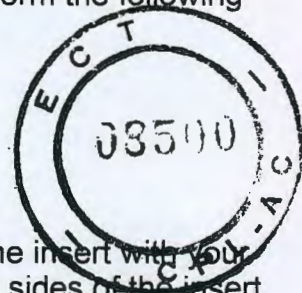
To protect the inside of the computer from foreign particles, a plastic insert covers each empty external drive bay. Additionally, each empty external drive bay is covered by a metal insert to maintain the necessary electromagnetic interference (EMI) shielding for the chassis. Before you install a drive in an empty bay, you must first remove the plastic and metal inserts. Whenever you remove a drive, be sure to replace the metal insert on the chassis and then replace the plastic insert in the front bezel to cover the empty bay.

Removing a Plastic Insert

To remove the plastic insert for a drive bay that you intend to use, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the front bezel.
2. Facing the inside of the front bezel, press against the center of the insert with your thumbs until the insert bows sufficiently to loosen the tabs on the sides of the insert.
3. Pull the insert out of the bezel.



Removing a Metal Insert

To remove the metal insert from a drive bay, perform the following steps:

1. Remove the front bezel.
2. Use your thumb to press in the tab on the right edge of the metal insert to release the insert.
3. Pivot the insert away from the chassis and disengage the tab on the insert's left edge.

Drive Connections

This section describes the interface cables and power cables used with the drives in your system.

Interface Cables

Most interface connectors are keyed for correct insertion; that is, a notch or a raised tab on one connector matches a tab or a notch on the other connector. Keying ensures that the pin-1 wire in the cable goes to the pin-1 ends of the connectors on both ends.

When you disconnect an interface cable, take care to grasp the cable connector, rather than the cable itself, to avoid stress on the cable.

DC Power Cables

Each drive in the external drive bays must connect to a four-wire DC power cable from the system power supply. The connectors on these cables are labeled "FD1," "FD2,"

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"FD3," "FD4," and "FD5." Connectors FD1 through FD4 are used for 5.25-inch devices; connector FD5 is used for the 3.5-inch diskette drive.

Externally-Accessible Drives

To remove a 3.5-inch diskette drive or a 5.25-inch drive assembly from one of the externally accessible drive bays, perform the following steps.

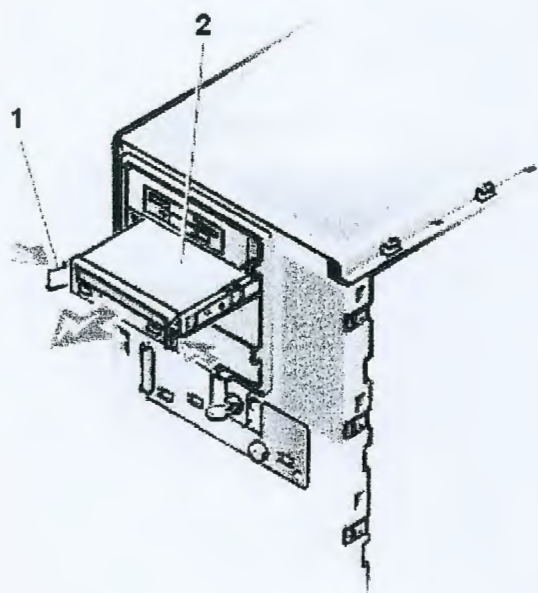
NOTICE: See "Protecting Against Electrostatic Discharge."

1. Disconnect the DC power cable and the interface cable from the back of the drive.

Be sure to record the power connector number and the location of the interface cable connector.

2. Press inward (toward the center of the drive) on the two drive-release tabs, and slide the drive out of the bay (see Figure 9).

Figure 9. Externally-Accessible 5.25-Inch Drive Removal

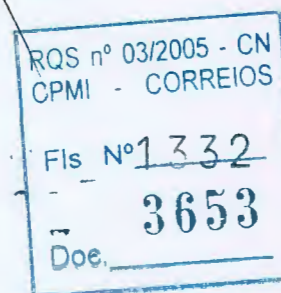


1 Release tab (2)

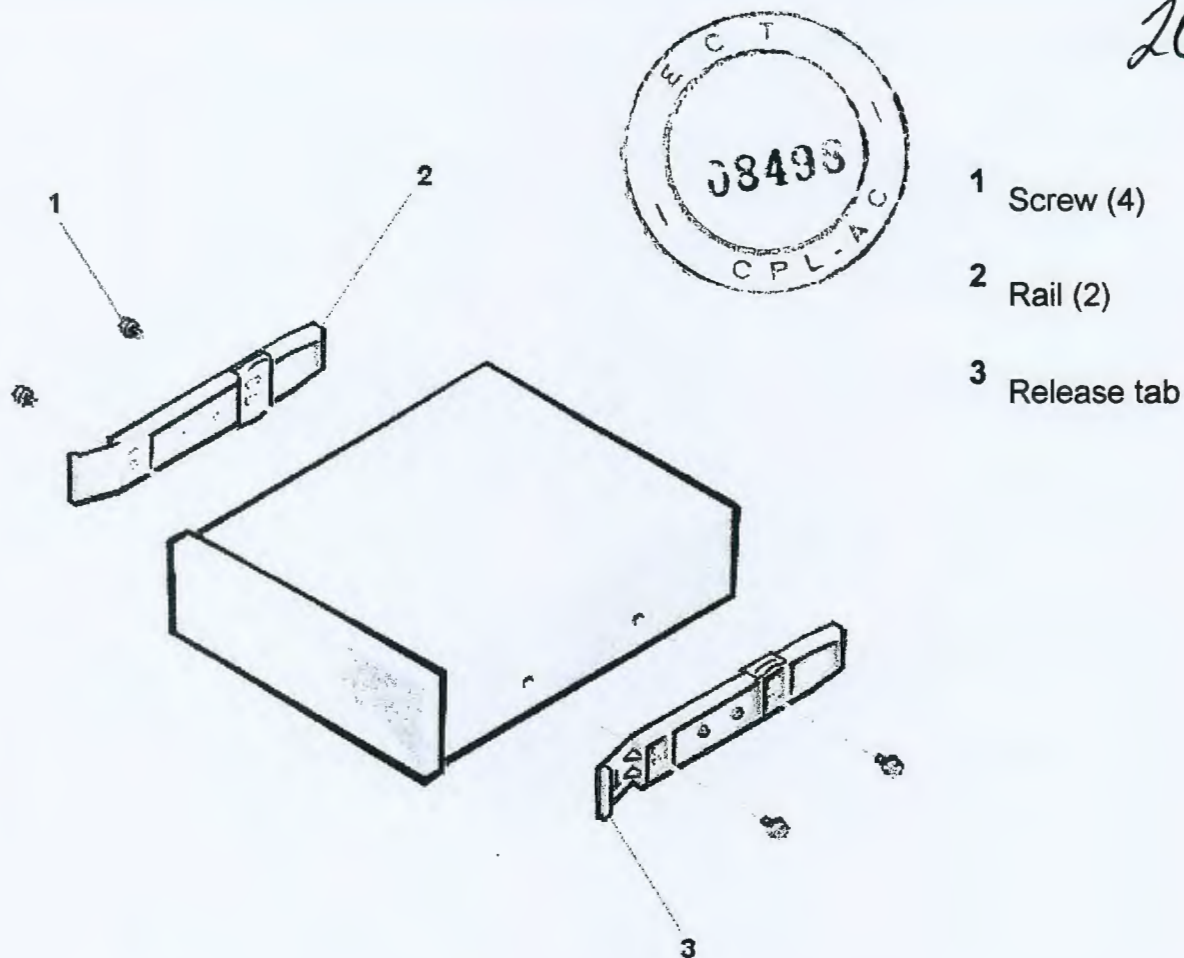
2 Drive

3. Remove the drive-mounting rails from the drive (see Figure 10).

Figure 10. Drive Mounting Rail Removal



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- 1 Screw (4)
- 2 Rail (2)
- 3 Release tab

3. If the drive is a SCSI drive, record the setting of the SCSI address jumpers and SCSI bus termination jumper.
4. If present, remove the 50-pin to 68-pin adapter from the SCSI connector on the back of the drive.

Some drives use a 50-pin to 68-pin adapter between the SCSI cable and the drive connector. Check the back of the drive for an adapter. If present, remove it and retain it for use on the new drive.

 **NOTE:** When you reinstall a SCSI drive, set the SCSI address jumpers and the SCSI bus termination jumpers to the settings you recorded.

Figure 11. 3.5-Inch Diskette Drive Removal



- 1 Release tab (2)
- 2 Diskette drive

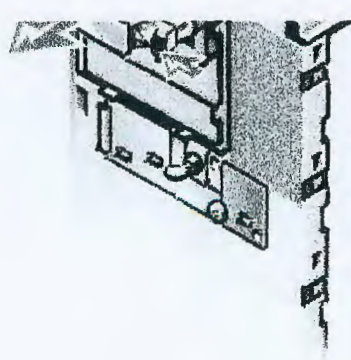
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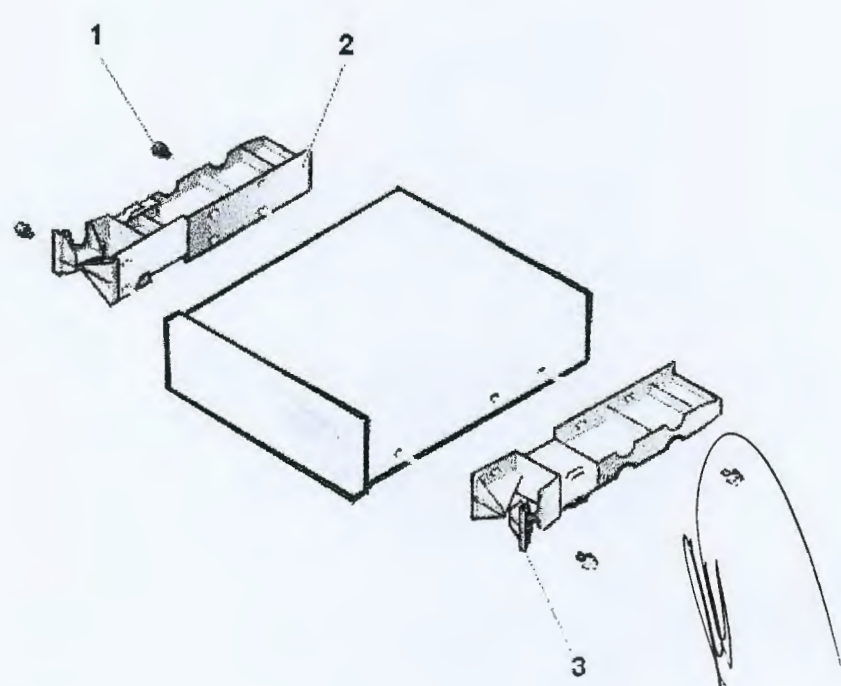
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To remove the 3.5-inch diskette drive, perform the following steps:

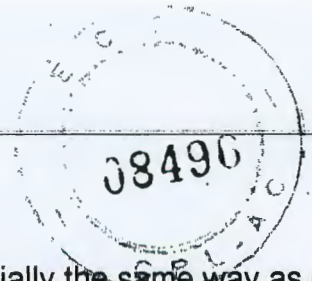
1. Remove the computer cover.
2. Remove the front bezel.
3. Disconnect the DC power cable and the interface cable from the back of the diskette drive.
4. Press inward (toward the center of the drive) on the two drive-release tabs, and slide the drive out of the bay (see Figure 11).
5. Remove the six mounting screws securing the two rails to the drive (see Figure 12).

Figure 12. Drive Rail Removal



- 1 Screw (4)
- 2 Rail (2)
- 3 Release tab

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SCSI Configuration Information

Although SCSI devices are installed essentially the same way as other devices, their configuration requirements are different. To configure SCSI devices installed in the external bays, follow the guidelines in the following subsections.

SCSI ID Numbers

Each device attached to the Ultra/Narrow SCSI host adapter must have a unique SCSI ID number from 0 to 7.

When SCSI devices are shipped from Dell, the default SCSI ID numbers are assigned as follows:

- The integrated Ultra/Narrow SCSI host adapter is configured through the basic input/output system (BIOS) as SCSI ID 7.
- A SCSI tape drive is configured as SCSI ID 6.
- A SCSI CD-ROM drive is usually configured as SCSI ID 5.

 **NOTE:** *There is no requirement that SCSI ID numbers be assigned sequentially or that devices be attached to the cable in order by ID number.*

Device Termination

SCSI logic requires that the two devices at opposite ends of the SCSI chain be terminated and that all devices in between be unterminated. The SCSI cable included in your system has an active terminator installed at the end of the cable. Therefore, you should disable the termination on all SCSI devices you attach to this cable.

Installing a SCSI Device That Uses a Controller Card

Tape drives, autoloaders, and other SCSI devices that require their own separate controller cards are shipped with the controller card and an interface cable.

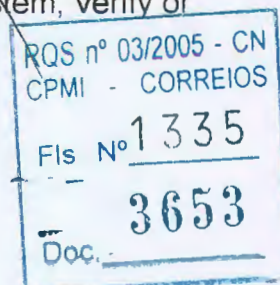
To install the tape drive or other device in an external drive bay, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Configure the controller card if necessary.

Refer to the documentation that came with the device and the card. If the card incorporates jumpers or switches that must be set to work with the system, verify or change the settings as necessary.

2. Remove the computer cover and front bezel.
3. Slide the new drive into its bay until it snaps securely into place.



If necessary, you can adjust drive alignment by repositioning one or both rails.

4. Install the controller card in an expansion slot.
5. Slide the system board tray to its service position.
6. If other installed drives interfere with access to the back of the tape drive, disengage them by pressing in on the plastic drive rails at the front of the bay, and slide them slightly toward the front of the chassis.
7. Determine which DC power cable connector to use, and then plug the DC power cable connector into the 4-pin power input connector on the back of the drive.
8. Attach the interface cable that came with the drive kit to the interface connector on the back of the drive.
9. Connect the interface cable to the controller connector on the controller card.

Refer to the controller card's documentation to identify the controller connector on the card.

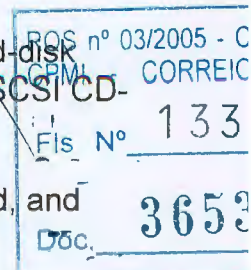
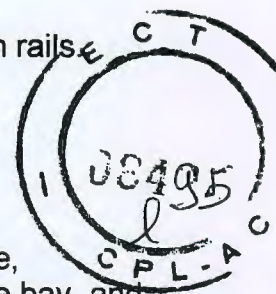
10. If you moved other drives in step 6, snap them back into place.
11. Check all cable connections that may have been loosened during this procedure. Arrange cables so that they will not catch on the computer covers or block the airflow of the fans or cooling vents.
12. Slide the system board tray back into the system chassis.
13. If a front-panel insert on the front bezel blocks the bay in which you installed the drive, remove the insert.
14. Replace the front bezel and computer cover.
15. Reconnect the computer and peripherals to their AC power sources, and turn them on.
16. Perform a tape backup and verification test with the drive as instructed in the tape-drive software documentation that came with the drive.

SCSI Hard-Disk Drives

⚠ WARNING: Before you install a new backplane board or host adapter card, you must turn off the computer and disconnect it from its AC power source. For more information, see "Safety First—For You and Your Computer."

The hard-disk drive bays provide space for up to six 1.6-inch or eight 1-inch hard-disk drives. (See "Installing Drives in the External Bays" for information on installing SCSI CD-ROM drives and SCSI tape drives in the external drive bays.)

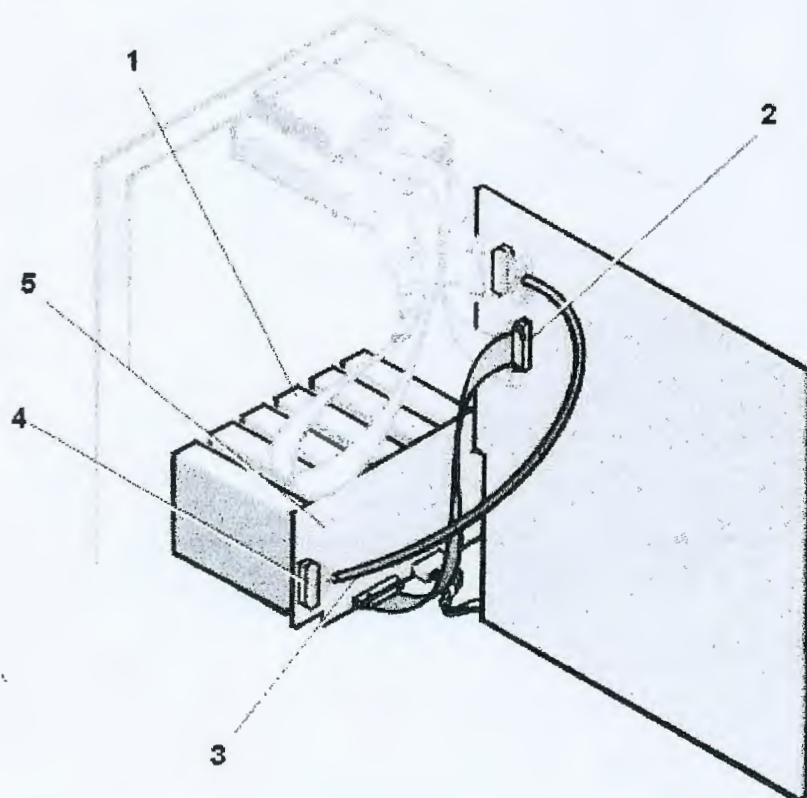
Figure 13 illustrates the hard-disk drive bays, the hot-plug SCSI backplane board, and



the Ultra3 SCSI cable. The Ultra3 SCSI cable has two connectors:

- The connector at one end attaches to the Ultra3 SCSI host adapter connector labeled "PRIMARY SCSI A" on the system board or to an optional SCSI host adapter card such as the Dell PERC 2.
- The connector at the other end of the cable attaches to the connector labeled "SCSIA" on the SCSI backplane board.

Figure 13. Hard-Disk Drive Hardware



- 1 SCSI hard-disk drive bays
- 2 System-board data cable connector
- 3 Ultra3 SCSI interface cable
- 4 Ultra3 SCSI interface cable connector (SCSIA)
- 5 SCSI backplane board

Preparing SCSI Hard-Disk Drives for Installation

☒ **NOTE:** Dell recommends that you use only drives that Dell has tested and approved for use with the SCSI backplane board.

SCSI Hard-Disk Drive Configuration



The SCSI drives must be configured as follows:

- Disable termination on the drives. The SCSI backplane board provides termination for the SCSI bus.
- Set the SCSI ID on all drives to **0**. All SCSI ID numbers for the drives are set by the SCSI backplane board (the rightmost drive is set to **SCSI ID 0**).
- Configure the drives so that the drive motor waits for a Start Unit command from the SCSI host adapter before spinning.

Partitioning and Formatting SCSI Hard-Disk Drives

You may need to use different programs than those provided with the operating system to partition and format SCSI hard-disk drives. See "Installing and Configuring SCSI Drivers" in the *User's Guide* for information and instructions.

NOTICE: Do not turn off or reboot your system while the drive is being formatted. Turning off or rebooting your system while the drive is being formatted can cause a drive failure.

When you format a high-capacity SCSI hard-disk drive, be sure to allow enough time for the formatting to complete. Long formatting times for these drives are normal. A 9-gigabyte (GB) hard-disk drive, for example, can take up to 2.5 hours to format.

SCSI Hard-Disk Drive Replacement

SCSI hard-disk drives are supplied by Dell in special drive carriers that fit in the hard-disk drive bays. To install a SCSI hard-disk drive, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

NOTICE: Systems without an activated Dell PERC 3/Di integrated redundant array of independent disks (RAID) controller or a Dell PERC 2 host adapter card do not support hot plug drive installation.

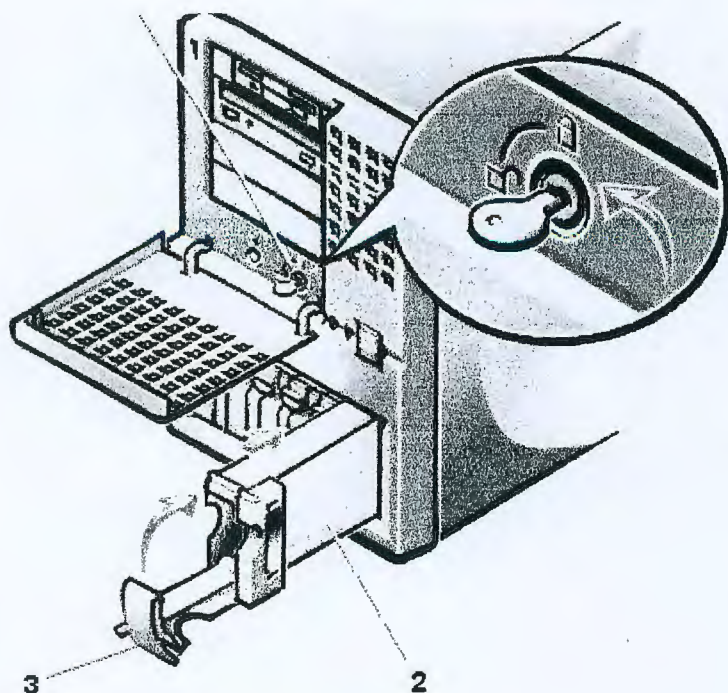
1. If the system does not have a RAID controller installed, shut down the system.
2. Open the front bezel and unlock the hard-disk drive keylock (see Figure 14).

Figure 14. Installing a SCSI Hard-Disk Drive Carrier

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- 1 Hard-disk drive keylock
- 2 Hard-disk drive carrier
- 3 Hard-disk drive carrier handle

3. For systems with RAID controllers, power down the hard-disk drive bay. If a hard-disk drive is currently installed in the bay, wait until all three SCSI hard-disk drive indicators on the hard-disk drive carrier handle are turned off before proceeding.
 4. Open the drive carrier handle and slide the carrier toward you until it is free of the drive bay.
 5. Open the handle on the new hard-disk drive carrier.
 6. Align the edge of the carrier with the notches in the hard-disk drive bay keys and insert the carrier into the drive bay (see [Figure 14](#)).
 7. Close the drive carrier handle to lock the new drive carrier in place.
 8. Lock the hard-disk drive keylock (see [Figure 14](#)).
 9. Close the front bezel.
 10. Install any required SCSI device drivers.
- See "Installing and Configuring SCSI Drivers" in the *User's Guide* for information.
11. For systems with RAID controllers, restore power to the drive bay.

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SCSI Backplane Board

To replace a SCSI backplane board with an identical replacement or with a different backplane board, perform the following steps.

⚠ WARNING: Before you perform this procedure, you must turn off the computer and disconnect it from its AC power source. For more information, see "Safety First—For You and Your Computer."

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Unpack the SCSI backplane board upgrade kit.
2. Remove the computer cover and front bezel.

NOTICE: You must remove all hard-disk drives to avoid damaging the SCSI backplane board when you remove it later in this procedure.

3. Remove the hard-disk drives from the system.
4. Slide the system board tray to its service position (see Figure 15).
5. Disconnect the Ultra3 SCSI cable from the SCSI backplane board.

To avoid damage to the cable, use the strain-relief loop to disconnect the cable.

6. Disconnect the flat data cable from the locking connector on the backplane board.
7. Disconnect the power cable labeled "HD-B/P" from the power connector labeled "POWER" on the backplane board by pressing the latch on the side of the connector.
8. Disconnect the fan power cable from the power connector labeled "FAN" on the backplane board.

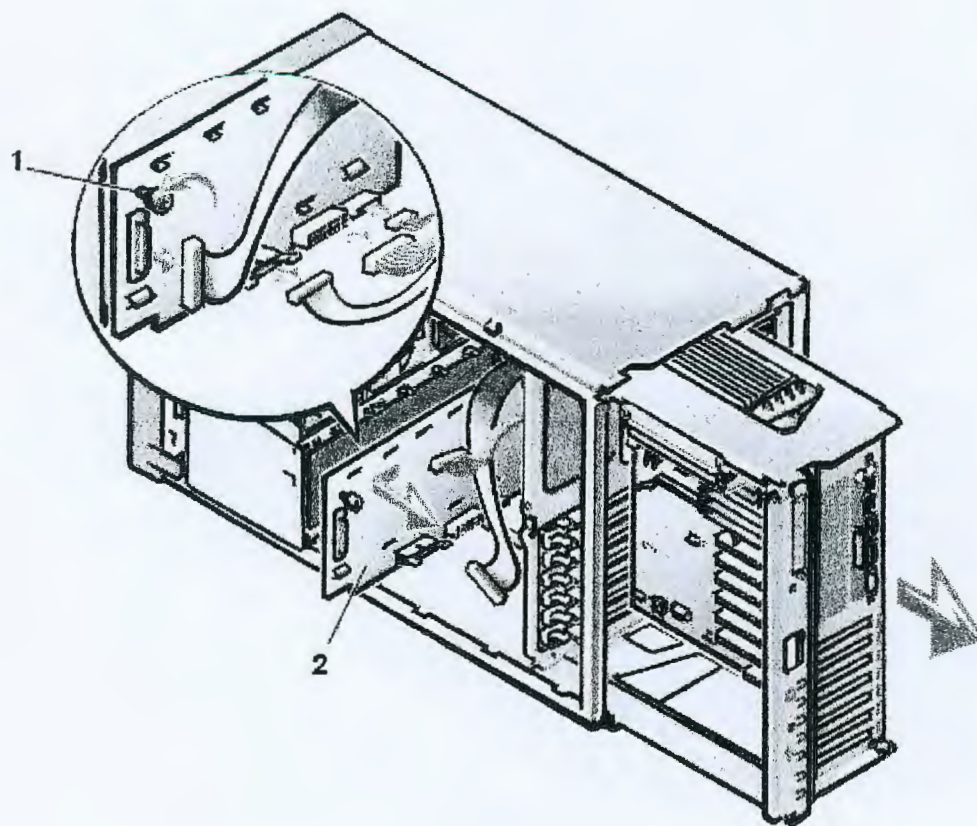
To release the connector, press the latch on the side of the connector.

9. Loosen the captive thumbscrew on the backplane board (see Figure 15).
10. Slide the SCSI backplane board away from the chassis inner wall approximately 1 centimeter (cm) (a quarter inch), and then lift the board off of the L-shaped mounting tabs and away from the chassis (see Figure 15).

Figure 15. Removing a SCSI Backplane Board

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1 Thumbscrew

2 SCSI backplane board

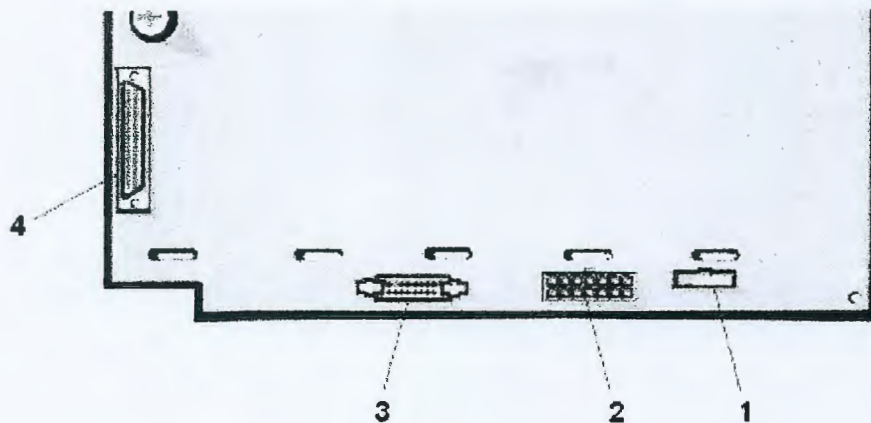
11. Install the new backplane board:

- a. While holding the backplane board by its edges, position the board so that the tabs on the computer chassis wall fit through the corresponding slots in the backplane board.
- b. Slide the backplane board toward the bottom of the chassis.
- c. Secure the backplane board by tightening the captive thumbscrew.

Figure 16. Back of 1 x 8 or 1 x 6 SCSI Backplane Board



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- 1 Cooling fan power cable connector (FAN)
 - 2 Power connector (POWER)
 - 3 System-board data cable connector (PLANAR)
 - 4 Ultra3 SCSI cable connector (SCSIA)
12. Reconnect the fan power cable to the power connector labeled "FAN" on the backplane board.
 13. Connect the power cable labeled "HD-B/P" to the connector labeled "POWER" on the backplane board.
 14. Connect the 20-pin data cable leading from the system board to the connector labeled "PLANAR" on the backplane board (see Figure 16).
 15. Connect the Ultra3 SCSI cable leading from the connector labeled "SCSI2" on the system board to the connector labeled "SCSIA" on the backplane board.
 16. Slide the system board tray back into the system chassis.

Does the new SCSI backplane board have a different number of drive bays?

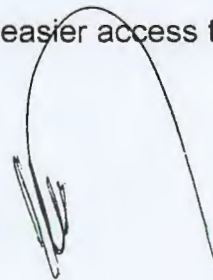
Yes. You must change the orientation of the two drive bay keys to match the new backplane. Go to step 17.

No. Go to step 24.

17. Turn the key in the keylock to lock the drive-locking flange (see Figure 17).

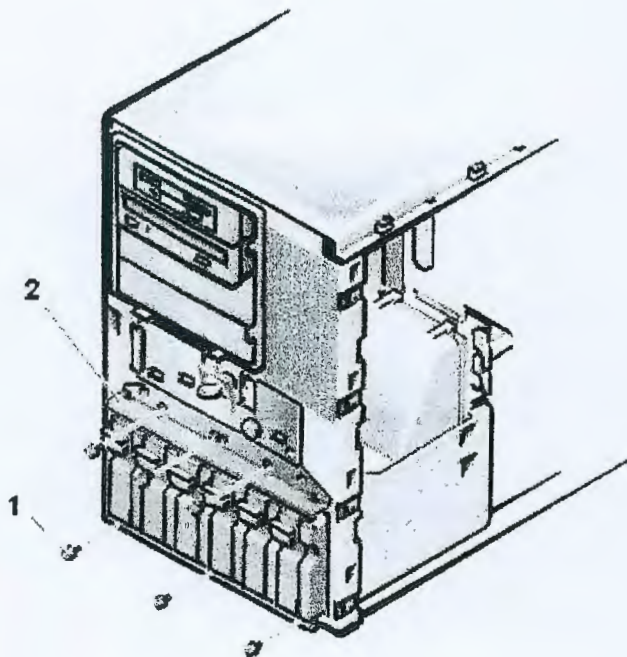
With the flange in the locked position, you have easier access to the upper drive bay key.

Figure 17. Removing the Drive Bay Keys



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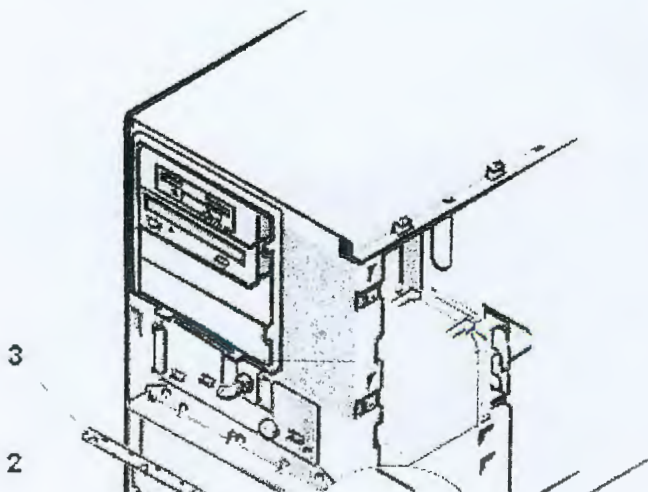


1 Screws (6)

2 Drive-locking flange

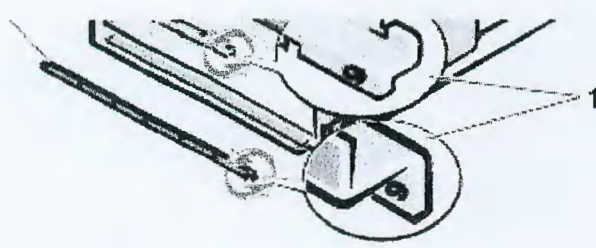
18. To remove the upper drive bay key, remove the three screws.
19. To remove the lower drive key, remove the three screws securing the key to the chassis.
20. Unlock the drive-locking flange.
21. Rotate each drive bay key so that the "6" or "8" stamped on the end of each key faces forward and matches the drive capacity of the new backplane (see Figure 18).

Figure 18. Reinstalling the Drive Bay Keys



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- 1 Key stamp
- 2 Lower drive bay key
- 3 Upper drive bay key



- 22. Reinstall the lower drive key using the three screws.
 - 23. To reinstall the upper drive key, lock the drive-locking flange and reinstall the three screws through the flange cutouts.
 - 24. Replace the front bezel and computer cover.
 - 25. Reinstall the hard-disk drives in the computer.
- ☒ **NOTE:** You can use only 1-inch hard-disk drives with an 8-bay backplane—you cannot use 1.6-inch hard-disk drives. (A 6-bay backplane can accommodate 1.6-inch or 1-inch drives.) If you install an 8-bay backplane, you need to convert the drive carriers to the 1-inch width by removing the spacer insert that fastens to each carrier adjacent to the carrier release handle.
- 26. Reconnect the computer and peripherals to their AC power sources.

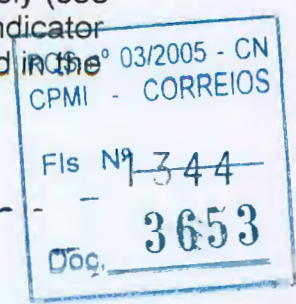
Configuring the Boot Device

If you plan to boot the system from a hard-disk drive, the drive must be attached to the primary (or boot) controller or SCSI host adapter card. You can select the primary controller using the System Setup program. See "Using the System Setup Program" in the *User's Guide* for instructions.

Power Supplies

Your system may contain two nonredundant power supplies or three redundant, hot-pluggable power supplies. The two indicators on the back of each power supply (see Figure 19) signal the power supply's current status. If the red (lower) failure indicator lights up while the system is operating, replace the power supply as described in the following subsection.

Removing and Replacing a Power Supply



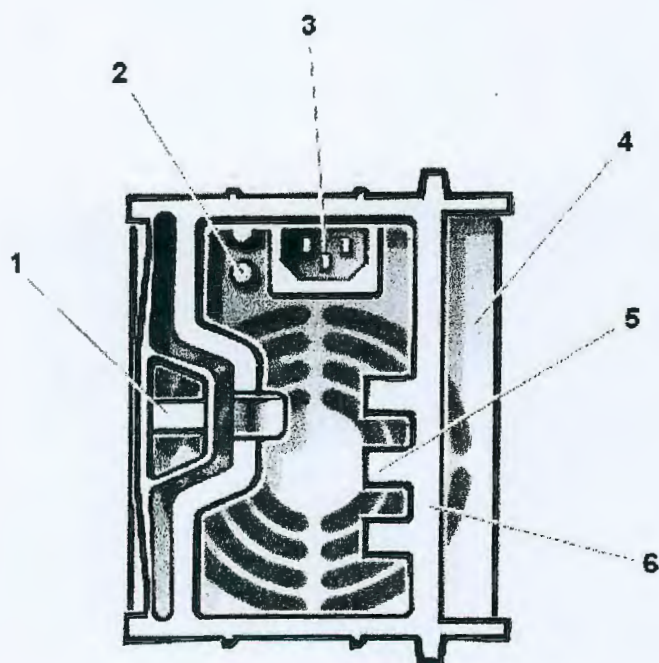
To replace a power supply, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

NOTICE: A power supply is heavy. Support it with both hands when installing or removing it.

1. Remove the power supply-bay close-out panel from the back of the system chassis if you are adding a power supply to an empty bay.
2. To open the handle of the new power supply, press the handle release in the middle of the power supply handle toward the center of the power supply (see Figure 19).

Figure 19. Power Supply Features

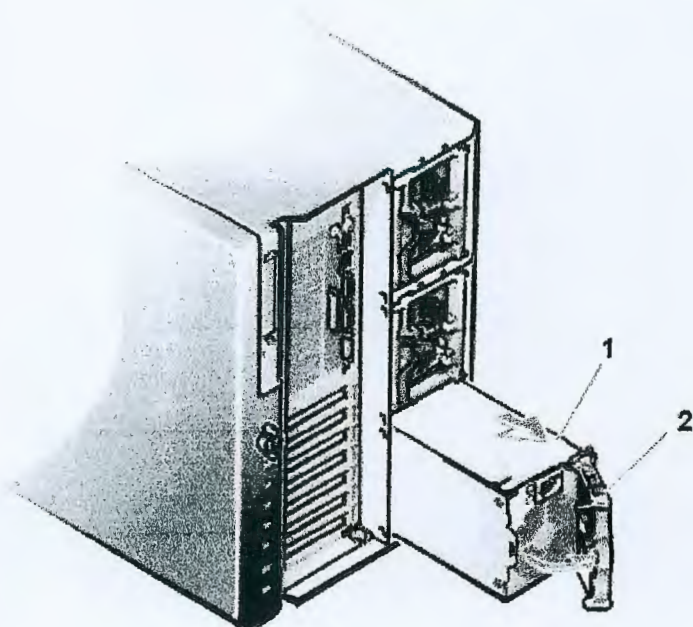


- 1 Handle release
- 2 Indicators (power [green, upper indicator] and power supply failure [red, lower indicator])
- 3 Power receptacle
- 4 Power supply
- 5 Strain-relief clips (3)
- 6 Handle



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Figure 20. Removing a Power Supply



1 Power supply

2 Handle



NOTICE: Do not use excessive force when sliding the power supply into the chassis.

3. With the new power supply's handle in the open position, slide the power supply into the chassis to the point where the power supply initially stops.
4. Rotate the power supply handle to the closed position.

The handle acts as a lever to push the power supply into the proper position inside the chassis.

5. With the power supply fully inserted into the chassis, close the handle completely so that the latch engages.

☒ **NOTE:** The power supply will not function until the handle is closed.

6. Connect the power cable to the power supply and route the cable through the strain-relief clips on the power supply handle.
7. Plug the power cord into the electrical outlet.

Power Cable Connections

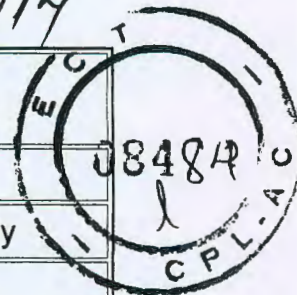
Table 1 lists the power cable connections on the PSPB.

Table 1. Power Cable Connectors on the PSPB

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Connector	Cable Connection
PS1.PB1 and PS1.PB2	To the power connector on the first power supply
PS2.PB1 and PS2.PB2	To the power connector on the second power supply
PS3.PB1 and PS3.PB2	To the power connector on the third power supply
PWR1	To POWER1 connector on system board
PWR2	To POWER2 connector on system board
PWR3	To POWER3 connector on system board
FD	To diskette drives and other devices in external drive bays
HD_B/P	To POWER connector on SCSI backplane board



Cooling Fans

Five cooling fans are installed in the system chassis. Two fans are located on the front of the system board tray adjacent to the microprocessor(s), and three fans are mounted in a removable assembly adjacent to the hard-disk drive bays.

The three-fan assembly for the hard-disk drives is hot-pluggable; that is, you can remove the entire three-fan assembly and replace it with another three-fan assembly while the system is running. If you want to replace the individual fans in the assembly, you must turn off the system before removing the fan assembly to prevent system overheating while the individual fan is replaced.

On the two-fan assembly for the system board, you can hot-plug the individual fans, but only a single fan at a time. Because the fans in the two-fan assembly can be removed and replaced without removing the assembly from the system, you can replace either fan while the system is running.

NOTICE: You can only hot-plug the fans in the two-fan assembly one fan at a time. Removing more than a single fan from operation at one time can result in system overheating.

If you observe that one of the cooling fans is not operating or if the Dell Hardware Instrumentation Package (HIP) server-management application issues a fan-related error message, perform the following steps to troubleshoot the problem.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the computer cover.
2. Check the fan power connections:

- Check the fan power cable connection to the SCSI backplane board.
- For the three-fan assembly for the hard-disk drives, remove the assembly and reinstall it, making sure that the electrical connector is fully seated.





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Do the fans operate properly?

Yes. You have fixed the problem.

No. Replace the defective fan or fan assembly as described in the following subsections.

Replacing a Fan in the Two-Fan Assembly

To replace a defective cooling fan in the two-fan assembly, perform the following steps.

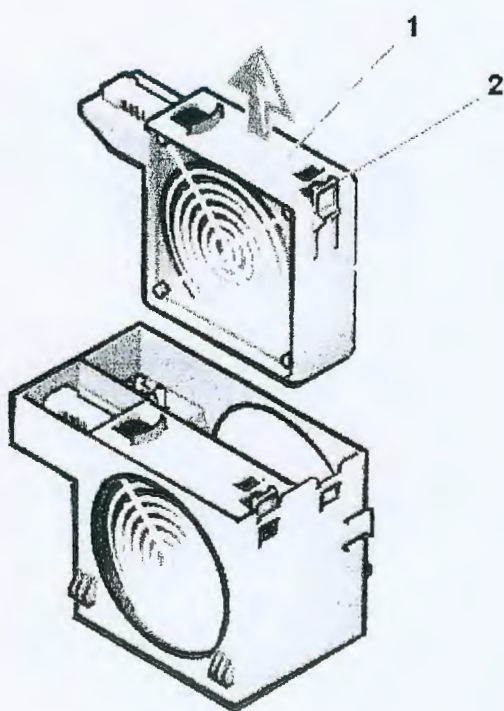
NOTICE: You can only hot-plug the fans in the two-fan assembly one fan at a time. Removing more than a single fan from operation at one time can result in system overheating. To maintain proper airflow within the system, do not remove the faulty fan until you are ready to replace it.

 **NOTE:** You can perform the following procedure with the system turned on or off.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the computer cover.
2. Identify the defective cooling fan in the assembly.
3. Remove the faulty cooling fan from the fan assembly by releasing the fan retention tab on the assembly and sliding the fan out of the carrier (see Figure 22).

Figure 22. Removing a Cooling Fan in the Two-Fan Assembly



- 1 System-board cooling fans (2)
- 2 Fan retention tabs (1 per fan)

4. Insert the replacement cooling fan into the carrier.

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If the system power is on, the cooling fan should begin to operate.

5. Replace the computer cover.

Replacing the Three-Fan Assembly

To replace the three-fan assembly for the hard-disk drives, perform the following steps.

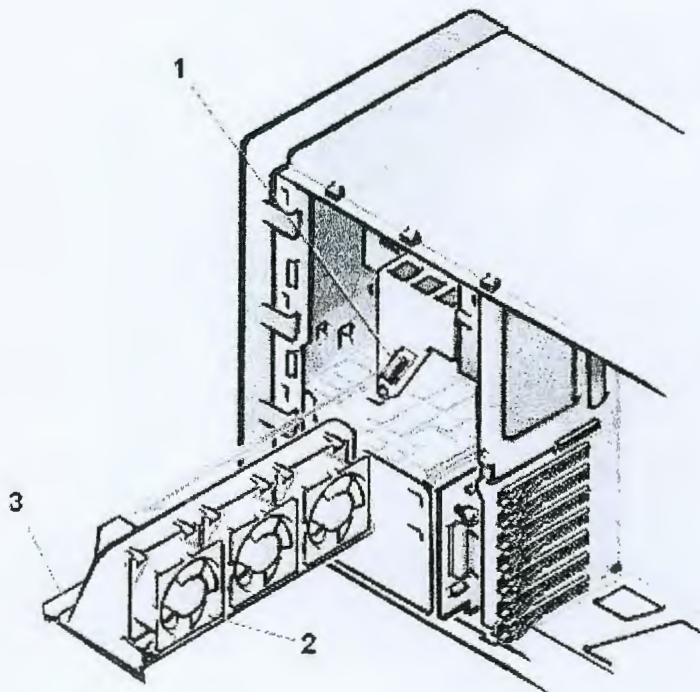
NOTICE: You can hot-plug the three-fan assembly only if you immediately install a replacement assembly. Removing the three-fan assembly from a running system for any period of time beyond what is needed for immediate replacement can result in system overheating.

 **NOTE:** You can perform the following procedure with the system turned on or off.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Remove the computer cover.
2. Lift up on the release latch on the back of the three-fan assembly and slide the assembly out of the system (see Figure 23).

Figure 23. Removing the Three-Fan Assembly



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fan assembly power connector

- 2 Cooling fans (3)
- 3 Release latch



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3. Slide the replacement assembly into the system, making sure that the fan assembly is fully seated.

If the system power is on, the cooling fans should begin to operate.

Do the fans operate properly?

Yes. You have fixed the problem.

No. Continue to the next question.

Is at least one fan operating?

Yes. Repeat steps 2 and 3 to replace the fan assembly.

No. Continue to the next question.

Is the fan cable connector broken?

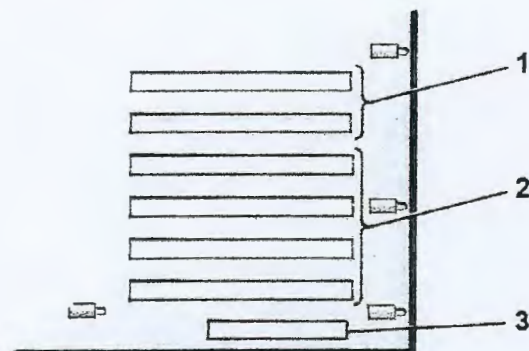
Yes. Replace the cable.

No. Replace the SCSI backplane board.

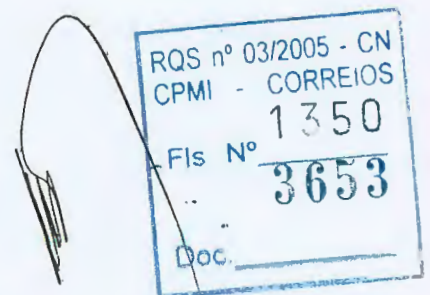
Expansion Cards

The system board contains seven Peripheral Component Interconnect (PCI) expansion-card connectors (see Figure 24).

Figure 24. Expansion-Card Connectors



- 1 64-bit, 66-MHz PCI expansion-card connectors PCI1 (top) and PCI2
- 2 64-bit, 33-MHz PCI expansion-card connectors PCI3 (top) through PCI6



3 32-bit PCI expansion-card connector PCI7



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Hot-Plug Expansion Cards

If your computer uses the Novell® NetWare® 5.0 or Microsoft® Windows® 2000 (Release Candidate 2 or later versions) operating system, connectors PCI1 through PCI4 support hot plug replacement and addition of PCI expansion cards.

For systems using NetWare 5.0, the following minimum configuration is required to support hot-plug expansion cards:

- Novell NetWare 5.0 symmetric multiprocessing (SMP) operating system with Support Pack 2A or later
- The latest Dell system-bus driver, as provided on the *Dell OpenManage Server Assistant CD*

The following PCI expansion cards are supported:

- Intel® EtherExpress™ PRO/10+ server adapter card
- Intel EtherExpress PRO/100+ server adapter card
- Intel EtherExpress PRO/100+ Dual Port server adapter card
- Intel PRO/1000 server adapter card

 **NOTE:** Other cards may be qualified for hot-plug operations by Dell in the future; contact Dell for current information.

NOTICE: If you attempt hot-plug addition or replacement of a unsupported card, the system may freeze or shut down unexpectedly.

Connectors PCI1 through PCI4 support hot-plug replacement of PCI expansion cards. Pairs of light-emitting diodes (LEDs) adjacent to each expansion slot display the expansion card connectors' current status. Table 2 lists the various codes for the hot-plug LED indicators

Table 2. Hot-Plug Indicator Patterns

Green LED	Amber LED	Safe to Remove Expansion Card?	Description
Off	Off	Yes	Connector power is off
On	Off	No	Connector power is on
Flash	Off	No	Connector is being powered up or powered down
Off	Flash slow	Yes	Power-up fault

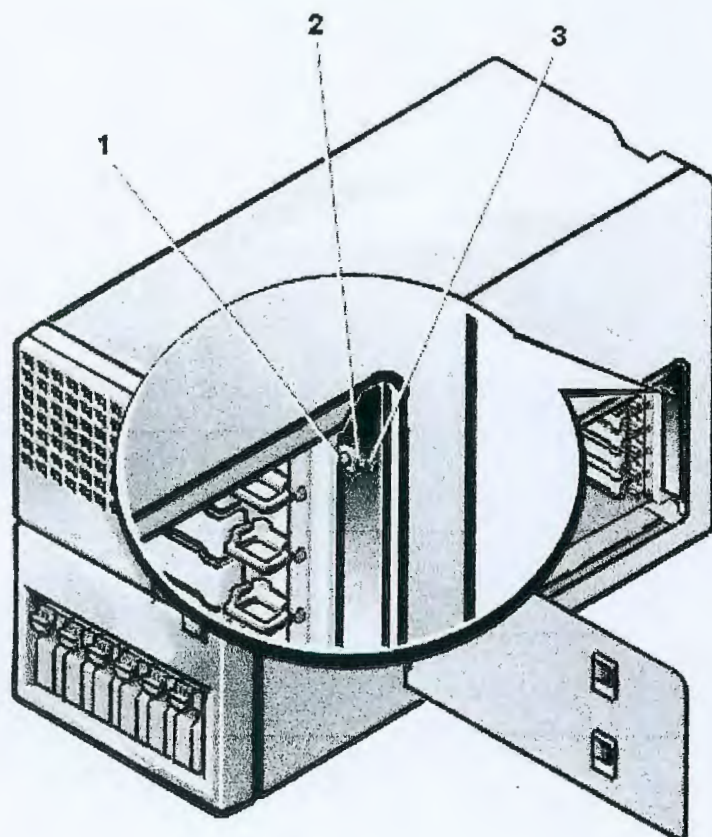
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On	Flash fast	No	Identifying a slot by user application or device driver
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Figure 25. Hot-Plug PCI Board Features



- 1 Switch
- 2 Amber LED
- 3 Green LED

Choosing an Expansion Slot

Follow these guidelines when you add an expansion card:

- Connectors PCI1 through PCI4 support hot plug replacement and addition of PCI expansion cards. (Verify that the expansion card supports hot-plug capability.)
- Install 64-bit, 66-megahertz (MHz), 3 volt (V) PCI expansion cards in connectors PCI1 and PCI2. (You may also install 32-bit cards in these connectors.)



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- ✓ **NOTES:** If connectors PCI1 and PCI2 are both empty and you hot-add a 66-MHz card, the card will operate at 33 MHz until you reboot the system.

Installing a 33-MHz card in either connector will limit the bus speed of both connectors to 33 MHz.

If PCI1 or PCI2 is occupied by a card running at 66-MHz and you hot-add a 33-MHz card in the empty 66-MHz slot, you must reset the system so that the 33-MHz expansion card is activated; both cards will then run at 33-MHz.

- Install 64-bit, 33-MHz, 5-V PCI expansion cards in connectors PCI3 through PCI6. (You may also install 32-bit cards in these connectors.)
- Install 32-bit, 33-MHz cards in connector PCI7.

- ✓ **NOTE:** If you install a Dell OpenManage™ Remote Assistant Card (DRAC), version 2.0, you must install this expansion card in connector PCI7.

Expansion Card Removal

To remove an expansion card, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Open the expansion-card door.

NOTICE: To avoid damage to the card or your computer, you must power down the expansion slot (expansion slots PCI1 through PCI4), or shut down the system (all other expansion slots) before you remove an expansion card.

2. Remove power from the expansion slot by using one of the following methods:

- If the expansion slot (slots PCI5 through PCI7) or the expansion card itself does not support hot-plug removal, or your computer's operating system does not support hot-plug PCI cards, shut down the system, including any attached peripherals, and disconnect the system from its electrical outlet.
- If your computer uses the NetWare 5.0 operating system, run **ncmcon.nlm** to place the affected slot in the off state.

- ✓ **NOTE:** If all slots are reported with **No** in the **Hot Plug** column, press the <Esc> key to exit the **ncmcon** utility and ensure that **dellsbd.nlm** is loaded; then restart the utility by running the **load ncmcon.nlm** command.

- If your computer uses the Windows 2000 operating system, press the switch next to the expansion slot to power down the expansion-card connector, or run the **Unplug or Eject Hardware** control applet from the status bar.



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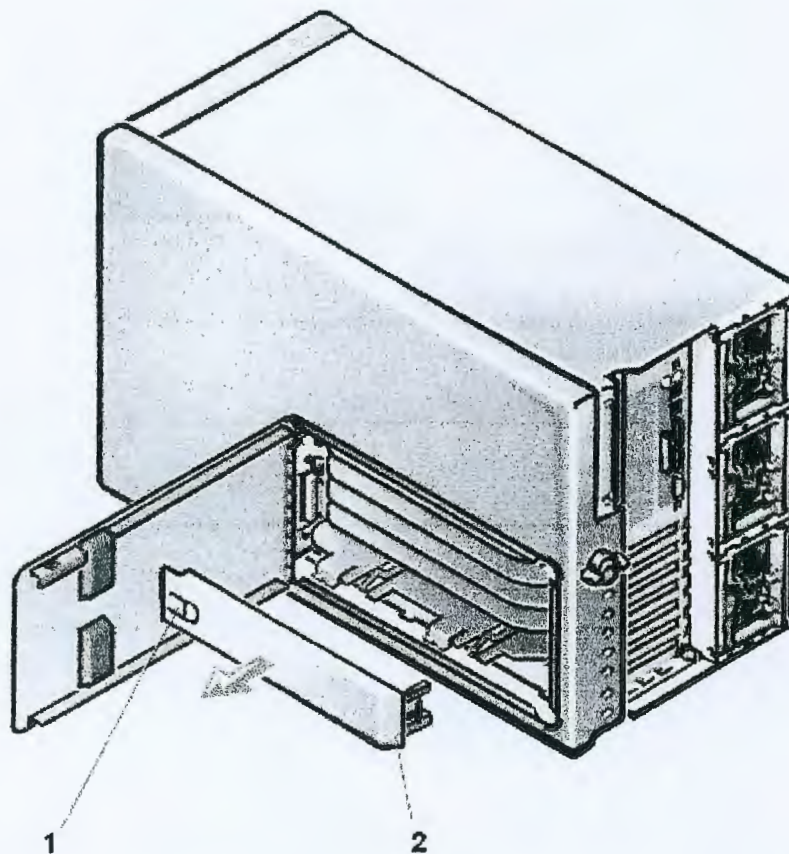


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The green LED flash as the expansion-card connector is powered down. When both indicator lights adjacent to the expansion slot are off, the card may be safely removed.

3. If you are removing a card from non-hot-plug connectors PCI5, PCI6, or PCI7, remove the plastic expansion slot cover by lifting the release tab (see Figure 26).

Figure 26. Non-Hot Plug Expansion Slot Cover



1 Release tab

2 Non-hot plug expansion card cover

4. Disconnect any cables attached to the expansion card you want to remove.

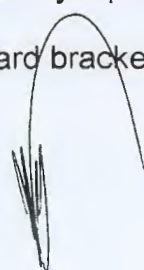
Be sure to record the location of each cable before you disconnect it.

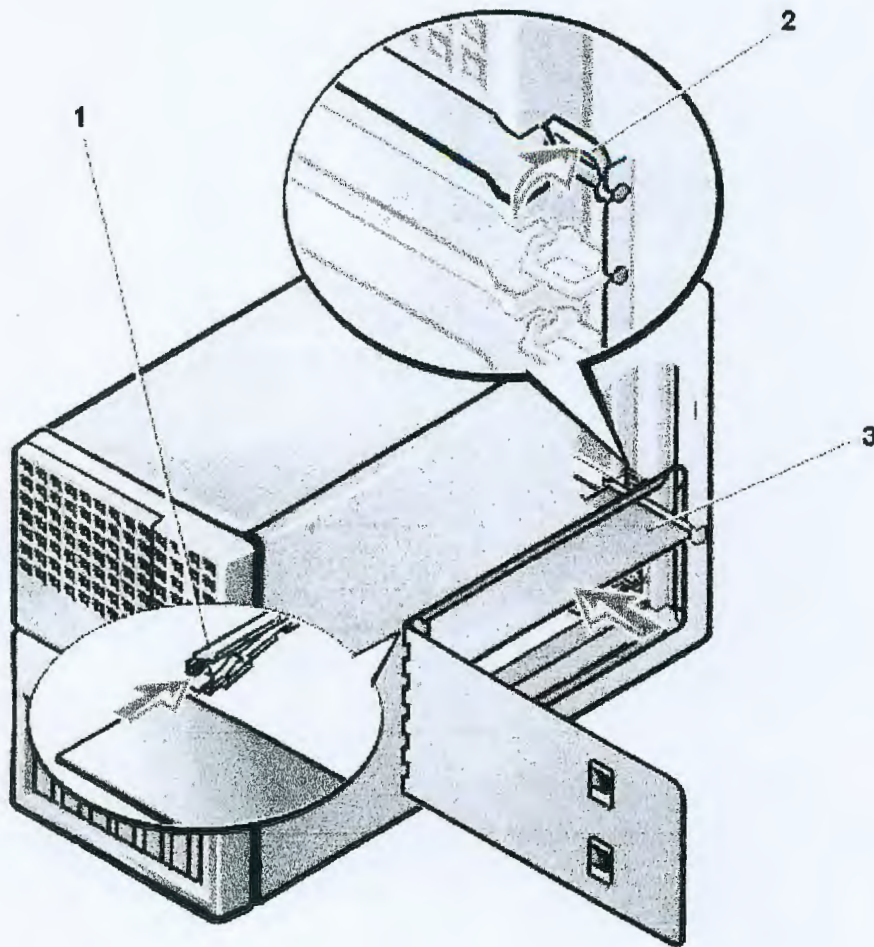
5. The bracket on the expansion card is secured by a plastic latch (see Figure 27).

Rotate the latch away from the expansion-card bracket to release the bracket (see Figure 27).

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Figure 27. Expansion-Card Latches





- 1 Plastic card guide
- 2 Expansion-card latch
- 3 Expansion card

6. If the expansion card is a full-length card, release the card's inner end by opening the tab on the plastic card guide (see [Figure 27](#)).

CAUTION: Some expansion cards can become warm during system operation. Be sure that the card has had sufficient time to cool after the connector is powered down before you touch the card.

7. Grasp the expansion card by its top corners, and carefully remove it from the expansion-card connector.
8. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

NOTE: You must install a filler bracket over an empty expansion slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the computer and help to maintain proper cooling and airflow inside the computer.

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9. If you removed a card from non-hot-plug connectors PCI5, PCI6, or PCI7, reinstall the plastic expansion slot cover.
10. Close the expansion-card door.
11. If you shut down the system prior to installing the card, reconnect the computer and peripherals to electrical outlets, and turn them on.

Installing an Expansion Card

To install an expansion card, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."



1. Open the expansion-card door.

NOTICE: You can only perform hot-plug replacement of an existing card with an identical replacement card.

NOTICE: To avoid damage to the card or your computer, you *must* power down the expansion slot before you install an expansion card.

2. Remove power from the expansion slot by using one of the following methods:

- If the expansion slot (slots PCI5 through PCI7) or the expansion card itself does not support hot-plug removal, or your computer's operating system does not support hot-plug PCI cards, shut down the system, including any attached peripherals, and disconnect the system from its electrical outlet.
- If your computer uses the NetWare 5.0 operating system, run **ncmcon.nlm** to place the affected slot in the off state.

 **NOTE:** If all slots are reported with **No** in the **Hot Plug** column, press the <Esc> key to exit the **ncmcon** utility and ensure that **dellsbd.nlm** is loaded; then restart the utility by running the **load ncmcon.nlm** command.

- If your computer uses the Windows 2000 operating system, press the switch next to the expansion slot to power down the expansion-card connector, or run the **Unplug or Eject Hardware** control applet from the status bar.

The green LED will flash as the expansion-card connector is powered down. When both indicator lights adjacent to the expansion slot are off, the card may be safely removed.

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3. If you are installing a card in non-hot-plug connectors PCI5, PCI6, or PCI7, remove the plastic expansion slot cover by lifting the release tab (see Figure 26).
4. If you are replacing an expansion card, remove the existing card by following steps

4 through 7 of "Expansion Card Removal."



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5. Prepare the expansion card for installation.

See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing the card for the system.

6. To remove the expansion-slot filler bracket from an **unoccupied** expansion slot, rotate the latch away from the expansion-card bracket to **release** the bracket (see Figure 27).
7. Insert the card-edge connector firmly into the expansion-card connector on the chassis.
8. When the card is firmly seated in the connector and the card-mounting bracket is aligned with the brackets on either side of it, close the expansion-card latch.
9. If the expansion card is a full-length card, secure the inner end of the card by closing the plastic latch on the card guide over the top edge of the card (see Figure 27).
10. Connect any cables that should be attached to the card.

See the documentation that came with the card for information about cable connections.

11. If your computer uses the Windows 2000 operating system, press the PCI hot-plug switch again to restore power to the expansion slot.

The green LED adjacent to the expansion slot will flash and then remain illuminated when power is restored.

12. If you installed a card in non-hot-plug connectors PCI5, PCI6, or PCI7, reinstall the plastic expansion slot cover.
13. Close the expansion card door.

 **NOTES:** If connectors PCI1 and PCI2 are both empty and you hot-add a 66-MHz card, the card will operate at 33 MHz until you reboot the system.

Installing a 33-MHz card in either connector will limit the bus speed of both connectors to 33 MHz.

If PCI1 or PCI2 is occupied by a card running at 66-MHz and you hot-add a 33-MHz card in the empty 66-MHz slot, you must reset the system so that the 33-MHz expansion card is activated; both cards will then run at 33-MHz.

14. If your computer uses the NetWare 5.0 operating system, run the **ncmcon.nlm** utility to restore power to the expansion slot occupied by the new PCI expansion card.

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15. If your computer uses the NetWare 5.0 operating system, the replacement adapter card is not automatically bound when the slot is turned on, and you are using the Transmission Control Protocol/Internet Protocol (TCP/IP), enter the following command on the system console to reinitialize the system and bind the new card to the network:

```
reinitialize system
```

16. If you shut down the system prior to installing the card, reconnect the computer and peripherals to electrical outlets, and turn them on.

DIMMs

The eight dual in-line memory module (DIMM) sockets on the memory board (see Figure 28) can accommodate 128 megabytes (MB) to 2 gigabytes (GB) of dynamic random-access memory (DRAM), in 128-MB increments.

Memory Upgrade Kits

The system is upgradable to 2 GB by installing combinations of 64-, 128-, and 256-MB registered DIMMs. You can purchase memory upgrade kits from Dell as needed.

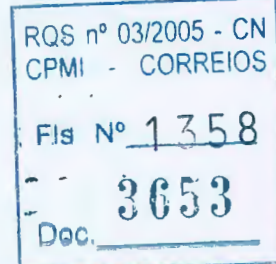
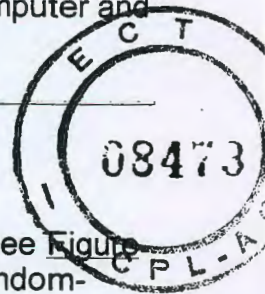
 **NOTE:** The DIMMs must be rated to run at 133 megahertz (MHz) or faster.

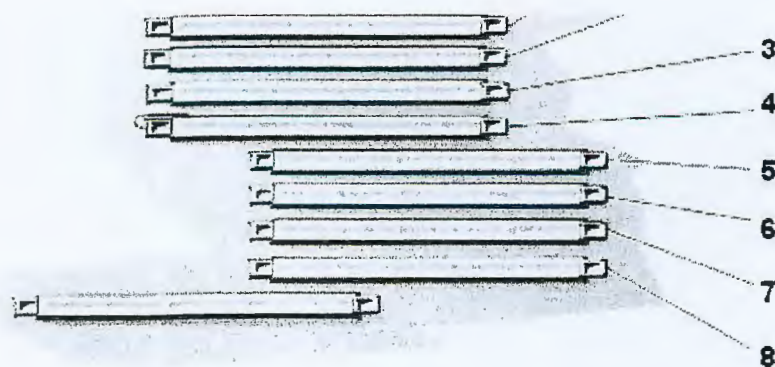
DIMM Installation Guidelines

The DIMM sockets are arranged in two groups of four sockets each. Sockets DIMM_A, DIMM_C, DIMM_E, and DIMM_G are associated with the primary North Bridge circuit, while sockets DIMM_B, DIMM_D, DIMM_F, and DIMM_H are associated with the secondary North Bridge circuit (see Figure 28). You can improve system performance by distributing memory equally between these two groups of DIMMs. When you install DIMMs, follow these guidelines:

- Install DIMMs in pairs, beginning with sockets DIMM_A and DIMM_B, then sockets DIMM_C and DIMM_D, and so on.
- Both DIMMs in a pair must be the same size.
- If you install different sizes of DIMMs, install them in order of descending capacity, beginning with the highest-capacity DIMMs in sockets DIMM_A and DIMM_B.

Figure 28. DIMM Sockets





- 1 DIMM B
- 2 DIMM D
- 3 DIMM F
- 4 DIMM H
- 5 DIMM G
- 6 DIMM E
- 7 DIMM C
- 8 DIMM A

Table 3 illustrates several sample memory configurations based on these guidelines.

Table 3. Sample DIMM Configurations

Total Desired Memory	DIMM Sockets							
	DIMM_A	DIMM_B	DIMM_C	DIMM_D	DIMM_E	DIMM_F	DIMM_G	DIMM_H
128 MB	64 MB	64 MB	None	None	None	None	None	None
256 MB	128 MB	128 MB	None	None	None	None	None	None
384 MB	64 MB	64 MB	128 MB	128 MB	None	None	None	None
512 MB	256 MB	256 MB	None	None	None	None	None	None
768 MB	128 MB	128 MB	256 MB	256 MB	None	None	None	None

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2 GB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB
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Performing a Memory Upgrade

To perform a memory upgrade to the system board, perform the following steps.

- ⚠ WARNING:** Before you perform this procedure, you must turn off the computer and disconnect it from the electrical outlet. For more information, see "Safety First—For You and Your Computer."

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Shut down the system, including any attached peripherals, and disconnect the system from the electrical outlet.
2. Remove the computer cover.
3. Remove the interior support panel.
4. Remove the cooling shroud.
5. Locate the DIMM sockets in which you will install or replace DIMMs.

Figure 33 shows the relative location of the DIMM sockets on the system board. Figure 28 shows the labeling of the DIMMs sockets.

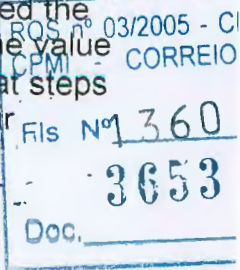
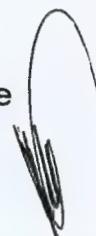
6. Install or replace the DIMMs as necessary to reach the desired memory total.
7. Replace the cooling shroud, support panel, and computer cover, reconnect the system to the electrical outlet, and turn on the system.
After the system completes the power-on self-test (POST) routine, it runs a memory test that displays the new memory total, which includes all newly installed memory.

- ✓ NOTE:** If the memory total is incorrect, turn off and disconnect the computer and peripherals from their AC power sources, remove the computer cover, and check all the installed DIMMs to make sure they are seated properly in their sockets. Then repeat step 6.

The system detects that the new memory does not match the system configuration information, which is stored in nonvolatile RAM (NVRAM). The monitor displays an error message that ends with the following words:

Press <F1> to continue; <F2> to enter System Setup

8. Press <F2> to enter the System Setup program, and check the **System Memory** field on the System Setup screens. The system should have already changed the value in the System Memory field to reflect the newly installed memory. If the value is incorrect, one or more of the DIMMs may not be installed properly. Repeat steps 1 through 8, checking to make sure that the DIMMs are firmly seated in their sockets.



9. Run the system memory test in the Dell Diagnostics.

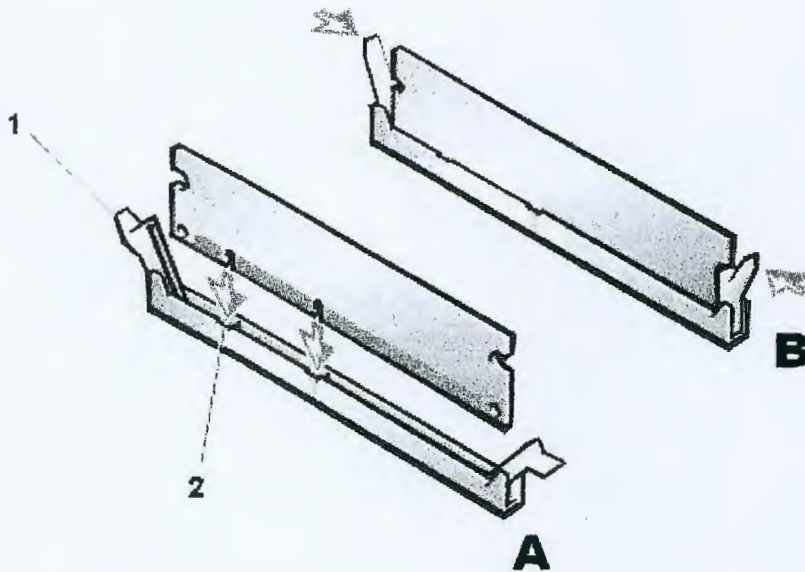
Installing DIMMs

To install a DIMM, perform the following steps.

NOTICE: See "Protecting Against Electrostatic Discharge."

1. Press down and outward on the ejectors on the DIMM socket, as shown in Figure 29, to allow the DIMM to be inserted into the socket.

Figure 29. Installing a DIMM



1 DIMM socket ejectors (2)

2 Alignment keys (2)

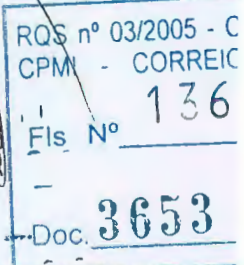
2. Align the DIMM's edge connector with the slot in the center of the DIMM socket, and insert the DIMM in the socket (see step A in Figure 29).

The DIMM socket has two alignment keys that allow the DIMM to be installed in the socket in only one way.

3. Press down on the DIMM with your thumbs while pulling up on the ejectors with your index fingers to lock the DIMM into the socket (see step B in Figure 29).

When the DIMM is properly seated in the socket, the ejectors on the DIMM socket should align with the ejectors on the other sockets with DIMMs installed.

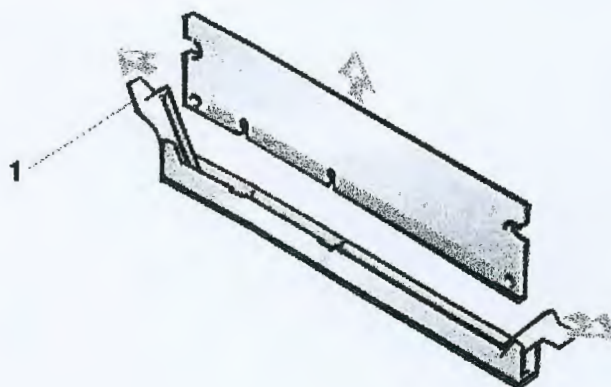
4. Repeat steps 1 through 3 to install the remaining DIMMs.
5. Continue with step 7 of "Performing a Memory Upgrade."



Removing DIMMs

To remove a DIMM, press down and outward on the ejectors on each end of the socket until the DIMM pops out of the socket (see Figure 30).

Figure 30. Removing a DIMM



1 DIMM socket ejectors (2)



Microprocessor and Heat Sink

Each microprocessor is contained within a single-edge contact (SEC) cartridge and heat sink assembly. The system board has two guide bracket assemblies, which hold the SEC cartridge and heat sink assemblies. If your system has only one microprocessor, the secondary guide bracket assembly must contain a terminator card.

If you add a second microprocessor to the system, its maximum speed need not match that of the primary microprocessor, but the internal operating speed of the faster microprocessor will be reduced to match the speed of the slower microprocessor. For example, if a 667-MHz microprocessor is added to a system containing a 600-MHz primary microprocessor, both microprocessors will operate at an internal speed of 600 MHz.

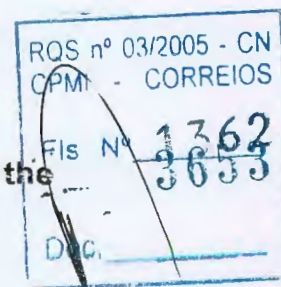
NOTICE: If you are upgrading a system by installing a secondary microprocessor, you must order an upgrade kit from Dell. The upgrade kit from Dell contains the correct version of the microprocessor for use as a secondary microprocessor.

Removing a Terminator Card

To remove a terminator card, perform the following steps.

- ⚠ WARNING:** Before you perform this procedure, you must turn off the computer and disconnect it from its AC power source. For more information, see ["Safety First—For You and Your Computer."](#)

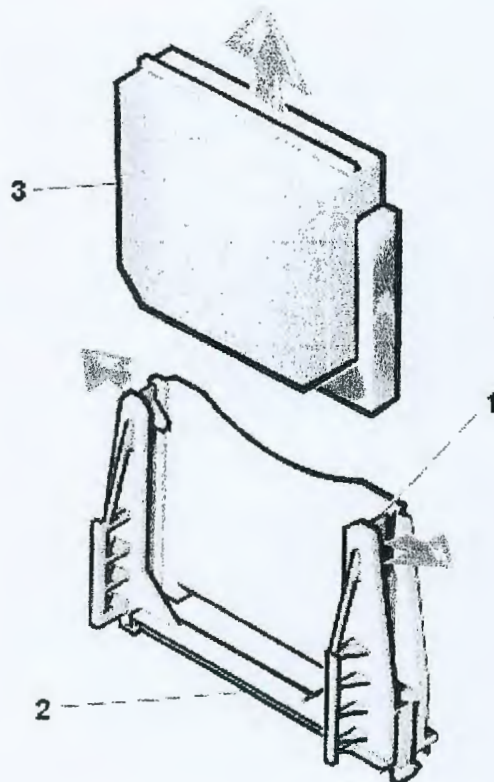
1. Turn off the system, including any attached peripherals, and disconnect the AC power cable from its power source.



NOTICE: See "Protecting Against Electrostatic Discharge."

2. Remove the computer cover.
3. Remove the cooling shroud.
4. Slide the terminator card up and out of the guide bracket assembly (see Figure 31).

Figure 31. Removing a Terminator Card



- 1 Tabs (2)
- 2 Guide bracket assembly
- 3 Terminator card

Installing a Terminator Card

NOTICE: You cannot use 100-MHz-only front-side bus (FSB) terminator cards from earlier PowerEdge systems in a PowerEdge 4400 system; you must use the new 133-MHz terminator card. However, you can use the new 133-MHz terminator card in older systems running at 100 MHz.

You can tell the difference between the 100-MHz and 133-MHz terminator cards by looking at them; while both use the same plastic housing, the internal board on the 133-MHz terminator cards is about half the size of the older terminator cards.



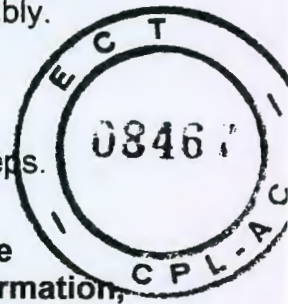
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To install a terminator card, align the notch on the terminator card with the socket on the guide bracket assembly and guide the card into the empty guide bracket assembly.

Removing the SEC Cartridge and Heat Sink Assembly

To remove the SEC cartridge and heat sink assembly, perform the following steps.



- ⚠ WARNING:** Before you perform this procedure, you must turn off the computer and disconnect it from the electrical outlet. For more information, see "Safety First—For You and Your Computer."
- ⚠ CAUTION:** The SEC cartridge and heat sink assembly can get extremely hot during system operation. Be sure the assembly has had sufficient time to cool before you touch it.
- ⚠ CAUTION:** When handling the SEC cartridge and heat sink assembly, take care to avoid sharp edges on the heat sink.

NOTICE: Every slot must be occupied by either a microprocessor or a terminator card.

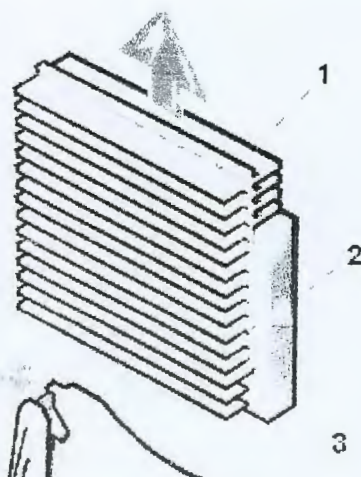
NOTICE: See "Protecting Against Electrostatic Discharge."

1. Turn off the system, including any attached peripherals, and disconnect the AC power cable from its power source.
2. Remove the computer cover.
3. Remove the support panel.

NOTICE: If you need to remove the guide-bracket assembly, note that the plastic parts do not interlock as on older systems.

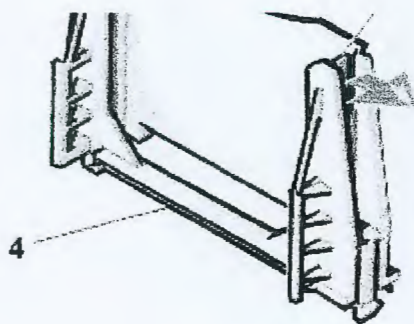
4. Pull the tabs on each side of the guide bracket away from the ends of the cartridge, then lift the cartridge and heat sink assembly away from the guide bracket assembly (see Figure 32).

Figure 32. Removing an SEC Cartridge and Heat Sink



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- 1 Heat sink
- 2 SEC cartridge
- 3 Tabs (2)
- 4 Guide-bracket assembly

Replacing the SEC Cartridge and Heat Sink Assembly

To install a replacement SEC cartridge and heat sink assembly, perform the following steps:

1. Remove the terminator card or old SEC cartridge from the guide-bracket assembly.
2. Slide the SEC cartridge into the guide bracket assembly, and firmly seat the assembly until the tabs on the guide bracket assembly snap into place over the ends of the cartridge.
3. Replace the cooling shroud and computer cover.

System Board Components

Figure 33. System Board Features

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- 1 Ultra/Narrow SCSI connector (SCSI1)
- 2 Ultra3 SCSI connector (SCSI2)
- 3 Battery connector for optional RAID controller (RAID_BTRY)

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20 19



- through PCI7
- 19 Dell Remote Assistant Car connector (SVR_MGT)
 - 20 Battery connector (BTRY)
 - 21 DIMM socket for optional RAID controller (RAID_DIMM)
 - 22 SCSI backplane board interface cable connector (BACKPLANE)
 - 23 Diskette-drive interface connector (FLOPPY)
 - 24 Power input connector (POWER2)
 - 25 Chassis intrusion switch connector (INTRUS2)
 - 26 Power input connector (POWER1)
 - 27 Power input connector (POWER3)
 - 28 Fan connector (FANS)

Battery

The system battery maintains system configuration, date, and time information in a special section of memory when you turn off the system. The operating life of the battery ranges from 2 to 5 years, depending on how you use the system (for example, if you keep the system on most of the time, the battery gets little use and thus lasts longer). You may need to replace the battery if an incorrect time or date is displayed during the boot routine along with one of the following or similar messages:

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Time-of-day not set -- please run SETUP program
Strike the F1 key to continue, F2 to run the setup utility

or

System CMOS checksum bad -- Run SETUP
Strike the F1 key to continue, F2 to run the setup utility

or

Invalid configuration information -- please run SETUP program
Strike the F1 key to continue, F2 to run the setup utility

To determine if the battery needs replacing, reenter the time and date through the System Setup program. Turn off and disconnect the system from the electrical outlet for a few hours, and then reconnect and turn the system on again. Enter the System Setup program. If the date and time are not correct in the System Setup program, replace the battery.

 **NOTES:** Some software may cause the system time to speed up or slow down. If the system seems to operate normally except for the time kept in the System Setup program, the problem may be caused by software rather than by a defective battery.

If the system is turned off for long periods of time (for weeks or months), the NVRAM may lose its system configuration information. This situation is not caused by a defective battery.

You can operate the system without a battery; however, the system configuration information maintained by the battery in NVRAM is erased each time you shut down the computer. Therefore, you must reenter the system configuration information and reset the options each time the system boots until you replace the battery.

The battery is a 3.0-volt (V), coin-cell CR2032-type battery. To remove the battery, perform the following steps.

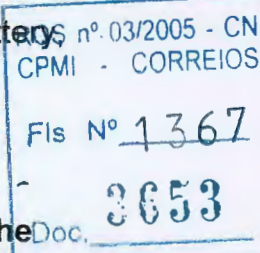
NOTICE: See "Protecting Against Electrostatic Discharge."

 **WARNING:** Before you perform this procedure, you must turn off the computer and disconnect it from the electrical outlet. For more information, see "Safety First—For You and Your Computer."

 **CAUTION:** There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Replacing the Battery

1. Enter the System Setup program and, if possible, make a printed copy of the



System Setup screens.

See "Using the System Setup Program" in the *User's Guide* for instructions.

2. Shut down the system, including any attached peripherals, and disconnect the system from the electrical outlet.
3. Remove the computer cover.
4. Remove the interior support panel.
5. Remove the cooling shroud.
6. Remove the non-hot-plug PCI cover.
7. Remove all expansion cards.
8. Remove the PCI insulator.



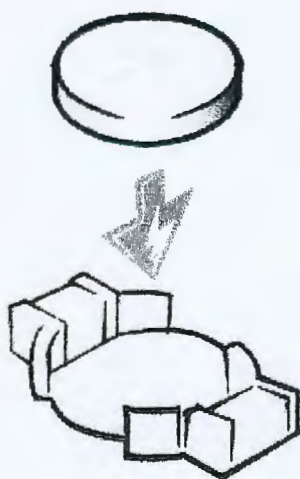
To remove the PCI insulator, release the two latches on the insulator along the inner wall of the system tray, and then lift the PCI insulator from the system.

9. Remove the battery.

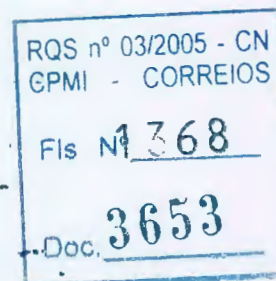
Pry the battery out of its socket with your fingers or with a blunt, nonconductive object such as a plastic screwdriver.

10. Install the new battery with the side labeled "+" facing up (see Figure 34).

Figure 34. Installing the Battery



11. Reinstall the PCI insulator.
12. Reinstall the expansion cards.
13. Replace the non-hot-plug PCI cover.
14. Replace the cooling shroud, interior support panel, and computer cover, and then



reconnect the computer and peripherals to their AC power sources and turn them on.

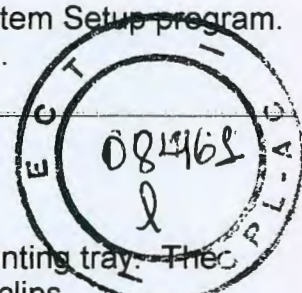
15. Enter the System Setup program to confirm that the battery is operating properly.
16. Enter the correct time and date through the System Setup program's **Time** and **Date** settings. Also reenter any system configuration information that is no longer displayed on the System Setup screens, and then exit the System Setup program.
17. To test the newly-installed battery, turn off and disconnect the system from the electrical outlet for at least an hour.
18. After an hour, plug in and turn on the system and enter the System Setup program. If the time and date are still incorrect, replace the system board.

System Board

The system board assembly consists of the system board and a mounting tray. The system board is held to the mounting tray with screws and mounting clips.

To remove the system board assembly, perform the following steps:

1. Run the Resource Configuration Utility (RCU) to record interrupt setting information.
See your system *User's Manual* for more information.
2. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
3. Remove the computer cover.
4. Remove the interior support panel.
5. Remove the non-hot plug expansion card cover.
6. Remove the cooling shroud.
7. Remove all external peripheral cables from their connectors at the back of the computer.
8. Record the locations and disconnect all internal cables attached to the system board.
9. Record the slot number and remove any expansion card internal cables, and then remove all expansion cards.
10. Release the tray latch at the lower-back corner of the tray (see Figure 5).
7. Pull the tray open to the first slide position.
8. To remove the tray completely, pull the tray slightly outward (or upward if the system is mounted horizontally) and press the tray latch again, and pull the tray out



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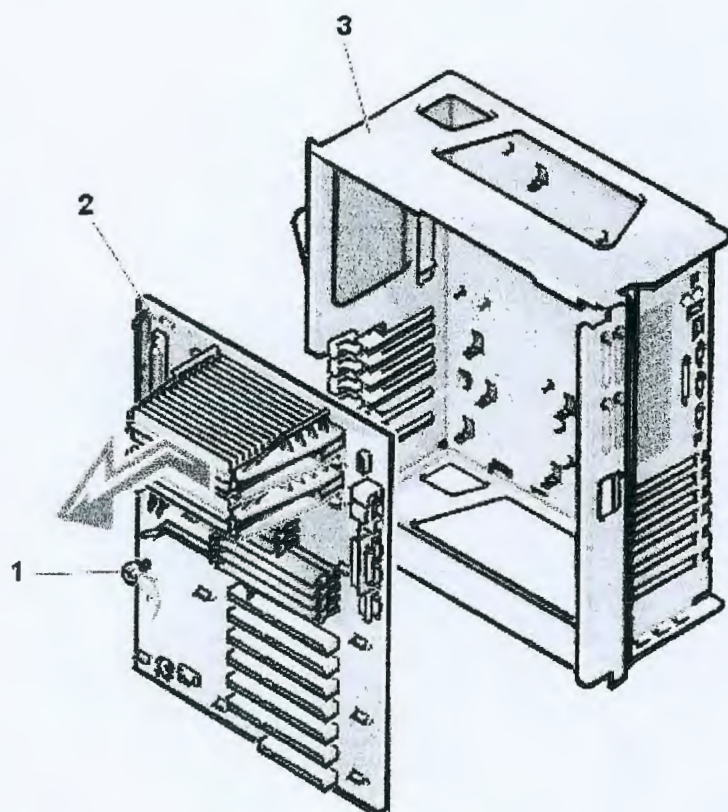
of the chassis.

9. Remove the PCI insulator.

To remove the PCI insulator, release the two latches on the insulator along the inner wall of the system tray, and then lift the PCI insulator from the system.

10. Remove any system board components you are migrating to the new system board.
11. Loosen the thumbscrew securing the system board to the tray (see Figure 35).

Figure 35. System Board Removal



- 1 Thumbscrew
- 2 System board
- 3 System board tray



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12. Slide the system board to the left as shown in Figure 35 (toward the inner expansion card guide brackets) about 12 mm (0.5 inch) to clear the chassis hooks, and remove the system board.

Before installing the replacement system board, install any components you removed from the old system board onto the replacement board. To retain the same system configuration and appropriate resource sharing, install the expansion cards in the same slots they occupied on the old system board. Verify that the jumper settings on the new system board are correct.

Integrated RAID Controller

To activate the integrated PowerEdge Expandable RAID Controller (PERC) 3/Di, follow these steps.

NOTICE: You will lose existing data on hard-disk drives attached to the integrated Adaptec AIC-7899 SCSI controller after you activate the integrated PERC 3/Di and configure the hard-disk drives as RAID.

1. Turn off the system, including any attached peripherals, and disconnect the AC power cable from its power source.

⚠ WARNING: Before you perform this procedure, you must turn off the computer and disconnect it from its AC power source. For more information, see "Safety First—For You and Your Computer."

NOTICE: See "Protecting Against Electrostatic Discharge."

2. Remove the computer cover.
3. Remove the interior support panel.
4. Remove the cooling shroud.
5. If the RAID DIMM and RAID battery are already installed, disconnect the RAID battery cable and remove the RAID battery.
6. Press the ejectors on the RAID DIMM socket down and outward, as shown in Figure 29, to allow the DIMM to be inserted into the socket.

See Figure 33 for the location of the socket on the system board.

✎ NOTE: The RAID controller DIMM must be an unbuffered DIMM, rated to run at 100 MHz or faster. Do not substitute registered DIMMs such as those used for system memory.

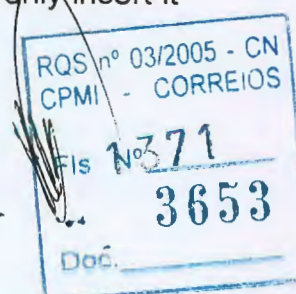
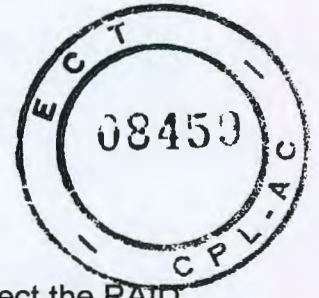
7. Align the RAID DIMM's edge connector with the slot in the center of the DIMM socket, and insert the DIMM in the socket (see step A in Figure 29).

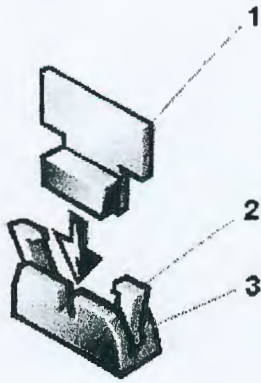
The DIMM socket has two alignment keys that allow the DIMM to be installed in the socket in only one way.

8. Press down on the DIMM with your thumbs while pulling up on the ejectors with your index fingers to lock the DIMM into the socket (see step B in Figure 29).
9. Install the RAID hardware key (see Figure 33 for the location of the socket on the system board).

Insert the hardware key into the socket and secure the key with the latches on each end of the socket (see Figure 36). The key is designed so that you can only insert it one way and is labeled "PE4400."

Figure 36. Installing the RAID Hardware Key



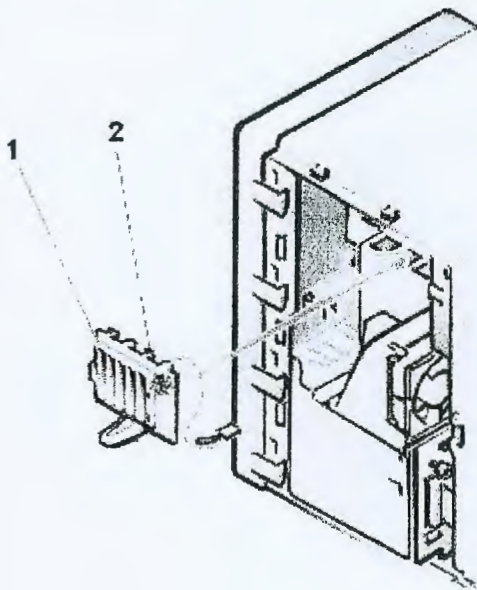


- 1 RAID hardware key
- 2 Latches (2)
- 3 Socket

10. Install the RAID battery on the side of the external drive bay compartment in the system chassis, adjacent to the two cooling fans (see [Figure 37](#)).

Fit the two hooks along the upper edge of the battery into the slot near the top of the drive bay, then snap the other edge of the battery into place so the battery lies flat on the drive bay.

Figure 37. Installing the RAID Battery



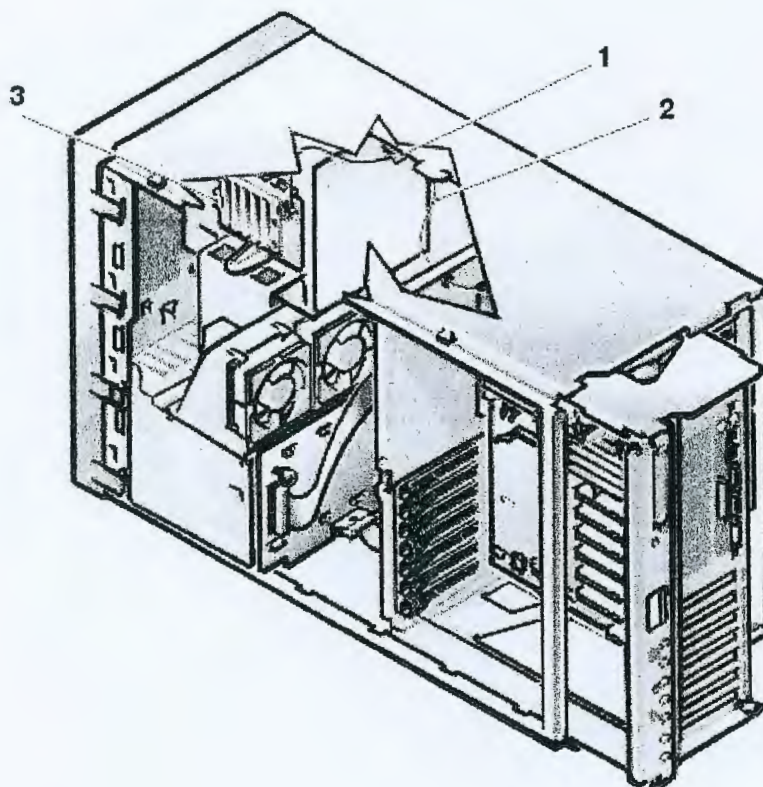
- 1 RAID battery



“ Hooks (2)

11. Thread the battery cable through the clip attached to the side of the chassis (see Figure 38).

Figure 38. Threading the Battery Cable Through the Clip



- 1 Clip
- 2 Battery cable
- 3 RAID battery

12. Connect the battery cable to the RAID battery connector (RAID_BTRY) on the system board (see Figure 33).

13. Replace the cooling shroud and

computer cover; reconnect the computer and peripherals to their AC power sources and turn them on.

14. Install the RAID software.

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For details, refer to the RAID controller documentation.

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Jumpers, Switches, and Connectors: Dell™ PowerEdge™ 4400 Systems Service Manual

- [Overview](#)
- [System Board Labels](#)
- [Jumpers and Switches—A General Explanation](#)
- [SCSI Backplane Boards](#)
- [System Board Jumpers](#)
- [Disabling a Forgotten Password](#)



Overview

This topic provides specific information about the jumpers on the system board. It also provides some basic information on jumpers and switches and describes the connectors and sockets on the various boards in the computer.

Jumpers and Switches—A General Explanation

Jumpers and switches provide a convenient and reversible way of reconfiguring the circuitry on a printed circuit board. When reconfiguring the system, you may need to change jumper settings on the system board. You may also need to change jumper or switch settings on expansion cards or drives.

Jumpers

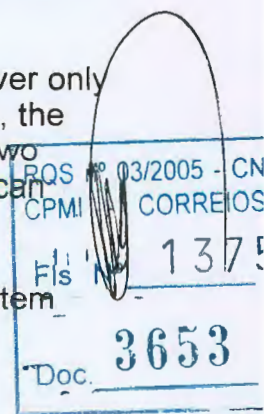
Jumpers are small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit. To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.



NOTICE: Make sure the system is turned off before you change a jumper setting. Otherwise, damage to the system or unpredictable results may occur.

A jumper is referred to as open or unjumped when the plug is pushed down over only one pin or if there is no plug at all. When the plug is pushed down over two pins, the jumper is referred to as jumped. The jumper setting is often shown in text as two numbers, such as 1-2. The number 1 is printed on the circuit board so that you can identify each pin number based on the location of pin 1.

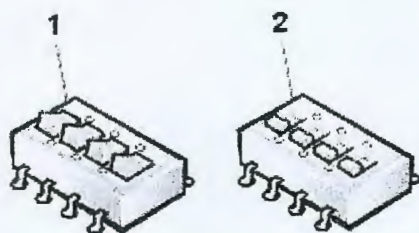
Figure 1 shows the location and default settings of the jumper blocks on the system



board. See Table 1 for the designations, default settings, and functions of the system's jumpers.

Switches

Switches control various circuits or functions in the computer system. The switches that you are most likely to encounter are dual in-line package (DIP) switches, which are normally packaged in groups of two or more switches in a plastic case. Two common types of DIP switches are slide switches and rocker switches (see the following illustration).



1 Rocker switch

2 Slide switch

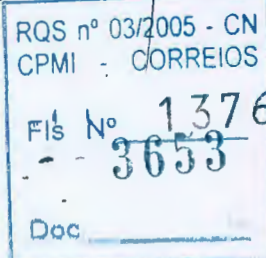


Each of these switches has two positions, or settings (usually on and off). To change the setting of a slide switch, use a small, pointed object such as a small screwdriver or a straightened paper clip to slide the switch to the proper position. To change the setting of a rocker switch, use the screwdriver or paper clip to press down on the appropriate side of the switch. In either case, do not use a pen, pencil, or other object that might leave a residue on the switch.

System Board Jumpers

Figure 1 shows the location of the configuration jumpers on the system board. Table 1 lists the function of these jumpers.

Figure 1. System Board Jumpers



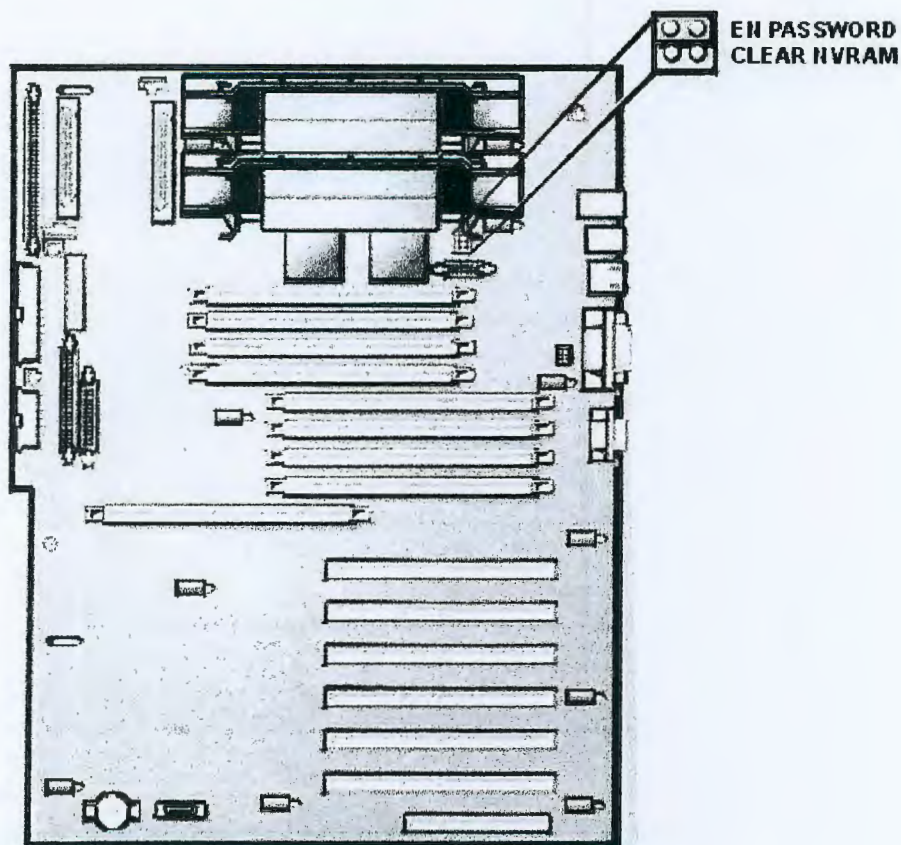


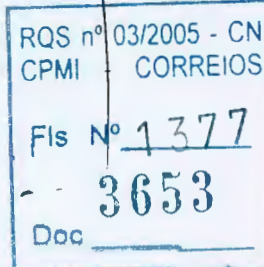
Table 1. System-Board Jumper Settings

Jumper	Setting	Description
EN PASSWORD	 (default)	The password feature is enabled.
		The password feature is disabled.
CLEAR NVRAM	 (default)	The NVRAM configuration settings are retained at system boot.
		The NVRAM configuration settings are cleared at next system boot. (If the NVRAM configuration settings become corrupted to the point where the system will not boot, install the jumper plug and boot the system. Remove the jumper before restoring the NVRAM configuration information.)

System Board Labels

Table 2 lists the connectors and sockets located on the system board.

Table 2. System Board Connectors and Sockets



Connector or Socket	Description
BACKPLANE	Hot-pluggable SCSI backplane board interface cable connector
BTRY	Battery connector
DIMM_x	DIMM sockets
NIC	Ethernet connector
INTRUS _n	Intrusion-alarm switch connectors
FAN _n	Fan connectors
FLOPPY	Diskette drive interface connector
KYBD	Keyboard connector
MOUSE	Mouse connector
PARALLEL	Parallel port connector; sometimes referred to as LPT1
PCI _n	PCI expansion-card connectors
PCI_LED_PNL	Hot-plug PCI indicator panel connector
POWER _n	Power connectors
PRIMARY SCSI A and PRIMARY SCSI B	Ultra3 SCSI controller connectors
RAID_DIMM	DIMM socket for integrated RAID controller
RAID_BTRY	Battery connector for integrated RAID controller
SECONDARY SCSI	Ultra/Narrow SCSI controller connector
SERIAL _n	Serial port connectors; sometimes referred to as COM1 and COM2
SVR_MGMT	Connector for DRAC
USB	USB connector
VGA	Video connector
PROC_ _n	Microprocessor guide bracket assembly and connectors

SCSI Backplane Boards

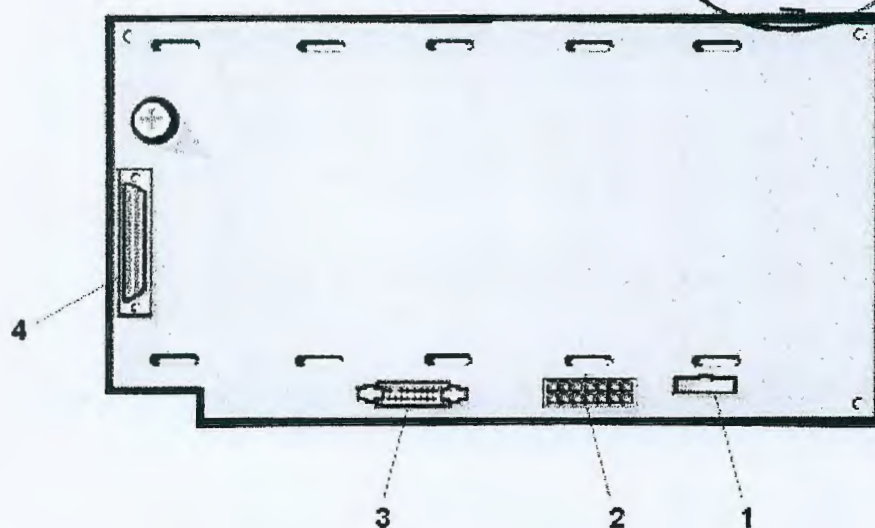
Figure 2 shows the location of the connectors on the 1 x 8 and 1 x 6 SCSI backplane boards.

Figure 2. Connectors on 1 x 8 and 1 x 6 SCSI Backplane Boards


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- 1 Cooling fan power cable connector (FAN)
- 2 Power connector (POWER)
- 3 System-board data cable connector (PLANAR)
- 4 Ultra2/m SCSI cable connector (SCSIA)

Disabling a Forgotten Password

The computer's software security features include a supervisor password and a user password, which are discussed in detail in "Using the System Setup Program" of the *User's Guide*. A password jumper on the system board enables these password features or disables them and clears any password(s) currently in use.

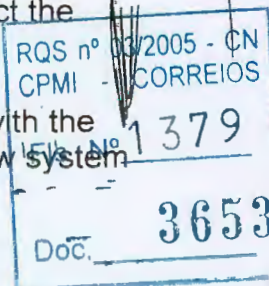
To disable a forgotten supervisor password or user password, perform the following steps:

1. Refer to "System Board Jumpers" for the location of the password jumper (labeled "EN PASSWORD") on the system board.
2. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

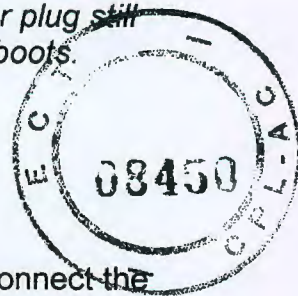
⚠ WARNING: Before you perform this procedure, you must turn off the computer and disconnect it from its AC power source. For more information, see "Safety First—For You and Your Computer."

3. Remove the computer cover.
4. Remove the interior support panel.
5. Remove the jumper plug from the EN PASSWORD jumper.
6. Replace the interior support panel and computer cover, and then reconnect the computer to an electrical outlet and turn it on.

The existing passwords are not disabled (erased) until the system boots with the EN PASSWORD jumper plug removed. However, before you assign a new system and/or user password, you must install the jumper plug.



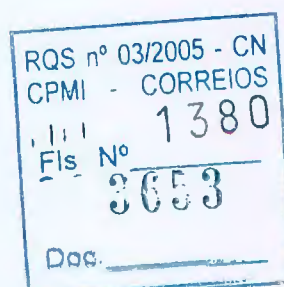
✓ **NOTE:** If you assign a new system or user password with the jumper plug still removed, the system disables the new password(s) the next time it boots.



7. Repeat steps 2 to 4.
8. Install the jumper plug on the EN PASSWORD jumper.
9. Replace the interior support panel and computer cover, and then reconnect the computer to the electrical outlet and turn it on.
10. Assign a new system and/or user password.

To assign a new system password using the System Setup program, see "Assigning a System Password" in the *User's Guide*. To assign a new user password using the System Setup program, see "Assigning a User Password" in the *User's Guide*.

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Using the System Setup Program: Dell™ PowerEdge™ 4400 Systems Service Manual

- | | |
|---|---|
| Overview | Using the System Password Feature |
| Entering the System Setup Program | Using the Setup Password Feature |
| System Setup Screens | Disabling a Forgotten Password |
| System Setup Options | Responding to Error Messages |

Overview

Each time you turn on your computer system, the system compares the hardware installed in the system to the hardware listed in the system configuration information stored in nonvolatile random-access memory (NVRAM). If the system detects a discrepancy, it generates error messages that identify the incorrect configuration settings. The system then prompts you to enter the System Setup program to correct the setting.

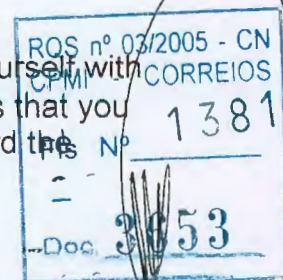
You can use the System Setup program as follows:

- To change the system configuration information after you add, change, or remove any hardware in your system
- To set or change user-selectable options—for example, the time or date on your system
- To enable or disable all integrated devices in your system

NOTICE: Whenever you make changes to the System Setup program or change settings for built-in devices, you must run the Resource Configuration Utility, make any necessary changes, and save the system configuration information. Failure to do so may cause resource conflicts between Peripheral Component Interconnect (PCI) devices (such as PCI expansion cards, the integrated video controller, or the integrated small computer system interface [SCSI] host adapter). See "Configuring Expansion Cards" in your online *User's Guide* for more information about how PCI devices are configured based on settings in the Resource Configuration Utility.

You can view the current settings at any time. When you change a setting, the system reboots automatically so that the change can take effect.

After you set up your system, run the System Setup program to familiarize yourself with your system configuration information and optional settings. Dell recommends that you print the System Setup screens (by pressing the <Print Screen> key) or record the information for future reference.



Before you use the System Setup program, you need to know the kind of diskette drive (s) and hard-disk drive(s) installed in your computer. If you are unsure of any of this information, see the Manufacturing Test Report that was shipped with your system. You can access the **Manufacturing Test Report** in the **Dell Accessories** folder.

Entering the System Setup Program

Enter the System Setup program as follows:

1. Turn on your system.
If your system is already on, shut it down and then turn it on again.
2. Press <F2> immediately after you see the following message:

Press <F2> for System Setup

If you wait too long and your operating system begins to load into memory, let the system complete the load operation; then shut down the system and try again.

 **NOTE:** To ensure an orderly system shutdown, consult the documentation that accompanied your operating system.

You can also enter the System Setup program by responding to certain error messages. See "Responding to Error Messages."



System Setup Screens

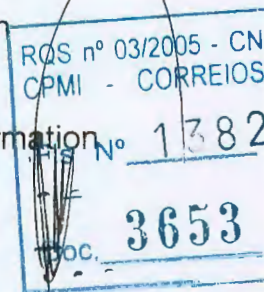
The three System Setup screens, **Page 1**, **Page 2**, and the **Device List** screen, display the current setup and configuration information and optional settings for your system. (Typical examples are illustrated in Figure 1.) Information on the System Setup screens is organized in five boxed areas:

- Title box — The box at the top of both screens lists the system name, page number, and the revision number of the basic input/output system (BIOS).
- Configuration options — The box on the left half of both screens lists the options that define the installed hardware in your computer.

Fields beside the options contain settings or values; those that appear bright on the screen can be changed. Settings or values that you cannot change because they are determined by the system appear less bright.

Some options have multiple fields, which may show settings or values as bright or less bright depending upon what settings or values you entered in other fields.

- Help — The box on the upper-right half of both screens displays help information for the option with a currently highlighted field.



- System data — The box in the lower-right corner of both screens displays information about your system.
- Key functions — The line of boxes across the bottom of both screens lists keys and their functions within the System Setup program.

Using the System Setup Program

Table 1 lists the keys that you use to view or change information on the System Setup screens and to exit the program.

Table 1. System-Setup Navigation Keys

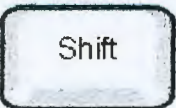
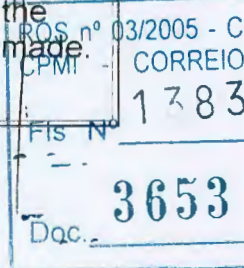
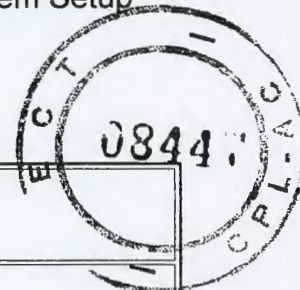
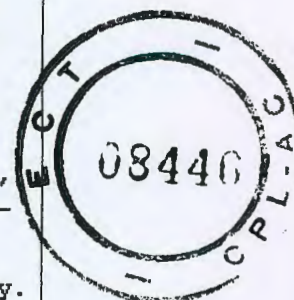
Keys	Action
 or 	Moves to the next field.
  or 	Moves to the previous field.
 or 	Cycles through the settings in a field. In many fields, you can also type the appropriate value.
 or 	Scrolls through help information.
 	Switches between Page 1 and Page 2.
	Exits the System Setup program and reboots the system if any changes were made. For most of the options, any changes you make are recorded but do not take effect until the next time you boot the system. For a few options (as noted in the help area), the changes take effect immediately.
 	Exits the System Setup program and reboots the system, implementing any changes you have made.

Figure 1. System Setup Screens



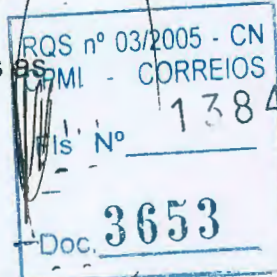
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Dell Computer Corporation (www.dell.com)	
Page 1 of 2	System PowerEdge 4400/600 Setup BIOS Version: XXX
Time: 22:46:58 Date: Thurs June 10, 1999 Diskette Drive A: 3.5 inch, 1.44 MB Diskette Drive B: Not Installed Speaker: On Num Lock: On OS Install Mode: Off Fan Speed: Full Speed System Alert: Fault Processor Serial Number: Disabled Processor Core: 600 MHz Processor Bus: 133 MHz Processor 1: A2 Processor 2: Not Installed	This category sets the time in 24-hour format (hours:minutes:seconds) for the internal clock/calendar. To change the value in a field, enter a number or use the left- or right-arrow key. Changes take effect immediately. Pentium® III Xeon™ Processor Level 2 Cache: 256 KB Advanced System Memory: 128 MB ECC SDRAM Video Memory: 4 MB SDRAM Service Tag:
Tab, Shift-Tab change fields ← → change values Alt-P next Esc exit Alt-B reboot	



Dell Computer Corporation (www.dell.com)	
Page 2 of 2	System PowerEdge 4400/600 Setup BIOS Version: XXX
Keyboard Errors: Report Boot Sequence: Device List, Ctrl → System Password: Disabled by Jumper Setup Password: Disabled by Jumper Password Status: Unlocked Integrated Devices USB: On Mouse: On Serial Port 1: Auto Serial Port 2: Auto Parallel Port: 378h Parallel Mode: PS/2 Diskette: Auto NIC: On MAC Address: 00C04F1F106D Primary SCSI: On Channel A: SCSI Channel B: SCSI Secondary SCSI: On	To assign and enable a password, press the left- or right- arrow key, then type the password and press <Enter>. Repeat to verify. If the system beeps when you press a key, the key is illegal for password use. Press the <Esc> key to abort the password entry procedure. Pentium® III Xeon™ Processor Level 2 Cache: 256 KB Advanced System Memory: 128 MB ECC SDRAM Video Memory: 4 MB SDRAM Service Tag:
Tab, Shift-Tab change fields ← → change values Alt-P next Esc exit Alt-B reboot	

If your system has RAID on motherboard (ROMB), Page 2 of the setup screen is as follows:



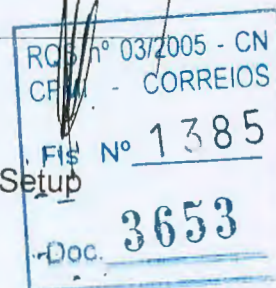
Dell Computer Corporation (www.dell.com)	
Page 2 of 2	System PowerEdge 4400/600 Setup BIOS Version: XXX
Keyboard Errors: Report Boot Sequence: Device List, Ctrl → System Password: Disabled by Jumper Setup Password: Disabled by Jumper Password Status: Unlocked ——— Integrated Devices ——— USB: On Mouse: On Serial Port 1: Auto Serial Port 2: Auto Parallel Port: 378h Parallel Mode: PS/2 Diskette: Auto NIC: On MAC Address: 00C04F1F106D Onboard RAID: RAID Channel A: RAID Channel B: RAID Secondary SCSI: On	To assign and enable a password, press the left- or right- arrowkey, then type the password and press <Enter>. Repeat to verify. If the system beeps when you press a key, the key is illegal for password use. Press the <Esc> key to abort the password entry procedure. Pentium® III Xeon™ Processor Level 2 Cache: 256 KB Advanced System Memory: 128 MB ECC SDRAM Video Memory: 4 MB SDRAM Service Tag:
Tab, Shift-Tab change fields ← → change values Alt-P next Esc exit Alt-B reboot	



Dell Computer Corporation (www.dell.com)	
Device List	System PowerEdge 4400/600 Setup BIOS Version: XXX
Boot Device Priority: Diskette Drive A: Hard Disk C: Exclude from Boot Device Priority: Device Controller Priority: System BIOS boot devices AIC-7899:00 SEAGATE ST34371W	The DEVICE LIST contains devices that may be bootable. The system attempts to boot from the devices in the list as ordered. If you ESC or ALT-B from this menu, the displayed order becomes the boot selection. Ctrl-Ins moves items between "Boot Device Priority" and "Exclude from Boot Device Priority" only. PgDn next 1 of 2 PgUp prev Pentium® III Xeon™ Processor Level 2 Cache: 256 KB Advanced System Memory: 128 MB ECC SDRAM Video Memory: 4 MB SDRAM Service Tag:
Tab, Shift-Tab change fields ← → change values Alt-P next Esc exit Alt-B reboot	

System Setup Options

The following subsections explain in detail each of the options on the System Setup



screens.

Time

Time resets the time on the computer's internal clock.

Time is kept in a 24-hour format (*hours:minutes:seconds*). To change the time, press the right-arrow key to increase the number in the highlighted field or press the left-arrow key to decrease the number. If you prefer, you can type numbers in each of the appropriate fields.

Date

Date resets the date on the computer's internal calendar.

Your system automatically displays the day of the week corresponding to the settings in the three fields that follow (*month, day-of-month, and year*).

To change the date, press the right-arrow key to increase the number in the highlighted field or press the left-arrow key to decrease the number. If you prefer, you can type numbers in the *month* and *day-of-month* fields.

Diskette Drive A

Diskette Drive A identifies the type of diskette drive installed in your computer. With the standard cabling configuration, **Diskette Drive A** (the boot diskette drive) is the 3.5-inch diskette drive installed in the top, externally accessible drive bay.

The option's settings always match the physical locations of the drives in your computer—the first drive listed on **Page 1** of the System Setup screens is the top drive in your computer.

The settings are:

- 3.5 Inch, 1.44 MB (default)
- 3.5 Inch, 720 KB
- 5.25 Inch, 360 KB
- 5.25 Inch, 1.2 MB
- Not Installed

Diskette Drive B

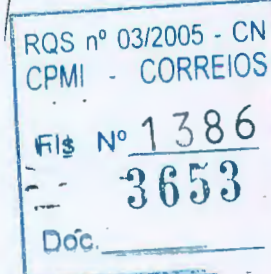
Diskette Drive B identifies the type of diskette drive installed in your computer.

The settings are:

- 3.5 Inch, 1.44 MB
- 3.5 Inch, 720 KB
- 5.25 Inch, 360 KB
- 5.25 Inch, 1.2 MB
- Not Installed (default)



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Speaker

Speaker determines whether the integrated speaker is **On** (the default) or **Off**.

Num Lock

Num Lock determines whether your system boots with the Num Lock mode activated on 101- or 102-key keyboards (it does not apply to 84-key keyboards).

OS Install Mode

The **OS Install Mode** determines the maximum amount of memory available to the operating system. **On** sets the maximum memory available to the operating system to 256 megabytes (MB). **Off** (default) makes all of the system memory available to the operating system.

Fan Speed

The **Fan Speed** option has the following settings:

- **Full Speed** (default)
- **Noise Reduced**

System Alert

The **System Alert** option has the following settings:

- **Fault** (default)
- **Warning**

Processor Serial Number

Processor Serial Number enables or disables the processor serial number feature. This option has the following settings:

- **Disabled** (default)
- **Enabled**

Processor Core

Processor Core displays the internal microprocessor speed.

Processor Bus

Processor Bus displays the front side bus speed.

Processor 1 and Processor 2



Processor 1 and **Processor 2** display the stepping number of the processor in processor slot 1 or slot 2 (such as **C0**), if one is installed. If the stepping number is unknown, **Unknown** is displayed. If no processor is installed in this slot, **Not Installed** is displayed. This option has no user-selectable settings.

Keyboard Errors

Keyboard Errors enables or disables reporting of keyboard errors during the power-on self-test (POST), which is a series of tests that the system performs on the hardware each time you turn on the system.

This option is useful when applied to self-starting servers or host systems that have no permanently attached keyboard. In these situations, selecting **Do Not Report** suppresses all error messages relating to the keyboard or to the keyboard controller during POST. This setting does not affect the operation of the keyboard itself if a keyboard is attached to the computer.

Boot Sequence

Boot Sequence can be set to **Diskette First** (default), **Hard Disk Only**, or **Device List**. **Ctrl →**.

The term *boot* refers to the system's start-up procedure. When turned on, the system "bootstraps" itself into an operational state by loading into memory a small program, which in turn loads the necessary operating system. **Boot Sequence** tells the system where to look for the files that it needs to load.

Diskette First

Selecting **Diskette First** causes the system to try booting from drive A first. If the system finds a diskette that is not bootable in the drive or finds a problem with the drive itself, it displays an error message. If it does not find a diskette in the drive, the system tries to boot from the hard-disk drive (drive 0). If the hard-disk drive is not bootable, the system tries to boot from the Plug and Play network adapters in the order found.

Hard Disk Only

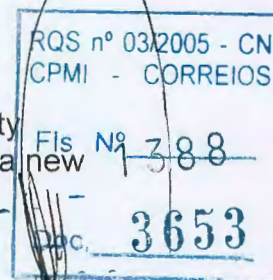
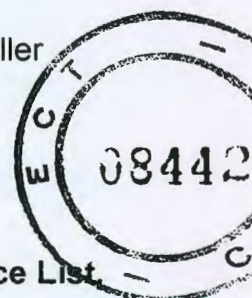
Selecting **Hard Disk Only** causes the system to attempt to boot first from the hard-disk drive and then from the Plug and Play network adapters in the order found.

Device List, Ctrl →

Selecting **Device List, Ctrl →** causes the system to attempt to boot from devices in the list shown on the **Device List** screen of the System Setup program. Pressing <Ctrl> and the right-arrow key simultaneously causes the **Device List** screen to appear.

System Password

System Password displays the current status of your system's password security feature and allows you to assign and verify a new password. No one can assign a new password unless the current status is **Not Enabled**, which is displayed in bright characters.



The settings for the **System Password** option are:

- **Not Enabled** (default)
- **Enabled**
- **Disabled by Jumper** (jumper removed)



 **NOTE:** See *"Using the System Password Feature"* for instructions on assigning a system password and using or changing an existing system password. See *"Disabling a Forgotten Password"* for instructions on disabling a forgotten system password.

Setup Password

Setup Password lets you restrict access to your computer's System Setup program in the same way that you restrict access to your system with the system password feature. The settings are:

- **Not Enabled** (default)
- **Enabled**
- **Disabled by Jumper** (jumper removed)

 **NOTE:** See *"Using the Setup Password Feature"* for instructions on assigning a setup password and using or changing an existing setup password. See *"Disabling a Forgotten Password"* for instructions on disabling a forgotten setup password.

Password Status

When **Setup Password** is set to **Enabled**, **Password Status** allows you to prevent the system password from being changed or disabled at system start-up.

To lock the system password, you must first assign a setup password in the **Setup Password** option and then change the **Password Status** option to **Locked**. In this state, the system password cannot be changed through the **System Password** option and cannot be disabled at system start-up by pressing <Ctrl><Enter>.

To unlock the system password, you must enter the setup password in the **Setup Password** option and then change the **Password Status** option to **Unlocked**. In this state, the system password can be disabled at system start-up by pressing <Ctrl><Enter> and then changed through the **System Password** option.

USB

USB enables or disables the system's Universal Serial Bus (USB) ports. Disabling the USB ports makes system resources available for other devices.

Mouse

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Mouse enables or disables the system's integrated Personal System/2 (PS/2)-compatible mouse port. Disabling the mouse allows an expansion card to use IRQ12.

Serial Port 1 and Serial Port 2

Serial Port 1 and **Serial Port 2** configure the system's integrated serial ports. These options can be set to **Auto** (the default) to automatically configure a port, to a particular designation (**COM1** or **COM3** for **Serial Port 1**; **COM2** or **COM4** for **Serial Port 2**), or to **Off** to disable the port.

If you set a serial port to **Auto** and add an expansion card containing a port configured to the same designation, the system automatically remaps the integrated port to the next available port designation that shares the same interrupt request (IRQ) setting as follows:

- **COM1** (input/output [I/O] address 3F8h), which shares IRQ4 with **COM3**, is remapped to **COM3** (I/O address 3E8h).
- **COM2** (I/O address 2F8h), which shares IRQ3 with **COM4**, is remapped to **COM4** (I/O address 2E8h).

 **NOTE:** When two COM ports share an IRQ setting, you can use either port as necessary, but you may not be able to use them both at the same time. If the second port (**COM3** or **COM4**) is also in use, the integrated port is turned off.

Parallel Port

Parallel Port configures the system's integrated parallel port. This option can be set to **378h** (the default), to alternate addresses **278h** or **3BCh**, or to **Off** to disable the port.

 **NOTE:** Do not set **Parallel Port** to **278h** if you have an **Extended Capabilities Port (ECP)** device connected to the port.

Parallel Mode

Parallel Mode controls whether the system's integrated parallel port acts as an AT-compatible (unidirectional) or PS/2-compatible (bidirectional) port.

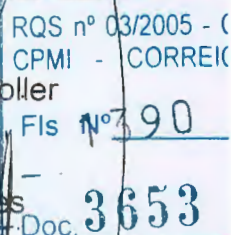
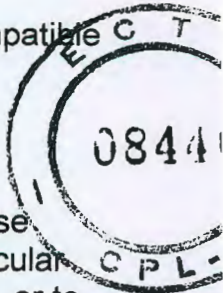
Set this option according to the type of peripheral device that is connected to the parallel port. To determine the correct mode to use, see the documentation that came with the device.

Diskette

Diskette controls the operation of the system's integrated diskette drive controller.

With **Auto** (default) selected, the system turns off the integrated diskette drive controller when necessary to accommodate a controller card installed in an expansion slot.

With **Write Protect** selected, nothing can be written to diskette drives and tape drives.



using the system's integrated diskette drive controller. (The system can still read from the drives.) When this setting is selected, the **Auto** setting (whereby the system turns off the integrated diskette drive controller as necessary) is also in effect.

Selecting **Off** turns off the integrated diskette controller; this setting is used primarily for troubleshooting purposes.

NIC

NIC determines whether the system's integrated network interface controller (NIC) is **On** (the default) or **Off**.

MAC Address

The **MAC Address** field displays the address of the media access control (MAC) address used by the integrated NIC. This field has no user-selectable settings.

Primary SCSI and Secondary SCSI

Primary SCSI and **Secondary SCSI** turn the respective SCSI controller on or off. Selecting **On** (the default setting) enables the integrated PCI SCSI controller and scans the associated ROM. For the system to boot from a drive attached to the integrated SCSI controller, the drive must be enabled. Selecting **Off** causes the BIOS to mask the presence of a device.

Onboard RAID

When ROMB is detected, selections are **RAID**, **SCSI**, and **Off**. When **Onboard RAID** is set to **RAID**, **Channel A** displays **RAID** and **Channel B** can be set to **RAID** or **SCSI**. When **Onboard RAID** is set to **SCSI** or **Off**, **Channel A** and **Channel B** display **SCSI**.

NOTICE: To avoid possible data loss, back up all data on the hard-disk drives before changing the mode of operation of the integrated SCSI controller.

Channel A

Channel A displays the selections **RAID** or **SCSI**. When **RAID** is displayed, this channel supports RAID functionality. When **SCSI** is displayed, it functions as a SCSI channel.

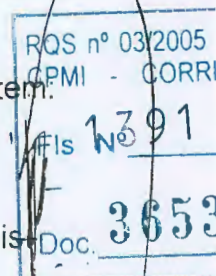
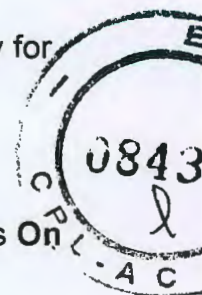
Channel B

Channel B will display the selections **RAID** or **SCSI**. When **RAID** is displayed, this channel supports RAID functionality. When **SCSI** is displayed, it functions as a SCSI channel. **Channel A** must be set to **RAID** before **Channel B** can display **RAID**.

System Data Categories

The following categories, which are not selectable, display information about the system.

- The processor line displays the microprocessor type and speed.
- **Level 2 Cache** displays the size of the cache (256 kilobytes [KB]). **Advanced** is



displayed for a microprocessor with enhanced cache.

- **System Memory** indicates the entire amount of installed memory detected in your system, except for memory on Expanded Memory Specification (EMS) expansion cards. After adding memory, check this option to confirm that the new memory is installed correctly and is recognized by the system.
- **Video Memory** displays the amount of video memory detected in your system.
- **Service Tag** displays the system's five- or seven-character service tag number, which was programmed into NVRAM by Dell during the manufacturing process. Refer to this number during technical assistance or service calls. The service tag number is also accessed by certain Dell support software, including the diagnostics software.
- **Asset Tag** displays the customer-programmable asset tag number for the system if an asset tag number has been assigned. You can use the Asset Tag utility, which is included with your software support utilities, to enter an asset tag number up to 10 characters long into NVRAM.

Using the System Password Feature

NOTICE: The password features provide a basic level of security for the data on your system. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

Your Dell system is shipped to you without the system password feature enabled. If system security is a concern, you should operate your system only with system password protection.

You can assign a system password whenever you use the System Setup program. After a system password is assigned, only those who know the password have full use of the system.

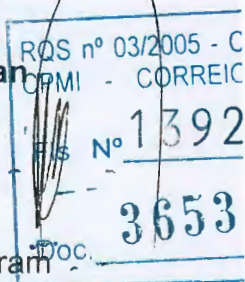
When the **System Password** option is set to **Enabled**, the computer system prompts you for the system password just after the system boots.

To change an existing system password, you must know the password (see "Deleting or Changing an Existing System Password"). If you assign and later forget a system password, you need to be able to remove the computer cover to change a jumper setting that disables the system password feature (see "Disabling a Forgotten Password"). Note that you erase the setup password at the same time.

NOTICE: If you leave your system running and unattended without having a system password assigned, or if you leave your computer unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on your hard-disk drive.

Assigning a System Password

Before you can assign a system password, you must enter the System Setup program



and check the **System Password** option.



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When a system password is assigned, the setting shown for the **System Password** option is **Enabled**. When the system password feature is disabled by a jumper setting on the system board, the setting shown is **Disabled by Jumper**. You cannot change or enter a new system password if either of these settings is displayed.

When no system password is assigned and the password jumper on the system board is in the enabled position (its default), the setting shown for the **System Password** option is **Not Enabled**. Only when this option is set to **Not Enabled** can you assign a system password, using the following procedure:

1. Verify that the **Password Status** option is set to **Unlocked**.

For instructions on changing the setting for **Password Status**, see "Password Status."

2. Highlight the **System Password** option, and then press the left- or right-arrow key.

The option heading changes to **Enter Password**, followed by an empty seven-character field in square brackets.

3. Type your new system password.

You can use up to seven characters in your password.

As you press each character key (or the spacebar key for a blank space), a placeholder appears in the field.

The password assignment operation recognizes keys by their location on the keyboard, without distinguishing between lowercase and uppercase characters. For example, if you have an *M* in your password, the system recognizes either *M* or *m* as correct.

Certain key combinations are not valid. If you enter one of these combinations, the speaker emits a beep.

To erase a character when entering your password, press the <Backspace> key or the left-arrow key.

 **NOTE:** To escape from the field without assigning a system password, press the <Tab> key or the <Shift><Tab> key combination to move to another field, or press the <Esc> key at any time prior to completing step 5.

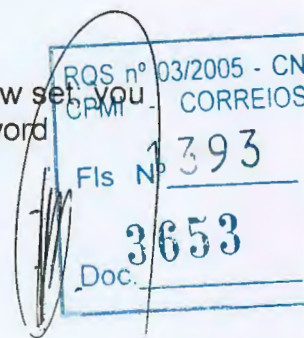
4. Press <Enter>.

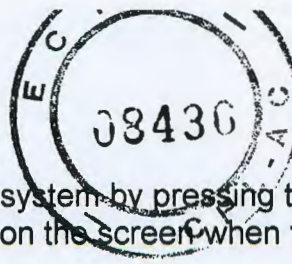
If the new system password is less than seven characters, the whole field fills with placeholders. Then the option heading changes to **Verify Password**, followed by another empty seven-character field in square brackets.

5. To confirm your password, type it a second time and press <Enter>.

The password setting changes to **Enabled**. Your system password is now set. You can exit the System Setup program and begin using your system. Password protection takes effect when you exit the System Setup program.

Using Your System Password to Secure Your System





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Whenever you turn on your system, reboot the system by pressing the <Ctrl><Alt> key combination, the following prompt appears on the screen when the **Password Status** option is set to **Unlocked**:

Type in the password and... -- press <ENTER> to leave password security enabled. -- press <CTRL><ENTER> to disable password security. Enter password:

If the **Password Status** option is set to **Locked**, the following prompt appears:

Type the password and press <Enter>.

After you type the correct system password and press <Enter>, your system boots and you can use the keyboard or mouse to operate your system as usual.

 **NOTE:** If you have assigned a setup password (see "Using the Setup Password Feature"), the system accepts your setup password as an alternate system password.

If a wrong or incomplete system password is entered, the following message appears on the screen:

** Incorrect password. **

Enter password:

If an incorrect or incomplete system password is entered again, the same message appears on the screen.

The third and subsequent times an incorrect or incomplete system password is entered, the system displays the following message:

** Incorrect password. **

Number of unsuccessful password attempts: 3
System halted! Must power down.

The number of unsuccessful attempts made to enter the correct system password can alert you to an unauthorized person attempting to use your system.

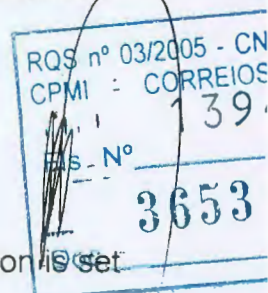
Even after your system is turned off and on, the previous message is displayed each time an incorrect or incomplete system password is entered.

 **NOTE:** You can use the **Password Status** option in conjunction with **System Password** and **Setup Password** to further protect your system from unauthorized changes. For more information, see "Password Status."

Deleting or Changing an Existing System Password

To delete or change an existing system password, perform the following steps:

1. Enter the System Setup program and verify that the **Password Status** option is set



to Unlocked.

Enter the System Setup program by pressing the <F2> key. Press the <Alt><p> key combination to move to Page 2 of the System Setup screens. For instructions on changing the setting for **Password Status**, see "Password Status."

2. Reboot your system to force it to prompt you for a system password.
3. When prompted, type the system password.
4. Press the <Ctrl><Enter> key combination to disable the existing system password, instead of pressing <Enter> to continue with the normal operation of your system.
5. Confirm that **Not Enabled** is displayed for the **System Password** option of the System Setup program.

If **Not Enabled** appears for the **System Password** option, the system password has been deleted. If you want to assign a new password, continue to step 6. If **Not Enabled** is not displayed for the **System Password** option, press the <Alt> key combination to reboot the system, and then repeat steps 3 through 5.

6. To assign a new password, follow the procedure in "Assigning a System Password."

Using the Setup Password Feature

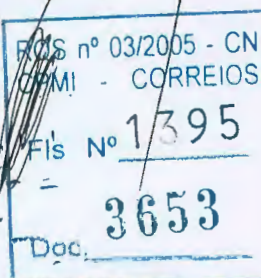
Your Dell system is shipped to you without the setup password feature enabled. If system security is a concern, you should operate your system with setup password protection.

You can assign a setup password whenever you use the System Setup program. After a setup password is assigned, only those who know the password have full use of the System Setup program.

To change an existing setup password, you must know the setup password (see "Deleting or Changing an Existing Setup Password"). If you assign and later forget a setup password, you cannot operate your system or change settings in the System Setup program until a trained service technician opens the computer chassis, changes the password jumper setting to disable the passwords, and erases the existing passwords. This procedure is described in Appendix B of the *Installation and Troubleshooting Guide*.

Assigning a Setup Password

A setup password can be assigned (or changed) only when the **Setup Password** option is set to **Not Enabled**. To assign a setup password, highlight the **Setup Password** option and press the left- or right-arrow key. The system prompts you to enter and verify the password. If a character is illegal for password use, the system emits a beep.



✓ **NOTES:** The setup password can be the same as the system password.

If the two passwords are different, the setup password can be used as an alternate system password. However, the system password cannot be used in place of the setup password.

After you verify the password, the **Setup Password** setting changes to **Enabled**. The next time you enter the System Setup program, the system prompts you for the setup password.

A change to the **Setup Password** option becomes effective immediately.

Operating With a Setup Password Enabled

If **Setup Password** is set to **Enabled**, you must enter the correct setup password before you can modify the majority of the System Setup options.

When you start the System Setup program, **Page 2** of the System Setup screens appears with the **Setup Password** option highlighted, prompting you to type the password.

If you do not enter the correct password in three tries, the system lets you view, but not modify, the System Setup screens—with the following exceptions:

- You can still modify the **Date**, **Time**, **Processor Speed**, **Num Lock**, and **Speaker** options.
- If **System Password** is not enabled and is not locked via the **Password Status** option, you can assign a system password (however, you cannot disable or change an existing system password).

✓ **NOTE:** You can use the **Password Status** option in conjunction with **Setup Password** to protect the system password from unauthorized changes. For more information, see "Password Status."

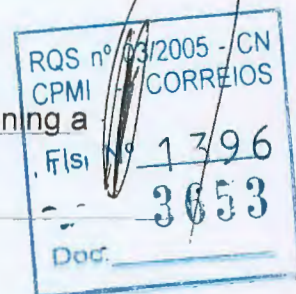
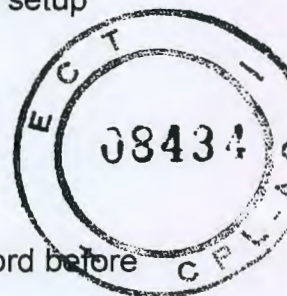
Deleting or Changing an Existing Setup Password

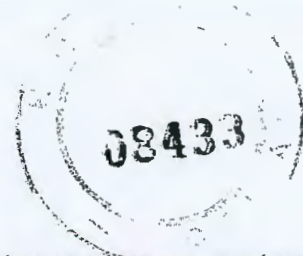
To delete or change an existing setup password, perform the following steps:

1. Enter the System Setup program.
2. Highlight the **Setup Password** option and press the left- or right-arrow key to delete the existing setup password.

The setting changes to **Not Enabled**.

3. If you want to assign a new setup password, perform the steps in "Assigning a Setup Password."





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Disabling a Forgotten Password

If you forget your system or setup password, you cannot operate your system or change settings in the System Setup program until a trained service technician opens the computer chassis, changes the password jumper setting to disable the passwords, and erases the existing passwords. This procedure is described in Appendix B of the *Installation and Troubleshooting Guide*.

Responding to Error Messages

If an error message appears on your monitor screen while the system is booting, make a note of the message. Then, before entering the System Setup program, refer to "System Beep Codes" and "System Messages" in "Messages and Codes" in the *Installation and Troubleshooting Guide* for an explanation of the message and suggestions for correcting any errors.

An exception to this routine: It is normal to receive an error message the first time you boot your system after installing a memory upgrade. In that situation, do not refer to "System Beep Codes" and "System Messages." Instead, follow the instructions for performing a memory upgrade in "Adding Memory" in "Installing System Board Options" in the *Installation and Troubleshooting Guide*.

If you are given an option of pressing either <F1> to continue or <F2> to run the System Setup program, press the <F2> key.

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**DOCUMENTAÇÃO TÉCNICA
MONITOR
DISCOS RÍGIDOS
UNIDADE DE FITA DAT**



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[Voltar à página do índice](#)**Especificações: Guia do Usuário - Monitor Colorido Dell™ M570**

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Informações Gerais

Número do modelo M570

**Tubo de imagem (CRT)**

Dimensões da tela 15 polegadas (tamanho visível da imagem de 1,78

Área de exibição predefinida:

Horizontal

267 ±4 mm (10,5 inches ± 0,15 polegadas)

Vertical

200 ± 4 mm (7,9 inches ± 0,16 polegadas)

Afastamento Diagonal de Fósforo

0,28 mm

Ângulo de deflexão

90°

Tipo de material fosforescente

P22, persistência média - curta

Revestimento da tela

Multi-camadas e revestimento anti-estático

Resolução

Limites de varredura horizontal

30 kHz to 70 kHz (automático)

Limites de varredura vertical

50 Hz to 160 Hz (automático)

Resolução otimizada predefinida

800 x 600 a 85 Hz

Resolução máxima predefinida

1024 x 768 a 85 Hz

Maior resolução endereçável*

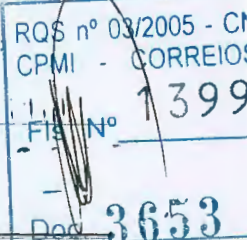
1280 x 1024 a 60 Hz

* Endereçável significa que o monitor irá sincronizar-se até este modo. Porém, a Dell não pode garantir o tamanho, a forma e a centralização da imagem serão corretos.

A Dell garante o tamanho e a centralização da imagem para todos os modos predefinidos listados na tabela a seguir.

Modos de exibição predefinidos

Modo de exibição	Frequência horizontal (kHz)	Frequência vertical (Hz)	Clock Pixel (MHz)	Polaridade de Sincronismo (Horizontal / Vertical)
------------------	-----------------------------	--------------------------	-------------------	---



IBM®, VGA2, 720 x 400	31.5	70.1	28.3	-/+
IBM, VGA3, 640 x 480	31.5	59.9	25.2	-/-
VESA®, 640 x 480	37.5	75.0	31.5	-/-
VESA, 640 x 480	43.3	85.0	36.0	-/-
VESA, 800 x 600	46.9	75.0	49.5	+/+
VESA, 800 x 600	53.7	85.1	56.3	+/+
VESA, 1024 x 768	60.0	75.0	78.8	+/+
VESA, 1024 x 768	68.7	84.9	94.5	+/+

Elétrica

Sinais de entrada de vídeo	analógico, 0.7 Vpp, positivos a 75 ohm
Sinais de entrada de sincronismo	horizontal e vertical separados e composto; Nível de TTL, positivo ou negativo
Tensão AC de entrada / frequência / corrente	90- 264 VAC/ 50 ~ 60 Hz±3Hz/ / 1.2A(RMS) a 120 VAC e 0.8A (RMS) a 220 VAC
Corrente de influxo a 120 V	20 A
Corrente de influxo a 240 V	35 A

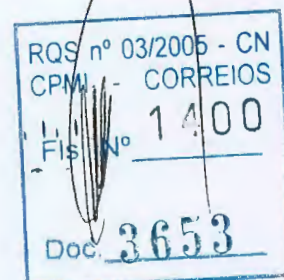
**Características físicas**

Tipo de conector	Subminiatura D de 15 pinos
Tipo de cabo de sinal	Fixado ao monitor
Dimensões:	
Altura	384 mm (15,1 polegadas)
Largura	362 mm (14,2 polegadas)
Profundidade	384 mm (15,1 polegadas)
Peso (apenas o monitor)	12,0 kg (26,5 lb)
Peso (com embalagem)	14,3 kg (31,5 lb)

Condições Ambientais

Temperatura:	
Operacional	5° to 40°C (41° to 104°F)
Não operacional	-40° a 60°C (-40° a 140°F)

Umidade:



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Operacional	10% a 80% (sem condensação)
Não operacional	5% a 95% % (sem condensação)
Altitude:	
Operacional	3.000 m (10.000 pés)
Não operacional	15.000 m (50.000 pés)
Dissipação térmica	290 BTU/hora (máximo) 239 BTU/hora (típico)



Modos de gerenciamento de energia

Se você tiver instalados no seu computador uma placa de vídeo ou software compatível com o DPMS da V, o monitor poderá reduzir automaticamente o seu consumo de energia quando não estiver sendo utilizado. Se detectado um sinal de entrada do teclado, mouse ou outros dispositivos de entrada, o monitor "acordará" automaticamente. A tabela a seguir mostra o consumo de energia e a sinalização desse recurso automático de energia:

Definição dos Diferentes Modos de Gerenciamento de Energia					
Modo da VESA	Vídeo	Sinc-H	Sinc-V	Energia consumida	Cor do LED
ligado	activo	sim	sim	Máximo 85W Típico 70 W Mínimo 38W	Verde
espera	Desativado	não	Sim	50W	Pisca verde em intervalos segundos
Hibernação	Desativado	Sim	não	Menos de 10W	Pisca verde em intervalos segundos
Activo-Desligado**	Desativado	não	não	Menos de 3W	Pisca verde em intervalos c

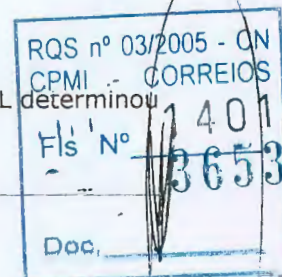
* O consumo zero de energia no modo DESLIGADO somente poderá ser alcançado desconectando-se o cabo de alimentação do monitor.

O consumo de energia é menos de 1W no modo DESLIGADO com o cabo ainda conectado, mas com o interruptor de energia desligado.



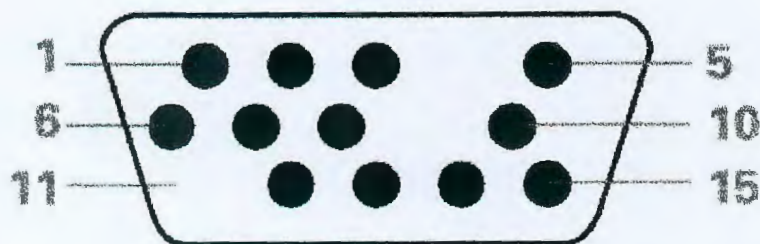
Este monitor está de acordo com as exigências da ENERGY STAR® e é compatível com o gerenciamento de energia TCO' 99.

ENERGY STAR® é uma marca registrada dos EUA. Como parceiro da ENERGY STAR®, a DELL determina que o produto atende às diretrizes da ENERGY STAR® quanto à economia de energia.



Atribuições dos Pinos

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Número do pino	Extremidade de 15 pinos do Cabo de Sinal
1	Vídeo-Vermelho
2	Vídeo-Verde
3	Vídeo-Azul
4	Sem- pino
5	DDC-retorno
6	Terra - Vermelho
7	Terra - Verde
8	Terra - Azul
9	Sem pino
10	Terra - Sinc/ auto-reticulado
11	Sem pino
12	Dados DDC
13	Sinc-H
14	Sinc-V
15	Clock do DDC



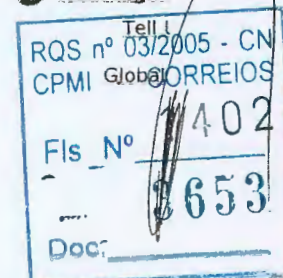
Capacidade de Plug and Play

Você pode instalar o monitor em qualquer sistema compatível com o padrão "Plug-and-Play". O monitor se conecta automaticamente ao sistema de computador seu "Extended Display Identification Data" (EDID), usando o "Display Data Channel" (DDC) para que o sistema possa se auto-configurar e otimizar as configurações de acordo com o desejado, o usuário pode selecionar configurações diferentes, mas na maioria dos casos a instalação do monitor é automática.

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Energy Efficiency

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Regulatory: Dell™ M570 Color Monitor User's Guide

[Electric and Magnetic Fields](#) • [Energy Efficiency](#) • [Federal Communications Commission \(FCC\) Notice \(U.S. Only\)](#) • [FCC Declarat](#)
[EU Declaration of Conformity \(LVD, EMC\)](#) • [Canadian Regulatory Information \(Canada Only\)](#) • [EN 55022 Compliance \(Czech R](#)
[VCCI Class 2 Notice \(Japan Only\)](#) • [MOC Notice \(South Korea Only\)](#) • [Polish Center for Testing and Certification Notice](#) • [NOM I](#)
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[Dell Computer Corporation's Environmental Program](#) • [Design for Recyclability](#) • [Dell's Blue Angel Disposal Program](#) • [Dell's Gre](#)
[Spare Parts Policy](#) • [Use of Chlorine-Free Paper \(Europe Only\)](#) • [Green Away Collection Points](#)

Electric and Magnetic Fields

MPR II Compliance

This product complies with Swedish National Council for Metrology (MPR) standards issued in December 1991 for very low frequency (VLF) and extremely low frequency (ELF).



P/Ns: 1304T, 2304T, 3304T, 5304T, 6304T, and 8304T only

Congratulations!

You have just purchased a TCO'99 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment to the further development of environmentally adapted electronics products.

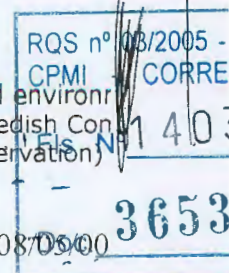
Why do we have environmentally labeled computers?

In many countries, environmental labeling has become an established method for encouraging the adaptation of products and services to the environment. The main problem, as far as computers and other electronics equipment concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste) to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labeling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labeling of personal computers. The labeling scheme was developed as a joint effort by the TCO (The Swedish Council of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Energimyndigheten (The Swedish National Energy Administration).



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Approval requirements cover a wide range of issues: environment, ergonomics, usability, emission of electromagnetic fields, energy consumption and electrical and fire safety.

The environmental demands impose restrictions on the presence and use of heavy metals, brominated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the product shall be reasonable for the user.

Labeled products must meet strict environmental demands, for example, in respect of the reduction of electromagnetic fields, physical and visual ergonomics and good usability.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development

SE-114 94 Stockholm, Sweden

Fax: +46 8 782 92 07

Email (Internet): development@tco.se

Current information regarding TCO'99 approved and labeled products may also be obtained via the Internet, using the address: info.com/



Environmental requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least reduce, the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants are halogenated, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating mammals, due to the bio-accumulative processes. Flame retardants have been found in human blood and researchers fear that foetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium**

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the environment and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display electrical or electronics components must not contain any cadmium.

Mercury**

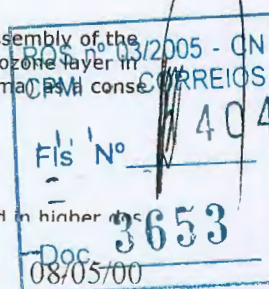
Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical components associated with the labeled unit.

CFCs (freons)

The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. (Freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the atmosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma).

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses can be fatal.



Lead can be found in plastic cases, display screens, cables and capacitors. Lead damages the nervous system and in higher doses poisoning. The relevant TCO '99 requirement permits the inclusion of lead since no replacement has yet been developed.

* Bio-accumulative is defined as substances which accumulate within living organisms

** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.



The proper operation of the function requires a computer with VESA® DPMS power management capabilities. When used with a computer equipped with VESA DPMS, the monitor is ENERGY STAR®-compliant. As an ENERGY STAR® Partner, Dell Computer Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Federal Communications Commission (FCC) Notice (U.S.Only)

! WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

Instructions to Users: This equipment complies with the requirements of FCC (Federal Communication Commission) equipment provided that following conditions are met.

1. Power cable: Shielded power cable must be used.
2. Video inputs: The input signal amplitude must not exceed the specified level.

! CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Declaration of Conformity

According to 47 CFR, Part 15 of the FCC Rules

* **For the following named product :**

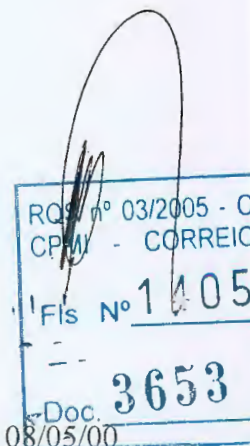
COLOR MONITOR
(Category Name)

M570 / DELL
(Model No / Brand Name)

* **Manufactured at :**

SAMSUNG ELECTRONICS CO., LTD

We hereby declare that this device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:



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Operation is subject to the following two conditions :

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

**FCC Rules :**

Tested to comply with FCC part 15, class B

*** Test site at :**

Compliance Engineering Services, Sunnyvale, CA, USA

*** Responsible Party for Product Compliance :**

America QA Lab of Samsung
85 West Tasman Drive, San Jose, CA 95134
Tel)408-544-5124 #
Fax)408-544-5191

*** Manufacturer Information :**

Samsung electronics Co., Ltd.	Display Division
416, Maetan-3Dong, Paldal-Gu	EMC/SAFETY GROUP
Suwon City, Kyungki-Do, Korea	General Manager
442-742 1999-06-17	

Woo Nam Byun

(place and date of issue)

(name and signature of authorized person)

EU Declaration of Conformity (LVD, EMC)**For the following product:**

COLOR MONITOR

(category name)

M570

(model name)

Manufactured at :

1. Samsung Electronics Co., Ltd. 416 Maetan-dong, Paldal-gu, Suwon Kyungki-Do, Korea 442-742
(factory name, address)
2.
(factory name, address)

We hereby declare, that all major safety requirements, concerning to CE-Mark Directive (93/68/EEC) and Low Voltage Directive (73/23/EEC), Electromagnetic Compatibility Directives (89/336/EEC, 92/31/EEC) are fulfilled, as laid out in the guidelines set down by the member states of the EEC Commission. This declaration is valid for all samples that are part of this declaration, which are manufactured according to the production charts appendix. The standards relevant for the evaluation of electrical safety & EMC requirements are as follows :

LVD : EN 60950:1997+A1+A2+A3+A4

EMC : EN 50082-1:1997, EN 55022:1997, EN 60555-3-2, 3:1995

1. Certificate of conformity / Test report issued by :

LVD : NEMKO, TUV

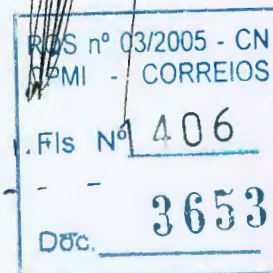
EMC : NEMKO

2. Technical documentation kept at :

Samsung electronics Co., Ltd.

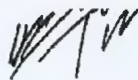
which will be made available upon request.

(Manufacturer)



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Samsung Electronics Co., Ltd.
416, Maetan-3Dong, Paldal-gu,
Suwon, Kyungki-Do, Korea
442-742 1999-06-03



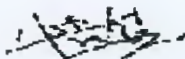
Woo Nam Byun / General Manager

(place and date of issue)
(Representative in the EU)

(name and signature of authorized person)

Samsung Electronics Euro

QA Lab.
Blackbushe Business Park
Saxony Way, Yately, Hampshire,
GU46 6GG, UK
1999-06-03



In-Seop Lee / Manager



(place and date of issue)

(name and signature of authorized person)

Canadian Regulatory Information (Canada Only)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Note that Canadian Department of Communications (DOC) regulations provide, that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

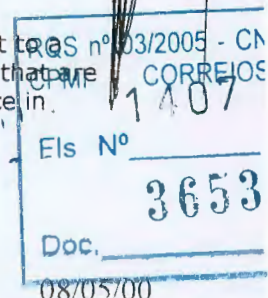
EN 55022 Compliance (Czech Republic Only)

This device belongs to category B devices as described in EN 55022, unless it is specifically stated that it is a category A device on the specification label. The following applies to devices in category A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference of telecommunication or other devices.

Pokud není na typovém štítku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (chranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

VCCI Class 2 Notice (Japan Only)

This equipment complies with the limits for a Class 2 digital device (devices used in or adjacent to a residential environment) and conforms to the standards for information technology equipment that are set by the Voluntary Control Council for Interference for preventing radio frequency interference in residential areas.



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Class B ITE

この装置は、日本電器工業会（VCCI）の基準に準拠した Class B 情報機器です。この装置が家庭環境で使用されることを前提としていますが、この装置から発生する電磁波が他の電機機器に干渉して使用を妨げる場合があります。この場合、1m の距離を離れるか、電源コードを延長し、電源タップを使用することによって干渉を低減させることができます。

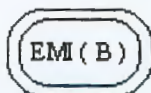


MOC Notice (South Korea Only)

Class B Device

참고 사항	사용자 안내문
인증 기구	이 장비는 가정용으로 인지와 적합하도록 된 장치로서 "가정용" 표시는 물론 소문 "가정용" 사용해야 합니다.

Please note that this device has been approved for nonbusiness purposes and may be used in any environment, including residential areas.



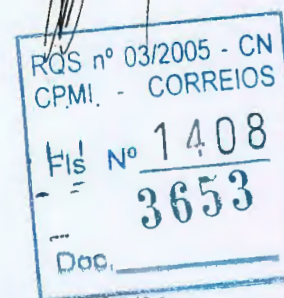
Polish Center for Testing and Certification Notice

The equipment should draw power from a socket with an attached protection circuit (a three-prong socket). All equipment that works together (computer, monitor, printer, and so on) should have the same power supply source.

The phasing conductor of the room's electrical installation should have a reserve short-circuit protection device in the form of a fuse with a nominal value no larger than 16 amperes (A).

To completely switch off the equipment, the power supply cable must be removed from the power supply socket, which should be located near the equipment and easily accessible.

A protection mark "B" confirms that the equipment is in compliance with the protection usage requirements of standards PN-93/T-42107 and PN-89/E-06251.



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Wymagania Polskiego Centrum Badań i Certyfikacji

Urządzenie powinno być zasilane z gniazda z przyłączonym obwodem ochronnym (gniazdo z kolkiem). Współpracujące ze sobą urządzenia (komputer, monitor, drukarka) powinny być zasilane z tego samego źródła.

Instalacja elektryczna pomieszczenia powinna zawierać w przewodzie fazowym rezerwową ochronę przed zwarciami, w postaci bezpiecznika o wartości znamionowej nie większej niż 16A (amperów).

W celu całkowitego wyłączenia urządzenia z sieci zasilania, należy wyjąć wtyczkę kabla zasilającego z gniazda, które powinno znajdować się w pobliżu urządzenia i być łatwo dostępne.

Znak bezpieczeństwa "B" potwierdza zgodność urządzenia z wymaganiami bezpieczeństwa użytkownika zawartymi w PN-93/T-42107 i PN-89/E-06251.

Pozostałe instrukcje bezpieczeństwa

- Nie należy używać wtyczek adapterowych lub usuwać kolka obwodu ochronnego z wtyczki. Jeżeli konieczne jest użycie przedłużacza to należy użyć przedłużacza 3-żyłowego z prawidłowo połączonym przewodem ochronnym.
- System komputerowy należy zabezpieczyć przed nagłymi, chwilowymi wzrostami lub spadkami napięcia, używając eliminatora przepięć, urządzenia dopasowującego lub bezładniowego źródła zasilania.
- Należy upewnić się, aby nic nie leżało na kablach systemu komputerowego, oraz aby kable nie były umieszczone w miejscu, gdzie można byłoby na nie nadeptywać lub potykać się o nie.
- Nie należy rozlewać napojów ani innych płynów na system komputerowy.
- Nie należy wpychać żadnych przedmiotów do otworów systemu komputerowego, gdyż może to spowodować pożar lub porażenie prądem, poprzez zwarcie elementów wewnętrznych.
- System komputerowy powinien znajdować się z dala od grzejników i źródeł ciepła. Ponadto, nie należy blokować otworów wentylacyjnych. Należy unikać kładzenia luźnych papierów pod komputer oraz umieszczania komputera w ciasnym miejscu bez możliwości cyrkulacji powietrza wokół niego.

**NOM Information (Mexico Only)**

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM)

Exporter: Dell Computer Corporation
One Dell Way
Round Rock, TX 78682

Importer: Dell Computer de México,
S.A. de C.V. Rio Lerma No. 302 - 4º Piso
Col. Cuauhtemoc 16500 México, D.F.

Ship to: Dell Computer de México,
S.A. de C.V. al Cuidado de Kuehne & Nagel
de México S. de R.I., Avenida Soles No. 55
Col. Peñon de los Baños, 15520 México, D.F.

Supply voltage: > 100/240 VAC

Frequency: 50/60 Hz

Current consumption: 1.2 A

Información para NOM (únicamente para México)

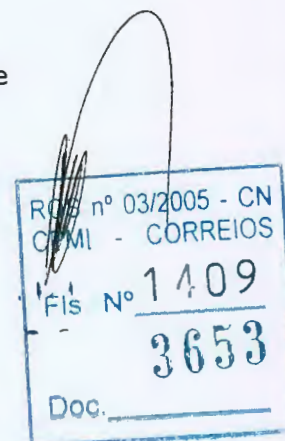
La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM):

Exporter: Dell Computer Corporation
One Dell Way
Round Rock, TX 78682

Importador: Dell Computer de México,
S.A. de C.V. Rio Lerma No. 302 - 4º Piso
Col. Cuauhtemoc 16500 México, D.F.

Embarcar a: Dell Computer de México,
S.A. de C.V. al Cuidado de Kuehne & Nagel
de México S. de R.I., Avenida Soles No. 55
Col. Peñon de los Baños, 15520 México, D.F.

Tensión alimentación: 100/240 VAC
<http://support.dell.com/docs/monitors/6204t/bp/Regs.htm>



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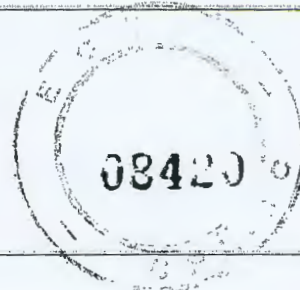
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Frecuencia: 50/60 Hz

Consumo de corriente: 1.2 A

BCIQ Notice (Taiwan Only)

警告使用者 請注意：請依照說明書之指示，在正確之環境中使用，可能會造成螢幕
第一條，在這種情況下，使用者會要求採取某種保護措施。

**Ergonomics Notice (Germany Only)**

Under the requirements of German ergonomics standard ZH1/618, graphics or characters:

1. Blue graphics or characters in dark background are not recommended. (This combination may increase eye fatigue due to poor visibility caused by low contrast.)
2. Graphics controller and monitor are recommended to be used in the following conditions:
 - o Vertical frequency : 70 Hz or higher.
 - o Display mode : Dark characters in bright background.

Ergonomie Hinweis (nur Deutschland)

Um den Anforderungen der deutschen Ergonomie-Norm ZH1/618 zu entsprechen.

1. Wird empfohlen, die Grundfarbe Blau nicht auf dunklem Hintergrund zu verwenden (schlechte Erkennbarkeit. Augenbelastung bei zu geringem Zeicheenkontrast).
2. Wird folgende Einstellung des Grafik-Controllers und Monitors empfohlen.
 - o Vertikalfrequenz : 70 Hz oder höher.
 - o Ohne Zellensprung.

Dell Computer Corporation's Environmental Program**Design for Recyclability**

Your Dell equipment complies with the following principles of recyclable design:

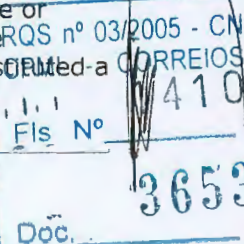
- Avoidance of nonseparable connections, such as gluing and welding, between different materials
- Avoidance of coatings and composite structure materials
- Use of as few different materials as possible
- Designed for ease of disassembly:
 - o Subassemblies, cables, and components easily detachable by one person working alone
 - o Minimal use of screws
 - o Most disassembly can be done by hand or with the aid of a standard 6-millimeter (1/4-inch) nut driver only

Dell's Blue Angel Disposal Program

Rapid technological advances lead to a high turnover in computer products, as customers upgrade or replace their systems at an ever-increasing rate. To address the mounting problem regarding the indiscriminate disposal of unwanted products, and in anticipation of future legislation, Dell has instituted a disposal program, called Green Away, for the collection and disposal of these products.

Dell's Green Away Program

Dell's Green Away program is a free material return and disposal service for Dell customers, covering computer products sold by Dell under the environmental label plans. The returned products are reused, <http://support.dell.com/docs/monitors/6204t/bp/Regs.htm>



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recycled, or disposed of as appropriate, in accordance with local environmental guidelines.



NOTE: The Green Away program is designed to dispose of unwanted or unusable products under the environmental label plans. For returned material discounts on recent purchases, or for recycling of equipment neither sold by Dell nor covered by the environmental label plans, contact your local Dell Asset Management specialist.

In carrying out this program, Dell's general responsibilities include the following:

- Organizing the reuse/recycling/disposal of the equipment
- Ensuring that all disposal/recycling practices meet local environmental regulations
- Monitoring the process to ensure compliance and facilitate process improvement



How the Green Away Program Works

When you have one or more items of equipment that you would like to dispose of, contact your local Dell customer service department to request instructions. The returns coordinator processes the request and advises you on the return of your material. Refer to "Green Away Collection Sites" found later in this document for the telephone number and collection point in your area.



NOTE: "Shells" (equipment from which integral components, such as chips and power supplies, have been removed) are not accepted as part of this free program. If a shell is discovered in your shipment, you will be asked to either collect the system or pay for its disposal.

The equipment is transported to Dell's Green Away partner, where it is assessed and disposed of as follows:

- If judged resellable, the Dell label is removed and the equipment is tested, repaired, and resold.
- If judged beyond repair, the equipment is dismantled, and usable parts are offered for sale.

Unusable parts are disposed of as follows:

- Metal cases are sold to metals recyclers.
- Printed circuit boards and cases are sent to refiners.
- Plastic parts are sent to plastic recyclers.
- Unusable packaging is sent to paper recyclers.

Monitors are sent to recycling companies to be disposed of as follows:

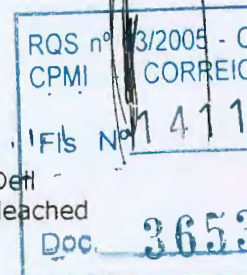
- The tubes are washed and the luminescent powder is recovered, some elements are extracted for reuse, and the remainder is disposed of via controlled incineration.
- Glass is sorted and sent to the lead smelter or recycled for glass works.
- The planar mask and the iron are sent for reuse to metals recyclers.
- Items that are not reusable are mainly incinerated. However, if certain residues on the items are not allowed in hazardous waste incinerators, the Dell Green Away partner transports the items to a secured (bundled) hazardous waste landfill.

Spare Parts Policy

Dell commits to retaining stocks of spare parts (or reasonable alternatives) for a period of five years from the termination of production of the Dell system component—for example, the base system, the keyboard, or the monitor.

Use of chlorine-free paper (Europe Only)

As part of Dell's policy to reduce the impact on the environment of obsolete item disposal and in compliance with guidelines in many geographical locations, all Dell documentation supplied with Dell equipment is printed on paper (fresh fiber from sustainable resources or recycled waste paper) bleached without the use of chlorine.



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Green Away Collection Points

The table lists the country specific customer service telephone number along with the address for the Green Away collection site. For Germany, the Green Away collection site telephone number is listed rather than the customer service number.



NOTE: Locations marked with an asterisk (*) are facilities approved for battery disposal. As Dell expands the network of Green Away centers, additional addresses will be available across Europe. Contact your local Dell customer service department for information about the availability of Green Away services in your location.

Country	Telephone	Address (model)
Belgium	02 481 91 00	R Frazier Ltd. Plantijnweg 15 4104 BC Culemborg, Netherlands
Denmark	+46-8-5900 5151	WMI Sellbergs AB Box 1294 S-171 25 Solna, Sweden
Finland	+46-8-5900 5181	WMI Selbergs AB Box 1294 S-171 25 Solna, Sweden
Germany:		
Northern Germany*	0130-86 12 51	Bockmann/Ohlig Tersteegenstrasse 21a 42653 Solingen
Southern Germany*	0130-86 12 51	Knab Carl Benz Strasse 8-10 35440 Linden
Netherlands	02 481 91 00	R Frazier Europe Plantijnweg 15 4104 BC Culemborg, Netherlands
Norway	+46-8-5900 5179	WMI Sellbergs AB Box 1294 S-171 25 Solna, Sweden
Sweden	+46-8-5900 5169	WMI Sellbergs AB Box 1294 S-171 25 Solna, Sweden
United Kingdom*	0800 783-3124	R Frazier Ltd. Irongray Business Park Lochside Industrial Estate Dumfries DG2 0NR



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Global	
Doc.	3653

[Back to Contents Page](#)**Specifications: Seagate Cheetah 18LP disk Drive User's Guide****General** • **Functionality** • **Internal Drive Characteristics** • **Reliability** • **Heat/Power Dissipation** • **Shock** • **Physical**

NOTE: These specifications are provided by the manufacturer for information purposes only a constitute an extension of Dell's warranty to you. Dell's warranty is contained in the document your system.

General

Manufacturer	Seagate Technology
Model numbers	ST318203LW/LC ST39103LW/LC
Model Name	Cheetah 18LP
Interface	SCSI

**Functionality**

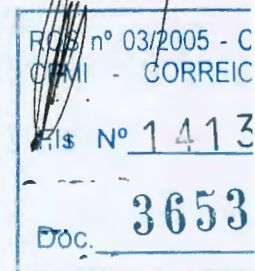
Formatted capacity	18.2 Gbytes
Rotational speed	10,016 rpm
Average rotational latency	2.99 msec
Interleave factor	1:1
Track density	12,580 tracks per inch
Data cylinders	9,801 (user accessible)
Total used sectors	Not specified
Cache (total)	1,024 Mbytes (standard) 4,096 Mbytes (optional)
Access time* (average, including controller overhead)	Read: 5.4 msec Write: 6.0 msec

*Access time = controller overhead + average seek time.

Access to data = controller overhead + average seek time + latency time.

SCSI interface data (asynchronous)

SCSI interface data transfer rate:	Maximum instantaneous one byte wide 5.0 Mbytes/
	Maximum instantaneous two bytes wide 10.0 Mbyte



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[1] Assumes system ability to support the rates listed and no cable loss.

SCSI interface data (synchronous)

In single-ended (SE) interface mode 5.0 to 40 Mbytes/sec

In low voltage differential (LVD) interface mode 5.0 to 80 Mbytes/sec



Internal Drive Characteristics

Read/write heads

ST318203 12
ST39103 6

Bytes per sector

Default 512

Variable 512 to 4,096 bytes per sector in even number of bytes per sector. If n (number of bytes per sector) is odd, the used.

Number of tracks per cylinder

9,801 (user accessible)

Reliability

MTBF 1,000,000 hours

Component life 5 years

Start/stop cycles 250 average on/off cycles per year.

Data errors

Seek error rate Less than 10 in 10⁸ seeks

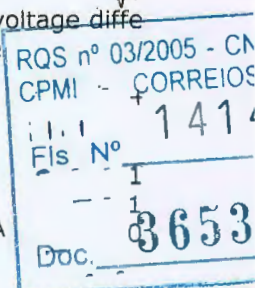
Unrecovered data Unrecovered read error rate: Less than 1 sector in 1 transferred (OEM default settings)

SMART-compliant Yes

Electrical

Voltages

	Single-ended (SE) mode		Low voltage differential mode
DC power requirements (±5%)	+5 V	+12 V	+5 V
ST318203LW/LC			
Maximum start current	0.81	1.5	0.82
Maximum operating current	0.80	1.13	0.85
Average idle current	0.71A	0.57A	0.72A
ST39103LW/LC			
	0.01	1.1	0.02



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Maximum start current	0.61	1.4	0.62	1
Maximum operating current	0.80	0.84	0.85	0
Average idle current	0.71	0.34	0.72	0

Heat/Power Dissipation

Typical seek/read DC power dissipation

ST318203

For drives using single-ended interface circuits, typical dissipation under idle conditions is 10.39 watts (35. hour)

For drives using low voltage differential interface circuit power dissipation under idle conditions is 10.44 watt per hour)

ST39103

For drives using single-ended interface circuits, typical dissipation under idle conditions is 7.63 watts (26 B

For drives using low voltage differential interface circuit power dissipation under idle conditions is 7.68 watts per hour)

Shock

Operating (no data loss)

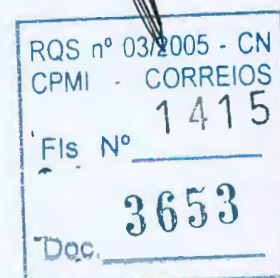
Normal - The drive, as installed for normal operation operate error free while subjected to intermittent shock exceeding 5.0 Gs at a maximum duration of 11 msec (half sinewave). Shock may be applied in the X, Y, or Z axis.

Nonoperating

The drive subjected to nonrepetitive shock not exceeding at a maximum duration of 11 msec (half sinewave) exhibit device damage or performance degradation. Shock may be applied in the X, Y, or Z axis.

Physical

Height	1.000 inches (25.4 mm)
Width	4.000 inches (101.6 mm)
Depth	5.75 inches (146.05 mm)
Weight	
ST318203	1.3 pounds
ST39103	1.2 pounds





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[Home](#) | [Fix-It](#) | [Downloads](#) | [Communicate](#) | [Customer Services](#) | [L](#)**Specifications: Seagate ST39102LC Cheetah 9 LP SCSI 9.1-GB Hard-Disk Drive**[General](#) | [Functionality](#) | [Internal Drive Characteristics](#) | [Reliability](#) | [Electrical](#) | [Heat/Power Dissipation](#) | [Shock](#) | [Physical](#) | [Env](#)
[Regulatory](#) | [Features](#)

NOTE: These specifications are provided by the manufacturer for information purposes only and do not constitute an ex Dell's warranty to you. Dell's warranty is contained in the end-user documentation.

General

Manufacturer	Seagate
Model number	ST39102LC
Model name	Cheetah 9 LP (low profile)
Interface	80-pin, Ultra 2 SCSI

**Functionality**

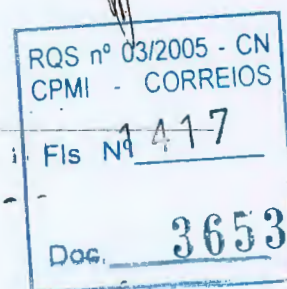
Capacity (formatted)	9.10 GB
Rotational speed	10,025 ± 0.5% rpm
Average rotational latency	2.99 ms
Interleave factor	1:1
Spin-up time	30 sec (maximum)
Stop time	<30 sec
Prefetch/multisegmented cache	1 MB
Seek time (including controller overhead):	
Read	6.2 ms (typical)
Write	6.8 ms (typical)
SCSI interface data (synchronous, wide)	5 to 80 MB/sec

Internal Drive Characteristics

Read/write heads	12
Bytes per track	104,840 to 159,008
Megabytes per surface	939
Tracks per surface	6962

Reliability

MTBF	1,000,000 POH
Service life	5 years



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Preventive maintenance

none required

Data errors:

Seek error rate

<10 in 10^8 seeks

Recoverable error rate

<1 sector in 10^{12} bits transferred

Unrecovered data

<1 sector in 10^{15} bits transferred

Miscorrected data

<1 sector in 10^{21} bits transferred

Error correction

96-bit Reed Solomon

**Electrical**

Voltages

+5 VDC ($\pm 5\%$)
+12 VDC ($\pm 5\%$)**Heat/Power Dissipation¹**

Typical seek/read DC power dissipation

13.8 W (47 BTU/hr)

Typical power dissipation (idle state)

11.2 W (38 BTU/hr)

¹ For drives with LVD interface circuits**Shock¹**

Operating:

Normal (error-free operation)

2 G ¹

Abnormal (damage-free operation)

10 G ¹

Nonoperating

140 G ²¹ Half-sine wave, 11-ms maximum duration² Half-sine wave, 2-ms maximum duration**Physical**

Height

25.40 mm (1.0 inches)

Width

101.60 mm (4.0 inches)

Depth

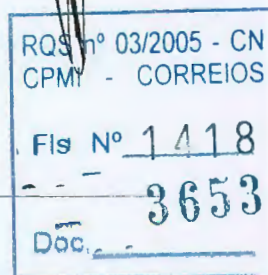
146.05 mm (5.75 inches)

Weight

0.59 kg (1.3 lb)

Environmental

Temperature:

Operation¹

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Operating	5° to 50°C (41° to 122°F) ambient
Nonoperating ¹	-40° to 70°C (-40° to 158°F)
Humidity:	
Operating ²	5% to 95% RH (noncondensing)
Nonoperating ²	5% to 95% RH (noncondensing)
Maximum wet bulb	29°C (82°F)
Altitude:	
Operating	-305 to 3048 m (-1000 to 10,000 ft)
Nonoperating	-305 to 12,210 m (-1000 to 40,000 ft)



¹ Maximum gradient of 20°C (36°F) per hour

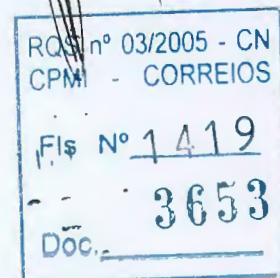
² Maximum gradient of 10% per hour

Regulatory

- UL 1950
- CSA standard C22.2 No. 950-M89
- VDE0805 and EN60950

Features

- Integrated Ultra 1/Ultra 2 SCSI controller
- Single-ended and LVD SCSI drivers and receivers
- Asynchronous and synchronous data transfer protocols
- 10,025-rpm rotational speed that yields a low 2.99-ms average rotational latency
- Firmware downloadable via SCSI interface
- Flawed sector reallocation at format time
- Reallocation of defects on command (post-format)
- Reed-Solomon error correcting code for header and data fields
- Sealed head and disc assembly (HDA)
- Self-monitoring, analysis and reporting technology (S.M.A.R.T.) automatically monitors the drive and reports problems
- No preventive maintenance or adjustments required
- Dedicated head-landing zone
- Automatic shipping lock
- Embedded Grey Code track address to eliminate seek errors
- Self-diagnostics performed at power-on
- 1:1 interleaving factor
- Zoned bit recording (ZBR)
- Vertical, horizontal, or top-down mounting
- Dynamic spindle brake
- 1-MB data buffer



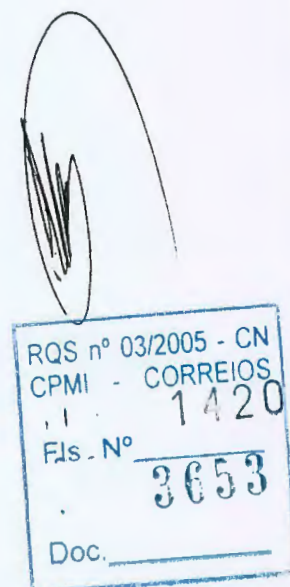
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Specifications: Seagate 20/40 GB DDS-4 Drive User's Guide

[General](#) | [Performance](#) | [Reliability](#) | [Recommended Tapes](#) | [Physical](#) | [Power](#) | [Environmental](#)

General

Manufacturer	Seagate
Model number	STD2401LW
Interface type	Ultra2 SCSI (LVD), 68-pin SCSI Wide, 68-pin SCSI-2, narrow, 50 pin, (requires 68 to 50-pin adapter)



Performance

Capacity:

Without data compression	DDS-4 20.0 GB typical
With data compression	DDS-4 40.0 GB assuming 2:1 Compression ratio

Type of Compression DCLZ, hardware

Effective Backup Rate 2.75-5.5 MB/S, System dependent

Data Transfer Rate 2.75 MB/sec (Native), 5.5 MB/S (Compressed)

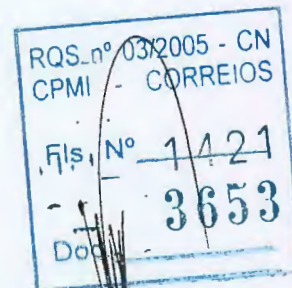
Tape Speed

Read/Write 20.4 mm/sec

Search/Rewind 203.8 mm/sec and greater

Recording Method Helical

Recording Format DDS-1 & DDS-DC (90 meter tape)



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	DDS-2, DDS-3, or DDS-4
Recording Code	DDS
Head Configuration	Helical, 2 write heads and 2 read heads
Recording Media	DDS metal particle media, MP+++
Cartridge Size	73 mm x 54 mm x 10.5 mm
Data Density	5999.7 ftpmm
Tracks	



Reliability

Recording unrecoverable errors

The uncorrectable error rate is expected to be 1 error in 10^{15} bits read.

Error Recovery

Mean Time Between Failures

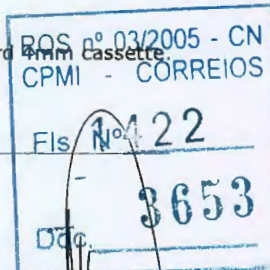
The mean-time-between-failures (MTBF) shall be greater than 300,000 hours. This time shall include all power-on and operational time. The operational time shall be assumed to be 20% of the power-on time. Operational time is defined as tape loaded on the cylinder moving and / or cylinder rotating, depending upon the mode of operation).

Mean Time To Repair

The mean-time-to-repair (MTTR) shall be less than 0.5 hours. This time is the estimated time required by a Seagate Field Engineer or other equally qualified repair technician) to diagnose and replace a defective drive by replacement of the drive.

Recommended Tapes

The Seagate DDS-4 Drive will utilize the latest generation of DDS metal particle media, MP+++ , in a standard 4mm cassette.



Physical

Height: 41.3 mm
Width: 101.6 mm
Depth: 152 mm
Weight: 620 grams

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Power

DC voltage:

The drive requires +5 volt and +12 volt power supplies from the host system. Other voltage levels required for drive operations are generated internal to the drive.

Voltage tolerance:

+5 VDC +/- 7% operating
+12 VDC +/- 12% operating

Operational current:

+5 VDC 1.5A maximum
+12 VDC 250 mA maximum

Standby current:

+5 VDC 700mA maximum
+12 VDC 50 mA maximum

Peak:

+5 VDC 1.7A maximum
+12 VDC 500 mA maximum

Power Sequence:

TBD

Ripple (peak to peak):

+5 VDC <100 mV maximum
+12 VDC <100 mV maximum

Power use (nominal):

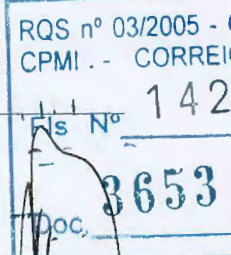
Total power consumption (inclusive of both +5V and +12V supplies) for the drive is as follows:

Standby:	5.0 Watts maximum
Operating:	10.5 Watts typical 12.0 Watts maximum
Surge (start-up):	14.5 Watts maximum

Environmental

Temperature

Operating	5° to 45° C
Storage	-4° to 65° C



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Thermal Gradient

Operating 2.0° C/min, no condensation

Storage Below condensation

Relative Humidity

Operating 20 to 80%, non-condensing

Storage 0% to 90%, non-condensing

**Maximum Wet bulb temperature**

Operating 28° C

Storage ----

Altitude

Operating -100 to 4,575 m

Storage ----

Shock

Operating	Magnitude	10 g's, half sine
	Duration	11 milliseconds
	Interval	15 seconds
	Directional Axis	5 pulses each in all 3 axes (X, Y, Z)

Storage	Magnitude	100 g's, half sine
	Duration	11 milliseconds
	Directional Axis	1 pulse each in all 3 axes (X, Y, Z)

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CERTIFICAÇÃO ISO 9000

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Fis. Nº 1425
Doc. 3653

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BRASÍLIA - DISTRITO FEDERAL

BUNNY GUSTAVE PERSIJN

Tradutor Público Juramentado e Intérprete Comercial
Registro: 3 /JCDF - SHIN QL 2 - Conj. 4 - Casa 1 - Tel.: 468-4466
SCS - Edifício Gilberto Salomão - Sala 413 - CEP 70.305-900
Brasília-DF - Brasil - Tel.: 225-3133 - Fax: (061) 468-1399
CPF 003218851/04 INPS Reg. 10945500391

TRADUÇÃO Nº

EU, BUNNY GUSTAVE PERSIJN, TRADUTOR PÚBLICO
JURAMENTADO E INTÉRPRETE COMERCIAL DESTA PRAÇA DE
BRASÍLIA, DF, CERTIFICO E DOU FÉ QUE ME FOI APRESENTADO
NESTA DATA UM DOCUMENTO EXARADO EM IDIOMA INGLÊS A FIM
DE TRADUZÍ-LO PARA O VERNÁCULO, O QUE CUMPRI EM RAZÃO DE
MEU OFÍCIO E CUJA TRADUÇÃO É A SEGUINTE:

AUTORIDADE NACIONAL DE NORMAS DA IRLANDA
(NATIONAL STANDARDS AUTHORITY OF IRELAND - NSAI)

Certificado de Registro de Sistema de Qualidade de acordo com
I.S. EN ISO 9002: 1994

A National Standards Authority of Ireland certifica que

DELL COMPUTER CORPORATION
America's Operations
2214 W. Braker Lane
Austin
TX 78758
EUA

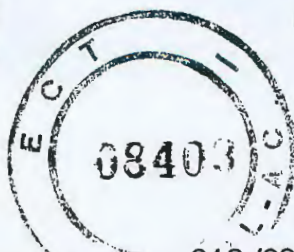
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foi avaliada quanto à satisfação das disposições da norma acima citada
respeito ao escopo de operação fornecido no presente e está pelo pre
registrada no Registro da NSAI de Produtos Certificados e Compa
Registradas.

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CPF 003218851/04 - INPS Reg. 10945500391

TRADUÇÃO Nº 610 /99

/CONTINUAÇÃO/ Página 2

Registro número: M981 - - -

Data de registro: 27 (vinte e sete) de agosto de 1993 (mil novecentos e noventa e três) - - - -

(assinatura ilegível)

Última emenda: 4 (quatro) de outubro de 1995 (mil novecentos e noventa e cinco) - - - -

Este certificado permanece válido até 27 (vinte e sete) de agosto de 2001 (dois mil e um) e a validade é mantida por meio de inspeções de vigilância em andamento. - - - - -

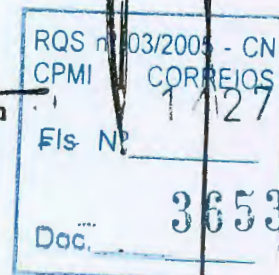
(Selo da ANSI-RAB - OMS - ACREDITADO)

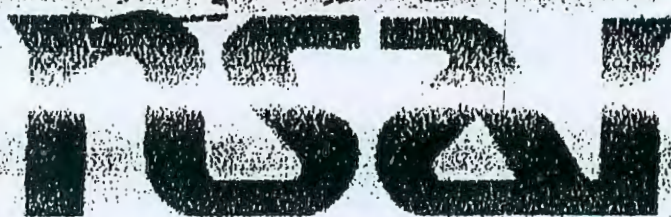
(Selo da NSAI - I.S. EN ISO 9002)

NADA MAIS constando no referido documento, dou-o por feito, bem e fielmente traduzido ao primeiro dia do mês de dezembro de mil novecentos e noventa e nove.



Prof. Bunny Gustave Persijn
SWORN TRANSLATOR
REG. Nº 3 - JODF





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National Standards Authority
of Ireland



**Certificate of Registration
of Quality System to
I.S. EN ISO 9002 : 1994**

The National Standards Authority of Ireland certifies that

Dell Computer Corporation

**America's Operations
2214 W. Braker Lane
Austin
TX 78758
USA**

has been assessed for compliance with the provisions of the above standard in respect of the scope of operation given hereunder and is hereby registered in the NSAI Register of Certified Products and Registered Companies

Scope of Registration

The manufacture of personal computer products including field service.



I.S. EN ISO 9002

Registration No.: **M981**

Registration date **August 27, 1993**

Signed: *Simon Kelly*

Last amended on **October 04, 1995**

This certificate remains valid to **August 27, 2001**
and the validity is maintained through ongoing surveillance inspections



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Fils No **1428**
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REPÚBLICA FEDERATIVA DO BRASIL
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SCS - Edifício Gilberto Salomão - Sala 413 - CEP 70.305-900
Brasília-DF - Brasil - Tel.: 225-3133 - 225-2581 - Fax: (061) 468-1399
CPF 003218851/04 - INPS Reg. 10945500391

TRADUÇÃO Nº 621/99

EU, BUNNY GUSTAVE PERSIJN, TRADUTOR PÚBLICO JURAMENTADO E INTÉRPRETE COMERCIAL DESTA PRAÇA DE BRASÍLIA, DF, CERTIFICO E DOU FÉ QUE ME FOI APRESENTADO NESTA DATA UM DOCUMENTO EXARADO EM IDIOMA INGLÊS A FIM DE TRADUZI-LO PARA O VERNÁCULO, O QUE CUMPRI EM RAZÃO DE MEU OFÍCIO E CUJA TRADUÇÃO É A SEGUINTE:

AUTORIDADE NACIONAL DE NORMAS DA IRLANDA

(NATIONAL STANDARDS AUTHORITY OF IRELAND) - NSAI

Endereço: *Glasnevin, Dublin 9, Irlanda*

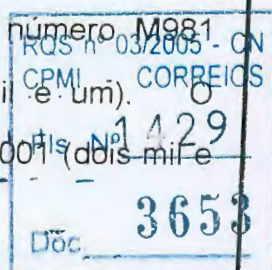
Telefone: 01-50736—

3 (três) de dezembro de 1999 (mil novecentos e noventa e nove)

A QUEM INTERESSAR POSSA

Ref.: **Dell Computer Corporation America's Operations,**
2214 W. Braker Lane, Austin, Texas

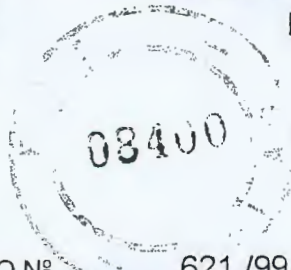
Confirmamos pelo presente que o Certificado de Registro do Sistema de Gestão de Qualidade de acordo com a I.S. EM ISO 9002:1994 para a **Dell Computer Corporation, America's Operations**, registrado em 27 (vinte e sete) de agosto de 1993 (mil novecentos e noventa e três) sob número M981 é válido até 27 (vinte e sete) de agosto de 2001 (dois mil e um).
Certificado será renovado em 27 (vinte e sete) de agosto de 2001 (dois mil e



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REPÚBLICA FEDERATIVA DO BRASIL
BRASÍLIA - DISTRITO FEDERAL



BUNNY GUSTAVE PERSIJN

Tradutor Público Juramentado e Intérprete Comercial
Registro: 3 /JCDF - SHIN QL 2 - Conj. 4 - Casa 1 - Tel.: 468-4466.
SCS - Edifício Gilberto Salomão - Sala 413 - CEP 70.305-900
Brasília-DF - Brasil - Tel.: 225-3133 - 225-2581 - Fax: (061) 468-1399
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TRADUÇÃO Nº 621 /99

/CONTINUAÇÃO/ Página 2 //

um) sujeito a auditorias de vigilância periódicas bem sucedidas de acordo com as exigências da norma ISO 9002.

O escopo de registro abrange a fabricação de produtos para computador pessoal, incluindo serviço de campo. Os produtos incluem servidores, *workstations*, *desktops* e computadores portáteis.

Atenciosamente,

Assinado por (ass.): John Purcell

John Purcell

Gerente

Serviços de Certificação.

Membro Irlandês da International Organization for Standardization (ISO)
Patrocinador do Comitê Nacional Irlandês da International Electrotechnical
Commission (IEO)

=====

NADA MAIS constando no referido documento, dou-o por feito, bem e fielmente traduzido aos seis dias do mês de dezembro de mil novecentos e noventa e nove.



Bunny Gustave Persijn
Tradutor Público Juramentado
MAT. 8 - JCDF

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NSAI National Standards Authority of Ireland

GLASNEVIN, DUBLIN 9,
IRELAND. 29

Telephone:
National 01 - 807 3900
International + 353 1 807 3800
Telefax 01 - 807 3830

December 3 1999

TO WHOM IT MAY CONCERN

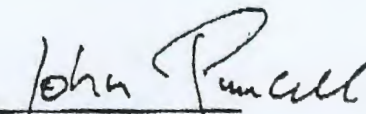


Re: Dell Computer Corporation America's Operations,
2214 W. Braker Lane, Austin, Texas

This confirms that the Certificate of Registration, of the Quality Management System to I.S. EN ISO 9002:1994 for **Dell Computer Corporation, America's Operations**, registration date August 27, 1993 No. M981 is valid through August 27, 2001. The Certificate will be renewed on 27th August 2001 subject to successful periodic surveillance audits in accordance with the requirements of the ISO 9002 standard.

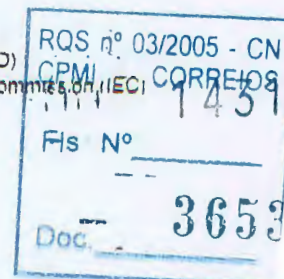
The scope of registration covers the manufacture of personal computer products including field service. The products include servers, workstations, desktops and portables.

Yours faithfully,


John Purcell
Manager
Certification Services



Irish Member, International Organization for Standardization (ISO)
Sponsor of the Irish National Committee of the International Electrotechnical Commission (IEC)



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BRTUV

Certificado de Sistema da Qualidade

Nº CSO - 288

EMPRESA:

TECNOCOOP INFORMÁTICA - COOPERATIVA DE TRABALHO
DE ASSISTÊNCIA TÉCNICA A EQUIPAMENTOS DE
PROCESSAMENTO DE DADOS LTDA

ENDEREÇO:

RUA PROF. RODOLFO COUTINHO, 7 E 17 - RAMOS
CEP 21030-160 - RIO DE JANEIRO - RJ - BRASIL

68398

CPL

BRTUV concede o presente certificado atestando que o Sistema da Qualidade da empresa acima foi auditado e está em conformidade com a norma:

NBR ISO 9002

O Sistema da Qualidade auditado é aplicável a:

ASSISTÊNCIA TÉCNICA EM EQUIPAMENTOS DE INFORMÁTICA;
REPARO DE MÓDULOS ELETRÔNICOS EM LABORATÓRIO;
INSTALAÇÕES DE REDES (SISTEMA DE CABEAMENTO E SOFTWARE);
MANUTENÇÃO DE REDES DE COMPUTADORES;
SUPORTE A SISTEMAS OPERACIONAIS DE REDE;

Período de Validade: 23 JAN 1998 a 22 JAN 2001

A validade deste certificado está sujeita ao atendimento satisfatório e contínuo pela empresa, das condições estabelecidas em contrato.
Este certificado dá direito ao registro na Lista de Empresas Certificadas do Sistema Brasileiro de Certificação.



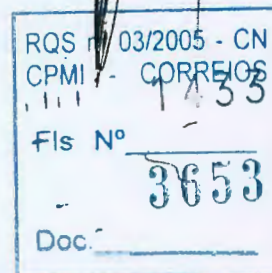
Claudio A. M. Campos
Gerente Geral

Reino Curranah
Gerente Técnico

03/2005 - CP
CORREIO:
Fls. Nº 1432
3653
Doc.



ANEXO III
REDE NACIONAL DE ASSISTÊNCIA TÉCNICA



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CENTROS DE ASSISTÊNCIA TÉCNICA**Rio de Janeiro/RJ - Matriz**

Endereço: Rua Professor Rodolfo Coutinho, 07/17
Bairro: Ramos
Cidade: Rio de Janeiro
CEP: 21030-160
Telefone: (021) 560-1922 (PABX)
Fax: (021) 280-6689
E-mail: tecnoinf@tecnocoop.com.br

Presidência Executiva:

Sérgio Alexandre Milani (milani@tecnocoop.com.br)

Gerência de Desenvolvimento de Negócios:

Nelson Vicente Lima de Almeida (nelvic@tecnocoop.com.br)

Gerência de Operações e Planejamento:

Roberto Martins Veeren (veeren@tecnocoop.com.br)

Gerência de Marketing:

Hélio Koremblun (helioko@tecnocoop.com.br)

Gerência de Suporte Técnico:

Jorge Luis de Lima (jorlima@tecnocoop.com.br)

**Filiais****Aracaju/SE**

Nome do gerente: Milton Dalan
Endereço: Rua Lagarto, 1529
Bairro: São José
Cidade: Aracaju/SE
CEP: 49015-270
Telefone: (079) 211-5200 / 224-8623 / 971-0345
Fax: (079) 211-5200 / 224-8623
E-mail: tecnofaj@tecnocoop.com.br

Bauru/SP

Nome do gerente: Marcos Aparecido Gimenes
Endereço: Rua Cônego Aníbal Difrância, 5-64
Bairro: Parque Vista Alegre
Cidade: Bauru/SP
CEP: 17020-690
Telefone: (014) 239-3627
Celular: (014) 991-0166
Email: tecnofba@tecnocoop.com.br

Belém/PA

Nome do gerente: Raimundo Santos da Luz
Endereço: Av. Ceará, 219-A
Bairro: Canudos
Cidade: Belém/PA
CEP: 66090-460
Telefone: (091) 246-0215 / 246-0271 / 246-3548 / 266-3690 / 266-2941 / 266-2871
Fax: (091) 246-0215
Email: tecnofbe@tecnocoop.com.br

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3653
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Belo Horizonte/MG

Nome do gerente: Cícero Adriano Roque Tolentino
Endereço: Rua Rio de Janeiro, 1629
Bairro: Lourdes
Cidade: Belo Horizonte/MG
CEP: 30160-042
Telefone: (031) 273-1061 / 4192
Fax: (031) 273-3698
Email: tecnofbh@tecnocoop.com.br

**Brasília/DF**

Nome do gerente: Pedro de Oliveira Borges
Endereço: SHCG / Norte CLR - Quadra 714 - Bloco C - Loja 50
Bairro: Asa Norte
Cidade: Brasília/DF
CEP: 70760-538
Telefone: (061) 340-8616 - 274-3232/3226
Fax: (061) 274-3226/3232
Email: tecnofbr@tecnocoop.com.br

Campinas/SP

Nome do gerente: Celso Mion
Endereço: Rua Professor Jorge Hennings, 393
Bairro: Jardim Chapadão
Cidade: Campinas/SP
CEP: 13073-420
Telefone: (019) 243-6751
Fax: (019) 243-6751
Email: tecnofca@tecnocoop.com.br

Campo Grande/MS

Nome do gerente: Rubens Francisco de Oliveira
Endereço: Rua 25 de Dezembro, 921 - Pavimento Superior
Bairro: Centro
Cidade: Campo Grande/MS
CEP: 79002-060
Telefone: (067) 721-4616/4873
Fax: (067) 721-4140
Email: tecnofcg@tecnocoop.com.br

Cuiabá/MT

Nome do gerente: Luis Carlos Santos
Endereço: Av. Miguel Sutil, 10.204
Bairro: Santa Rosa
Cidade: Cuiabá/MT
CEP: 78040-700
Telefone: (065) 626-3289 / 626-1494
Fax: (065) 626-3289
Email: tecnofcb@tecnocoop.com.br

Curitiba/PR

Nome do gerente: Izonilton Zanetti
Endereço: Rua Paula Gomes, 209
Bairro: São Francisco
Cidade: Curitiba/PR
CEP: 80510-070



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Telefone: (041) 225-6768
Fax: (041) 225-6768
Email: tecnofcw@tecnocoop.com.br

Florianópolis/SC

Nome do gerente: Valmir Cardoso de Cardoso
Endereço: Rua Lauro Linhares, 820
Centro Comercial Trindade - Bloco 4 / loja 1
Bairro: Trindade
Cidade: Florianópolis/SC
CEP: 88036-000
Telefone: (048) 233-4100
Fax: (048) 233-4100
Email: tecnoffl@tecnocoop.com.br



Fortaleza/CE

Nome do gerente: Cláudio Rotondo de Oliveira
Endereço: Rua Barão de Studart, 2821
Bairro: Aldeota
Cidade: Fortaleza/CE
CEP: 60120-002
Telefone: (085) 257-4239
Fax: (085) 272-3498 Email: tecnoffo@tecnocoop.com.br

Goiânia/GO

Nome do gerente: Wilmar Mendes da Silva
Endereço: Rua Dr. Olinto Manso Pereira, 1135 Apto 02
Bairro: Setor Sul
Cidade: Goiânia/GO
CEP: 74080-100
Telefone: (062) 213-3277 / 2687 / 3173 229-1769
Fax: (062) 213-3267 / 2687 / 3173 229-1769
Email: tecnofgo@tecnocoop.com.br

João Pessoa/PB

Nome do gerente: Paulo Sérgio de Alvarenga Farinazzo
Endereço: Av. Almirante Barroso, 974
Bairro: Centro
Cidade: João Pessoa/PB
CEP: 58013-000
Telefone: (083) 221-0243 / 222-2411 / 982-4570
Fax: (083) 222-2411
Email: tecnofip@tecnocoop.com.br

Juiz de Fora/MG

Nome do gerente: Marcelo Reis Junqueira
Endereço: Rua Hafeld, 1400 - 2o Andar - Salas 212 e 220
Bairro: Centro
Cidade: Juiz de Fora/MG
CEP: 36016-000
Telfax: (032) 215-0759/217-8199
Celular: (032) 987-5531
Email: tecnoffj@tecnocoop.com.br

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Doc. 3653

Al

Londrina/PR

Nome do gerente: Claudio Tesser
Endereço: Rua Senador Souza Naves, 966
Bairro: Vila Ipiranga
Cidade: Londrina/PR
CEP: 86010-160
Telefone: (043) 321-4598
Fax: (043) 321-4598
Email: tecnoflo@tecnocoop.com.br

Maceió/AL

Nome do gerente: Lourival Ferreira Filho
Endereço: Rua da Praia, 165
Bairro: Centro
Cidade: Maceió/AL
CEP: 57020-680
Telefone: (082) 326-1894 / 326-1505
Fax: (082) 326-1894 / 326-1505
Email: tecnofmc@tecnocoop.com.br

**Manaus/MA**

Nome do gerente: Raimuindo da Costa Serudo
Endereço: Rua Luiz Antony, 755
Bairro: Centro
Cidade: Manaus/MA
CEP: 69010-100
Telefone: (092) 633-4381 / 982-8704
Fax: (092) 633-4608 / 4381
Email: tecnofma@tecnocoop.com.br

Natal/RN

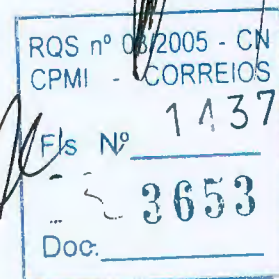
Nome do gerente: Rafael Pedrini Siqueira
Endereço: Av. Prudente de Moraes, 1869
Bairro: Tirol
Cidade: Natal/RN
CEP: 59020-400
Telefone: (084) 201-1945 / 221-4405 / 221-4337
Fax: (084) 221-4405
Email: tecnofna@tecnocoop.com.br

Porto Alegre/RS

Nome do gerente: Sérgio Luiz Garcia da Silva
Endereço: Av. Pernambuco, 2323
Bairro: São Geraldo
Cidade: Porto Alegre/RS
CEP: 90240-005
Telefone: (051) 346-2123
Fax: (051) 346-2123
Email: tecnofpa@tecnocoop.com.br

Porto Velho/RO

Nome do responsável: Ricardo José Eloy
Endereço: Av. Pinheiro Machado, 2011 - Loja 4
Bairro: São Cristóvão
Cidade: Porto Velho/RO
CEP: 78901-250



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Telefone: (069) 221-8666
Fax: (069) 221-8585
Email: tecnofpv@tecnocoop.com.br

Pouso Alegre/MG

Nome do gerente: Heriberto José de Souza
Endereço: Rua João Parenti, 33-B
Bairro: Centro
Cidade: Pouso Alegre/MG
CEP: 37550-000
Telefax: (035) 423-6441
Email: tecnofpo@tecnocoop.com.br

Recife/PE

Nome do gerente: Paulo Roberto Silva
Endereço: Rua São Salvador, 138
Bairro: Espinheiro
Cidade: Recife/PE
CEP: 52020-200
Telefone: (081) 423-0002 / 2808
Fax: (081) 423-0002 / 2808
Email: tecnofre@tecnocoop.com.br



Ribeirão Preto/SP

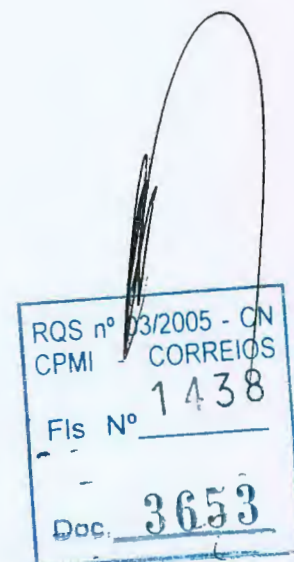
Nome do gerente: Gonçalo Gimenes Junior
Endereço: Rua Campos Salles, 1855 - Sala 21
Bairro: Vila Seixas
Cidade: Ribeirão Preto/SP
CEP: 14015-110
Telefone: (016) 610-8037 / 610-4463 / 961-6449 / 962-7164
Fax: (016) 610-8037
Email: tecnofrp@tecnocoop.com.br

Rio de Janeiro/RJ

Nome do gerente: Jordélio Marcos de Lima
Endereço: Av. Nilo Peçanha, 155/8o Andar - Salas 801/808
Bairro: Centro - Edifício Nilomex
Cidade: Rio de Janeiro/RJ
CEP: 20020-100
Telefone: (021) 533-0122 / 253-3006 / 524-7213 / 524-7269
Fax: (021) 533-0122 / 253-3006
E-mail: tecnofrj@tecnocoop.com.br

Salvador/BA

Nome do gerente: Claudio Pataro Machado
Endereço: Av. Tancredo Neves, 805 - Salas 402/403
Bairro: Pituba - Edifício Espaço Empresarial
Cidade: Salvador/BA
CEP: 41850-021
Telefone: (071) 341-5436 / 1032
Fax: (071) 341-1032
Email: tecnofsa@tecnocoop.com.br



307

**São Paulo/SP**

Nome do gerente: Alcício de Deus Seixas
Endereço: Rua Carlos Petit, 287
Bairro: Vila Mariana
Cidade: São Paulo/SP
CEP: 04110-000
Telefone: (011) 539-0188
Fax: (011) 539-0188
Email: tecnofsp@tecnocoop.com.br

Vitória/ES

Nome do gerente: Frederico Pulier Gonçalves
Endereço: Av. Americo Buaiz, 501 - Salas 709/711/713/715/716
Bairro: Enseada do Suá - Edifício Victoria Office Tower - Torre Norte
Cidade: Vitória/ES
CEP: 29050-911
Telfax: (027) 200-3849
Email: tecnofvi@tecnocoop.com.br

Núcleos**Rio Branco/AC**

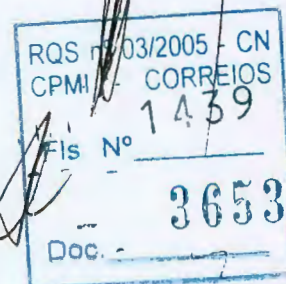
Nome do responsável: José Fernandes Muniz
Endereço: Conjunto Xavier Maia, Quadra 05 - Casa 26
Bairro: Vila Ivonete
Cidade: Rio Branco/AC
CEP: 69914-530
Telefone: (068) 224-0142
Fax: (068) 224-0142
Tel. Celular: (068) 9985-4131
Email: tecnonrb@tecnocoop.com.br

São Luís/MA

Nome do gerente: Geovane Raimunda Souza Mendes
Endereço: Rua José Alencar, 53
Bairro: Santa Cruz
Cidade: São Luís/MA
CEP: 65045-690
Telefone: (098) 243-9077
Tel. Celular: (098) 974-0715
Email: tecnonsl@tecnocoop.com.br

Teresina/PI

Nome do responsável: Maria José da Costa Machado
Endereço: Quadra 43 - Casa 33 - Setor A
Bairro: Mocabinho 1
Cidade: Teresina/PI
CEP: 64009-700
Telefone: (086) 224-3545
Fax: (086) 224-3545
Tel. Celular: (086) 982-7646
Email: tecnonte@tecnocoop.com.br



308

Uberlândia/MG

Nome do gerente: Claudiran Alves Ferreira

Endereço: Rua dos Feirantes, 768

Bairro: Planalto

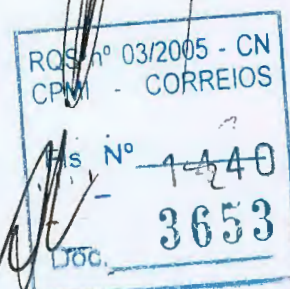
Cidade: Uberlândia/MG

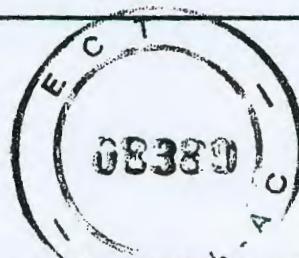
CEP: 38402-412

Telefone: (034) 238-3085

Fax: (034) 238-3085

Email: tecnonub@tecnocoop.com.br





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**CONTRATO DE PRESTAÇÃO DE SERVIÇOS DE ASSISTÊNCIA TÉCNICA QUE
ENTRE SI FAZEM TECNOCOOP INFORMATICA LTDA E MICROLOG COM. REP. E
CONSULTORIA LTDA.**

Os signatários deste documento, de um lado a TECNOCOOP INFORMATICA - Cooperativa de Trabalho de Assistência Técnica a Equipamentos de Processamento de Dados Ltda., com sede na cidade do Rio de Janeiro, à Rua Professor Rodolfo Coutinho, 7 a 17, inscrita no C.G.C.-MF sob o nº 28.194.652/0001-23, e no Estado do Rio de Janeiro sob o nº 81.851.573 e de outro MICROLOG COM. REP. E CONSULTORIA LTDA., com sede na cidade de BRASÍLIA - DF, ao end.: SCLN 107 - BLOCO C - SOBRELOJA, inscrita no C.G.C.-MF sob o nº 32.923.310/0001-74 e inscrição Estadual nº 07.321.915/0001-54, denominadas simples e respectivamente de TECNOCOOP E CONTRATANTE, têm justo e acordado o presente contrato, de acordo com as cláusulas e condições nele ajustadas e em seus Anexos.

1 - OBJETO E PRÉ-REQUISITO

1.1. O objeto deste contrato visa a prestação de serviços de assistência técnica, instalação para equipamentos de informática, em garantia de fabricação da contratante, conforme descrito nos anexos.

2 - VIGÊNCIA, RESCISÃO E RENOVAÇÃO

2.1. O presente Contrato vigorará a partir do primeiro dia de sua assinatura, por prazo indeterminado, desde que nenhum dos Contratantes não se manifeste em contrário até 30 (trinta) dias do seu término.

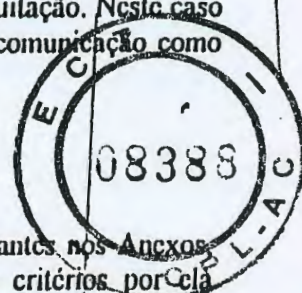
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CPM - CORREIO
Fis. Nº 1441
Doc. 3653



2.2. Os anexos vigoram a partir do primeiro dia dos meses que forem assinados e enquanto pendurar a vigência deste Contrato.

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2.3. O presente Contrato e seus Anexos poderão ser rescindidos, total ou parcialmente, a qualquer tempo, independente de notificação judicial ou extra-judicial, mediante comunicação escrita com antecedência mínima de 30 (trinta) dias, obrigando-se a TECNOCOOP e o CONTRATANTE a liquidar toda e qualquer obrigação pendente, após o que se darão plena e mútua quitação. Neste caso será considerado o trigésimo dia do mês subsequente à data do recebimento da comunicação como término do efetivo Contrato.



3 - MANUTENÇÃO

3.1. A TECNOCOOP obriga-se a manter o desempenho dos equipamentos constantes nos Anexos obedecendo normas técnicas da Contratante e, na efetivação dos Serviços, os critérios por ela estabelecidos.

3.2. A manutenção em garantia dos equipamentos será feita dentro do critério seguinte:

a) Atendimento ON-SITE - nesta modalidade, a TECNOCOOP envia seu técnico até ao local designado pelo usuário, solicita uma cópia da nota fiscal de compra do equipamento e o certificado de garantia, e uma vez confirmado estar o equipamento dentro do período de garantia, providencia o reparo do mesmo.

c) Ficam acordados os preços para atendimento, conforme sua modalidade:

ON-SITE = R\$ 25,00 (vinte e cinco reais)

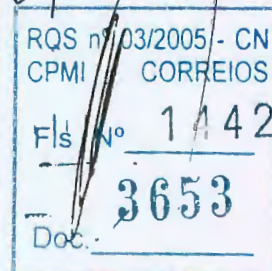
3.2.1. Toda (s) a (s) peça (s) que for (em) substituída (s) no (s) equipamento (s), será (ão) propriedade (s) da CONTRATANTE, ficando as peças substituídas como parte integrante do equipamento.

3.2.2. Para atendimento "ON SITE", haverá uma diferença de valores, correspondente à locomoção, respeitando a seguinte situação:

a) Fica estabelecido uma franquia de até 50 km, distantes do centro de atendimento mais próximo do local de instalação do usuário.

b) Para locomoção (ões) que ultrapasse (m), a franquia estabelecida será cobrada a taxa R\$ 0,70 (setenta centavos de reais) por quilometro rodado, considerando-se sentido apenas de ida.

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3.2.3. Durante o período de garantia, a contratante fornecerá à TECNOCOOP, pelo processo HOT-LINE num prazo máximo de 72 horas, mesmo aquele de estoque da TECNOCOOP, que foram utilizados nos reparos executados. 311

3.2.4. De acordo com as necessidades de cada usuário, será colocado à disposição da TECNOCOOP, 1 kit de partes e peças dos equipamentos (considerando-se 1 kit para cada 30 unidades do equipamento em garantia).

3.3. Os serviços serão prestados dentro do período principal de manutenção PPM (08:00 às 18:00 hs), devendo o usuário colocar o (s) equipamentos à disposição da TECNOCOOP para a realização dos mesmos.

3.3.1. Qualquer dificuldade, comprovadamente criada pelo usuário, visando prejudicar a execução dos serviços, desde que documentada, desobrigará a TECNOCOOP de qualquer responsabilidade com relação ao acordo neste contrato.

3.3.2. Desde que a manutenção e/ou a instalação seja solicitada para os mesmos modelos de equipamentos citados, esteja documentada, desobrigará a TECNOCOOP de qualquer responsabilidade com referência ao Contrato, poderão ser atendidos qualquer usuário indicado pelo contratante.

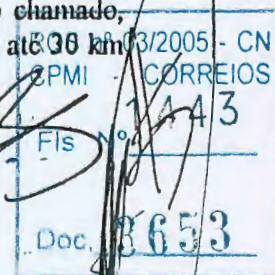
3.3.3. Todas as peças a serem substituídas nos equipamentos em garantia, sempre serão fornecidas pela contratante.

3.4. A TECNOCOOP não se responsabiliza por:

- a) Fornecimento de material necessário à utilização dos equipamentos, inclusive suporte e acessórios.
- b) Serviços executados em separado para análise e integração dos equipamentos a sistemas não previamente estabelecidos e alteração do sistema operacional.
- c) Custos de serviços decorrentes de mudanças de local de instalação, serviços elétricos externos aos equipamentos, bem como dispositivos e/ou acessórios que não estejam discriminados nos Anexos.
- d) Reparos, consertos e substituição de peças motivadas por negligência do CLIENTE, desde que comprovado pela TECNOCOOP.
- e) Reforma, troca ou pintura de partes externas que não afetam o funcionamento dos equipamentos.

3.5. As manutenções serão prestadas dentro do período contratado, ficando estabelecido o período entre 08:00 (oito) e 18:00 (dezoito) horas como sendo o Período Principal de Manutenção (PPM), exceto sábados, domingos e feriados.

3.6. A TECNOCOOP se obriga a iniciar o atendimento ao equipamento defeituoso no prazo de 06 (seis) horas e a remover o defeito no prazo de 30 (trinta) horas após o recebimento do chamado, contadas dentro dos horários contratados, desde que o mesmo esteja instalado num raio de até 30 km do centro de atendimento da TECNOCOOP mais próximo da instalação do CLIENTE.





3.6.1. Para casos em que forem necessários reposição de peças não estocáveis, tempo de reparo será contado a partir do recebimento do item solicitado via HOT-LINE.

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4 - DOS ENCARGOS FINANCEIROS



4.1. O cliente pagará à TECNOCOOP, durante o período contratado, a importância definida nos Anexos e na sub-cláusula 3.2.C.

4.2. Os preços serão reajustados conforme a variação do IPC/R - Índice de Preços ao Consumidor em Real, atualizado anualmente.

4.2.1. A (s) fatura (s) será (ão) gerada (s) a partir da emissão do documento "Controle de Chamado Técnico CCT", onde estará (ão) especificado (s) o (s) tipo (s) de atendimento (s) e/ou reparo (s) realizado (s), bem como a devida aprovação do usuário para o serviço.

4.3. Caso o preço dos serviços ora contratados esteja ou venha a estar sob o controle de qualquer órgão governamental, prevalecerão as determinações de reajustamento de preços emanadas por ele, inclusive quanto a percentual e periodicidade.

4.3.1. Na hipótese da TECNOCOOP informar que está dispensada do controle de preços e havendo perdas durante este período, os preços serão recompostos imediatamente no mês subsequente à liberação.

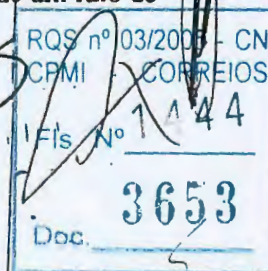
4.4. As faturas serão apresentadas em períodos quinzenais e os pagamentos serão efetuados mediante cobrança bancária com vencimento para 10 (dez) dias após o faturamento.

4.4.1. Sobre as faturas não pagas no vencimento, incidirão juros moratórios de 1% ao mês e multa contratual de 10% sobre o valor do débito, após o mesmo ter sido atualizado até a data do efetivo pagamento pela pro-rata da Taxa Financeira do mês.

4.4.2. a fatura não paga até 30 (trinta) dias após a data de seu vencimento, caracterizará inadimplência contratual para todos os fins de direito.

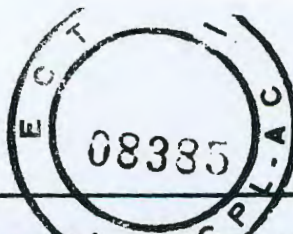
4.5. Obriga-se o CONTRATANTE a comunicar à TECNOCOOP, toda e qualquer mudança quanto ao local de instalação dos equipamentos, não se responsabilizando a TECNOCOOP pela inadequação de suas faturas com o novo local de instalação.

4.6. A cada visita para garantia, será cobrada uma taxa a título de despesa de Locomoção definida no (s) Anexo (s) desde que a localização do (s) equipamento (s) esteja (m) fora da área de um raio de 30 (trinta) km do Centro de Atendimento da TECNOCOOP mais próximo.





TECNOCOOP
INFORMATICA



Matriz:
Rua Prof. Rorillo Coutinho, 17 - Ramos
21000-160 - Rio de Janeiro - RJ
Fone: (021) 560-1922 - Fax: (021) 200-6689
CGC: 28.194.652/0001-23 - I.E. 81.851.573

4.7. A fatura relativa a despesas de Locomoção, horas extras e outros serviços não contratados será apresentada em períodos quinzenais à prestação dos serviços.

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4.8. Serviços não cobertos por este Contrato, solicitados formalmente, serão cobrados conforme orçamento autorizado.

4.9. Todo e qualquer atendimento executado fora do horário discriminado na sub-cláusula 3.6 será cobrado na razão do valor descrito no item 2 dos Anexos.

4.10. A utilização do Plantão Bip contratado será cobrada à razão no valor descrito no item 3 dos Anexos acrescido do disposto na cláusula 4.9.

4.11. A utilização do Plantão Bip em caráter eventual será cobrada à razão do valor discriminado no item 4 dos Anexos acrescido do disposto na cláusula 4.9.

5 - DAS DISPOSIÇÕES GERAIS

5.1. O usuário obriga-se a manter o equipamento em local adequado quanto às necessidades de energia elétrica, refrigeração e demais condições ambientais, especificadas pelo fabricante sob pena de isentar a TECNOCOOP, de qualquer responsabilidade técnica.

5.2. Todas as comunicações relativas ao presente Contrato serão consideradas como aceitas, se efetuadas por escrito, mediante carta protocolada. As comunicações por telegrama, telex ou fax terão que ser confirmadas por carta.

5.3. Constituirá inadimplência contratual do CONTRATANTE solicitação de terceiros, para ascender serviços técnicos nos equipamentos definidos no (s) anexo (s).

5.4. Não serão considerados como inadimplência contratual o descumprimento de obrigações quando resultantes de caso fortuito ou de força maior como previsto no artigo 1058 do Código Civil.

5.5. A tolerância de qualquer das partes, no descumprimento das cláusulas e condições aqui estipuladas, não será entendida como novação ou renúncia podendo a parte prejudicada exercer seus direitos a qualquer tempo.

O foro da Comarca do Rio de Janeiro eleito pelos contratantes para dirimir as dúvidas resultantes da interpretação deste Contrato e Anexos.

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Fis Nº 1445
Doc. 3653



TECNOCOOP INFORMATICA

Matriz:
Rua Prof. Rodolfo Coutinho, 17 - Ramos
21030.160 - Rio de Janeiro - RJ
Fone: (021) 560-1922 - Fax: (021) 200-0689
CGC: 20.194.652/0001-23 - I.E. 01.051.573

E, por estarem de pleno acordo com o teor deste Contrato, firmam o presente instrumento em 02 (duas) vias para um só efeito na presença das testemunhas abaixo.

314

Rio de Janeiro, 01 de Setembro de 1996.



Pela TECNOCOOP

Nome: KÉLIO KORENBLUM
CIC.: 028.243.187-68

Pelo CLIENTE

Nome: JOSE SANCHEZ
CIC.: 695.387.278-00

TESTEMUNHAS

Nome:
CIC.:

Nome:
CIC.:

RQS nº 03/2005 - CN
CPMI - CORREIOS
Fls. nº 1446
Doc. 3653



MICROLOG



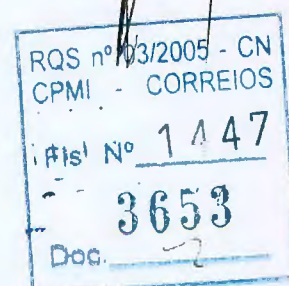
315

Y

ANEXO IV

CARTA DE SOLIDARIEDADE DO FABRICANTE

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316

A

ECT - EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS
BRASÍLIA / DF

REF: CONCORRÊNCIA Nº 001/2000 - CPL/AC
ABERTURA: 03/05/2000 - 09:30 HORAS
ATT: COMISSÃO PERMANENTE DE LICITAÇÃO DA
ADMINISTRAÇÃO CENTRAL - CPL/AC

TERMO DE SOLIDARIEDADE

DELL COMPUTADORES DO BRASIL LTDA, na condição de fabricante dos equipamentos de marca DELL e subsidiária da DELL COMPUTER CORPORATION, declara estar solidária com a empresa MICROLOG INFORMÁTICA E TECNOLOGIA LTDA, para fornecer, instalar e prestar garantia de funcionamento aos equipamentos ofertados em sua proposta perante à ECT.

Eldorado do Sul, 28 de Abril de 2000

Luis Carlos Freitas
Diretor Financeiro

Fernando Loureiro
Diretor de Comunicação e Assuntos Corporativos

28 ABR 2000

MANOEL ANTÔNIO SOBRINHO - Diretor
FRANCISCA ELIZABETH - Diretora
ANTONIO CARLOS - Diretor
Reinaldo - Diretor
EDSON - Diretor

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ANEXO V

**PAUTA DE DISTRIBUIÇÃO
DOS PRODUTOS OFERTADOS**



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<http://www.microlog.com.br>

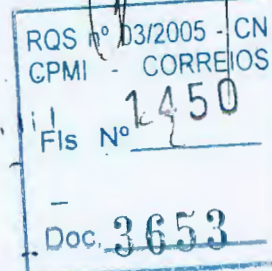
Fones: (61) 347-0995 - Fax: (61) 273-0239

**Pauta de Distribuição
Equipamentos de Informática - Servidores**



318

Tipo		INT3	INT4			INT5		
Local	Prazo de entrega (dias)	45	45	90	Subtotal	45	90	Subtotal
AC		2	1	1	2	3	1	4
AL		0	0	0	0	0	2	2
AM		0	0	0	0	0	2	2
BA		0	0	0	0	2	0	2
BSB		0	0	0	0	2	0	2
CE		0	0	0	0	0	2	2
ES		0	0	0	0	2	0	2
GT		0	0	0	0	2	0	2
MA		0	0	0	0	0	2	2
MG		1	0	0	0	1	0	1
MS		0	0	0	0	2	0	2
MT		0	0	0	0	2	0	2
NO		0	0	0	0	0	2	2
PA		0	0	0	0	0	2	2
PB		0	0	0	0	0	2	2
PE		0	0	0	0	2	0	2
PI		0	0	0	0	0	2	2
PR		1	0	0	0	1	0	1
RJ		1	0	0	0	1	0	1
RN		0	0	0	0	0	2	2
RS		1	0	0	0	1	0	1
SC		0	0	0	0	2	0	2
SE		0	0	0	0	0	2	2
SPM		2	0	1	1	0	1	1
SPI		1	0	3	3	1	0	1
Total		9	1	5	6	24	22	46



Pauta de Distribuição Consolidada
Equipamentos de Informática - Servidores



319

Tipo		INT3	INT4				INT5		
Local	Prazo de entrega (dias)	45	45	90	45~90	45	90	45~120	
AC		2	1	1	2	3	1	4	
AL		0	0	0	0	0	2	2	
AM		0	0	0	0	0	2	2	
BA		0	0	0	0	2	0	2	
BSB		0	0	0	0	2	0	2	
CE		0	0	0	0	0	2	2	
ES		0	0	0	0	2	0	2	
GT		0	0	0	0	2	0	2	
MA		0	0	0	0	0	2	2	
MG		1	0	0	0	1	0	1	
MS		0	0	0	0	2	0	2	
MT		0	0	0	0	2	0	2	
NO		0	0	0	0	0	2	2	
PA		0	0	0	0	0	2	2	
PB		0	0	0	0	0	2	2	
PE		0	0	0	0	2	0	2	
PI		0	0	0	0	0	2	2	
PR		1	0	0	0	1	0	1	
RJ		1	0	0	0	1	0	1	
RN		0	0	0	0	0	2	2	
RS		1	0	0	0	1	0	1	
SC		0	0	0	0	2	0	2	
SE		0	0	0	0	0	2	2	
SPM		2	0	1	1	0	1	1	
SPI		1	0	3	3	1	0	1	
Total		9	1	5	6	24	22	46	

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ANEXO VI

ENDEREÇO DAS DIRETORIAS REGIONAIS LOCAIS DE ENTREGA INTERNA

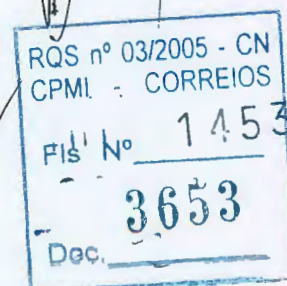
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Doc.	3653

Endereços dos Almoxxarifados das Diretorias Regionais

- DR/AL** Rod. BR 101 Lote. 8 Q. A Conj. Santos Dumont
Tabuleiro dos Martins
57080-000 - Maceió - AL
CGC: 34.038.316/0004-56
Insc. Est.: 240.002.223-8
- DR/AM** Rua André Araújo, 82 - Aleixo
69060-000 - Manaus - AM
CGC: 34.028.316/0003-75
Insc. Est.: 04.175.363-1
- DR/BA** BR 324, Rod.Km 06 - Rod. Salvador - Feira de Santana
41275-120 - Salvador - BA.
CGC: 34.028.316/0005-37
Insc. Est. : 00.901.190
- DR/BSB** SBN Quadra 01 Ed. Sede da ECT - 4º subsolo
70002-900 - Brasília - DF
CGC: 34.028.316/0007-07
Insc. Est.: 07.333.821/002-05
- DR/CE** Av. Almirante Tamandaré, 75
60060-200 - Fortaleza - CE
CGC : 34.028.316/0010-02
Insc. Est.: 06.842.096-0
- DR/ES** Rua Dona Maria Rosa, 425 - Bairro Santa Luzia
29045-110 - Vitória - ES
CGC: 34.028.316/0012-66
Insc. Est.: 08.025.225-7
- DR/GT** Av. T-1 1005 - Setor Bueno
74210-020 - Goiânia - GO
CGC: 34.028.316/0013-47
Insc. Est.: 10.054.877-6
- DR/MA** Rua São Pantaleão, 999, Centro
65015-560 - São Luiz - MA
CGC: 34.028.316/0034-71
Insc. Est.: 120.740.729
- DR/MG** Av. Izabel Bueno, 442 - Jaraguá
31270-900 - Belo Horizonte - MG
CGC: 34.028.316/0015-09
Insc. Est.: 062.014.462-0013
- DR/MT** Av. Dom Orlando Chaves, 1087 - Cristo Rei
78115-800 - Várzea Grande - MT
CGC: 34.028.316/0016-90



Insc. Est.: 13.072.481-5

DR/MS Av. Coronel Antonino, 2530 - Bairro Cel. Antonino
79023-000 - Campo Grande - MS
CGC: 34.028.316/0009-60
Insc. Est.: 28.079.808-3

DR/NO (ACRE e RONDÔNIA)
Av. Costa e Silva, 2137 - Bairro São Sebastião
78903-900 - Porto Velho - RO
CGC: 34.028.316/0027-42
Insc. Est.: 10.102.819-3

DR/PA Av. Pedro Álvares Cabral, 1240 - Marambaia
66050-040 - Belém - PA
CGC: 34.028.326/0018-51
Insc. Est.: 15.063283-5

DR/PB Rua Coronel Estevão D'avila Lins, 405 - Cruz das Armas
58085-010 - João Pessoa - PB
CGC: 34.028.316/0019-32
Insc. Est.: 16.074.550-0

DR/PE Rua São Mateus, 891 - Monsenhor Fabricio
50680-000 - Recife - PE
CGC: 34.028.316/0021-57
Insc. Est.: 18.100.100.143.605

DR/PI Rua Santa Luzia, 3160 - Ilhota
64001-800 - Teresina - PI
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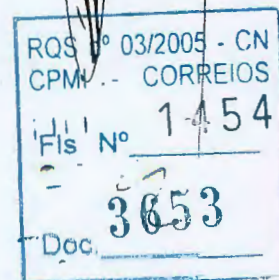
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81650-030 - Curitiba - PR
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DR/RJ Rua Leopoldo Bulhões, 530 Fundos - Benfica
20911-300 - Rio de Janeiro - RJ
CGC : 34.028.316/0002 - 94
Insc. Est.: 20.053.094-1

DR/RN Rua Cel. Norton Chaves, 1859 - Lagoa Nova
59075-200 - Natal - RN
CGC: 34.028.316/0025-80
Insc. Est.: 20.053.094-1

DR/RS Av. Sertório, 4222 - Vila Sesi
91040-620 - Porto Alegre - RS
CGC.: 34.028.316/0026-61
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DR/SC Av. Leoberto Leal, 975 - Barreiros
88110-000 - São José - SC



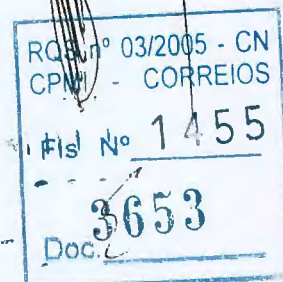
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323

DR/SE Rua Acre, 1084 - Bairro Siqueira Campos
49095-010 - Aracaju - SE
CGC: 34.028.316/0032-00
Insc. Est.: 27.051.097-4

DR/SPM Av. Bandeirantes do Sul, 311 - Vila Maria
Km 1,5 da Via Dutra
02065-000 - São Paulo - SP
CGC: 34.028.316/0031-29
Insc. Est.: 11.238.885.311-9

DR/SPI Rua Benedito Eleutério, 5-79 - Vila Falção
17050-370 - Bauru - SP
CGC: 34.028.316/
Insc. Est.:

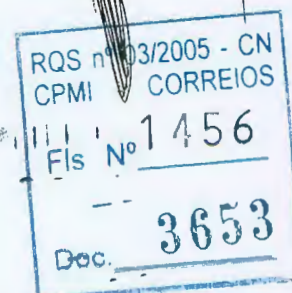


Locais de Entrega Interna



Obs.: Após o recebimento pelo Almojarifado os equipamentos serão destinados à GPLAT, DESIT, GESIT'Is e GETEC's.

LOCAL	ENDEREÇO	BAIRRO	CIDADE	UF
AC	SBN Q. 1 Conj. 3 Bloco A – 2º subsolo		Brasília	DF
AL	Rua do Sol, 57 - sala 213 – 2º andar	Centro	Maceió	AL
AM	Praça Antônio Bittencourt, 90		Manaus	AM
BA	Av. Paulo VI, 190 – 5º andar	Pituba	Salvador	BA
BSB	SBN Q. 1 Conj. 3 Bloco A – 2º subsolo		Brasília	DF
CE	Rua Sem. Alencar, 38 - Sala 307	Centro	Fortaleza	CE
ES	Av. Leitão da Silva, 2730	Santa Luzia	Vitória	ES
GT	Praça Cívica, 11 – 2º andar	Centro	Goiânia	GO
MA	Praça João Lisboa, 292 - sala 306	Centro	São Luis	MA
MG	Av. Afonso Pena, 1270 – 1º andar	Centro	Belo Horizonte	MG
MS	Av. Vasconcelos Fernandes, 164		Campo Grande	MS
MT	Av. Dom Orlando Chaves, 1250	Cristo Rei	Várzea Grande	MT
NO	Av. Costa e Silva, 2137		Porto Velho	RO
PA	Av. Presidente Vargas, 498 – 4º andar		Belém	PA
PB	Praça Pedro Américo, 70	Centro	João Pessoa	PB
PE	Av. Guararapes, 250 - sala 305	Centro	Recife	PE
PI	Av. Antônio Freire, 1407	Centro	Teresina	PI
PR	Rua XV de Novembro, 700 – 1º andar		Curitiba	PR
RJ	Av. Pres. Vargas, 3077 – 4º andar	Cidade Nova	Rio de Janeiro	RJ
RN	Av. Engº Hildebrando de Góis, 221	Ribeira	Natal	RN
RS	Rua Siqueira Campos, 1100 - sala 314		Porto Alegre	RS
SC	Praça XV de Novembro, 242	Centro	Florianópolis	SC
SE	Rua Laranjeiras, 229	Centro	Aracaju	SE
SPM	Rua Mergenthaler, 592 - Bloco 2 – 7º andar	V. Leopoldina	São Paulo	SP
SPI	Praça D. Pedro II, 4-55 - Centro – 3º andar	Centro	Bauru	SP





Guia do Produto do Usuário InfoServer 3030

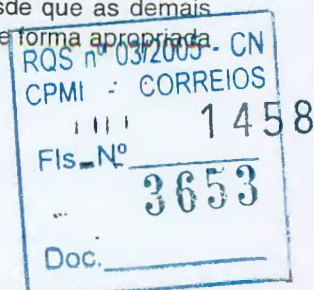
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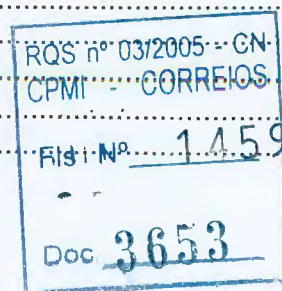
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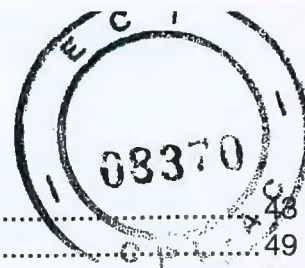


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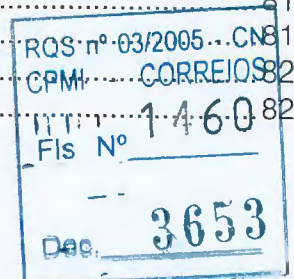


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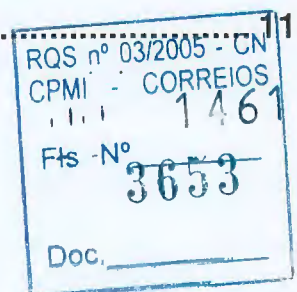


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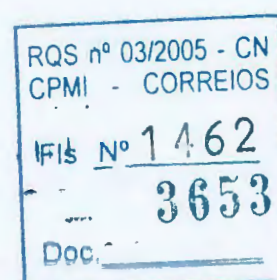


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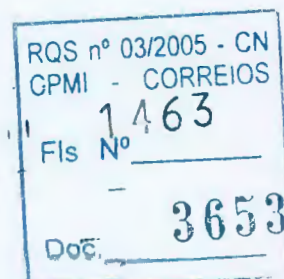
1 Descrição do Sistema



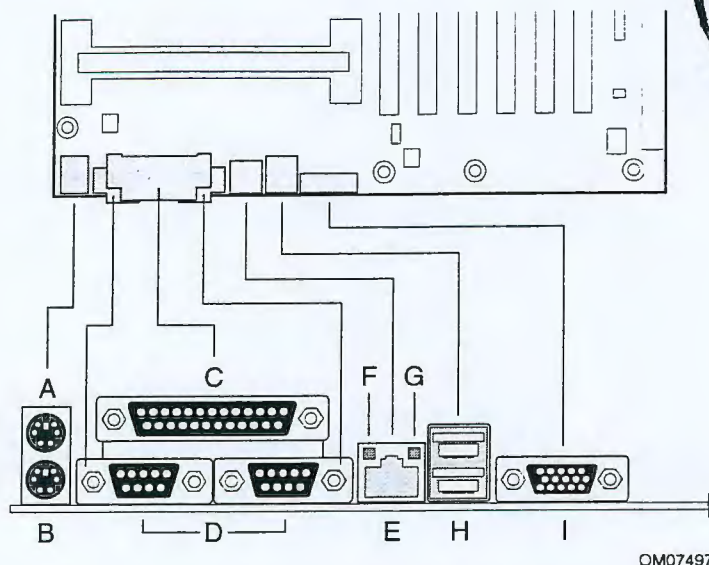
Recursos da Placa Básica

Tabela 1. Características da Placa Básica

Característica	Descrição
Processador	Instalados: Até dois processadores Pentium® III operando de 1,8 V até 3,5 V. O regulador de voltagem da placa básica é programado automaticamente pelos pinos VID para fornecer a voltagem necessária.
GMemory (DRAM)	Quatro soquetes de 72 bits para módulos de memória em linha dupla (DIMM) SDRAM de 168 pinos, com contato folheado a ouro, de 100 MHz, conforme especificação PC/100, ECC ou não ECC, registered ou unbuffered.
Memória de vídeo	Instalada: 2 MB de memória de vídeo.
Bus PCI	Quatro <i>slots</i> de expansão padrão PCI (PCI-33/32 bits) para placas de expansão. Dispositivos integrados: controlador de vídeo, interface de rede (Network Interface Controller -NIC) e controlador SCSI. Dois <i>slots</i> de expansão PCI-66/32 bits de 5V (com compatibilidade retroativa com PCI-33/32).
Bus ISA	Um <i>slot</i> ISA para uma placa de expansão. Suporte incorporado compatível com PC (serial, paralela, <i>mouse</i> , teclado, disquete, e recursos <i>Plug & Play</i>).
Gerenciamento do Servidor	Monitoramento térmico/de voltagem e gerenciamento de erros. RTC (Calendário/relogio de tempo real). Controles e indicadores (LEDs) do painel frontal. SSU (Utilitário de <i>Setup</i> do Sistema). BIOS (Sistema básico de entrada e saída), POST (teste automático de inicialização) e <i>Setup</i> armazenados em memória tipo <i>Flash</i> .
Gráficos	Controlador SVGA integrado Cirrus Logic† CL-GD5480.
SCSI	Adaptec† AIC-7896, oferecendo suporte para interfaces integradas Ultra2 (LVDS) Wide e Ultra-wide SCSI. O suporte para a placa Adaptec ARO-1130 RAIDPort† está integrado ao <i>slot</i> PCI 4.
Rede	NIC integrada, um controlador LAN PCI Intel® 82559 em um único chip para redes Fast Ethernet† de 10 ou 100 Mbps TX. Conector Ethernet RJ-45 e LEDs indicadores no painel traseiro de I/O.
I/O do Sistema	Porta para <i>mouse</i> e teclado compatível com PS/2† utilizando DIN de 6 pinos. Porta paralela avançada, suportando EPP (Porta Paralela Avançada) nível 1.7 e 1.9, ECP, compatível com 25 pinos. Porta de vídeo VGA de 15 pinos. Duas portas seriais de 9 pinos. Rede: Porta Ethernet RJ-45. Duas portas USB.
Formato	Formato Servidor ATX, 30,5 × 33 cm, I/O conforme padrão ATX 2.01.



Conectores do Painel Traseiro



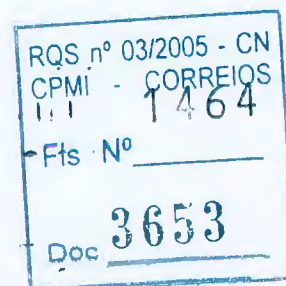
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Figura 1. Conectores do Painel Traseiro

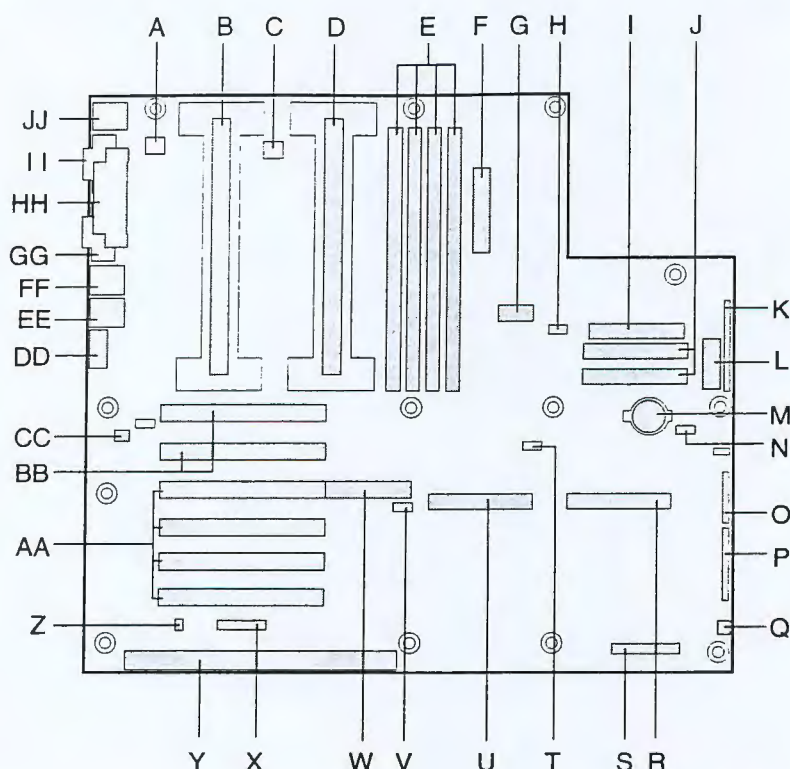
- A Conector do *mouse*
- B Conector do teclado
- C Conector da porta paralela
- D Conectores da porta serial
- E Conector de rede
- F LED NIC verde
- G LED NIC laranja
- H Conectores USB
- I Conector de vídeo

Tabela 2. LEDs da Placa de Rede (NIC)

Cor do LED	Se estiver aceso	Se estiver piscando	Se estiver apagado
Laranja	Conexão com rede de 100 Mbps.	N/D	Conexão com rede de 10 Mbps.
Verde	Conectado à rede, sem tráfego de rede.	Conectado à rede, enviando ou recebendo dados.	Não conectado à rede.



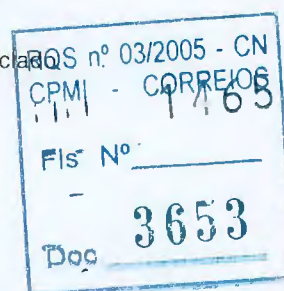
Localizações dos Conectores e Componentes da Placa do Servidor



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Figura 2. Localizações dos Conectores e Componentes da Placa Básica

- | | |
|---|---|
| A. Conector do ventilador do dissipador proc 2 | S. Conector do SMM (módulo monitor do servidor) |
| B. Processador secundário | T. Conector para Wake on LAN [†] externo |
| C. Conector do ventilador do dissipador proc1 | U. Conector SCSI Ultra2/LVD |
| D. Processador primário | V. Conector do LED de disco rígido |
| E. Slots DIMM | W. Conector Adaptec ARO-1130 /Slot PCI 4 |
| F. Conector de alimentação principal (Main) | X. Conector do ICMB (barramento do gerenciamento inteligente do gabinete) |
| G. Conector de alimentação auxiliar (Aux) ATX | Y. Conector ISA |
| H. Conector do ventilador FAN2A | Z. Conector de intrusão no gabinete |
| I. Conector do disco flexível | AA. Conectores PCI-33/32 |
| J. Conectores IDE | BB. Conectores PCI-66/32 |
| K. Conector do painel frontal ATX | CC. Conector do ventilador FAN2B |
| L. Conector do painel frontal, 16 pinos | DD. Conector de vídeo |
| M. Bateria | EE. Conectores USB |
| N. Conector do IMB (Bus do gerenciamento inteligente) do ISOL (gerenciamento do servidor isolado) | FF. Conector NIC |
| O. Bloco de jumpers | GG. Conector da porta serial |
| P. Bloco de jumpers | HH. Conector da porta paralela |
| Q. Conector para ventilador 1 | II. Conector da porta serial |
| R. Conector Ultra Wide SCSI | JJ. Conectores para mouse/teclado |





Processador

Cada processador Pentium III vem encapsulado em um cartucho SECC ou SECC2. O cartucho inclui o núcleo do processador com um *cache* primário (L1) integrado de 16 KB, o *cache* secundário (L2) e uma cobertura da parte traseira.

O processador implementa a tecnologia MMX™ e mantém total compatibilidade retroativa com os processadores 8086, 80286, Intel386™, Intel486™, Pentium, Pentium Pro e Pentium III anteriores. O coprocessador numérico do processador aumenta significativamente a velocidade de operações de ponto flutuante e está de acordo com o padrão ANSI/IEEE 754-1985.

Cada cartucho de processador é conectado à placa básica através de um conector de 242 pinos. O cartucho é preso à placa básica por um módulo de retenção. De acordo com a configuração, o servidor pode ter um ou dois processadores.

A interface externa do processador está pronta para MP (multi-processador) e opera a 100 MHz. O processador contém uma seção APIC (controlador programável de interrupção avançado) local para gerenciamento de interrupções em ambientes MP (multiprocessados) e UP (processador único).

A cache nível 2 está localizada no substrato cartucho SECC. A cache inclui memórias estáticas síncronas em modo *burst pipeline* (BSRAM). A cache L2 é oferecida em configurações de 512 KB apenas, com código de correção de erros (ECC) que opera na metade da velocidade de *clock* do núcleo.

Memória

A placa básica suporta apenas SDRAM de 100 MHz PC/100 ECC ou não ECC. A memória é particionada em quatro bancos de DIMMs de SDRAM, cada um contendo 72 bits de memória não intercalada (64 bits de memória principal mais ECC):

- Instalar de 64 MB a 2 GB de memória, utilizando DIMMs registred.
- Instalar de 32 MB a 1 GB de memória, utilizando DIMMs unbuffered.

A memória deve ser adicionada em ordem do *slot* 1 ao *slot* 4.

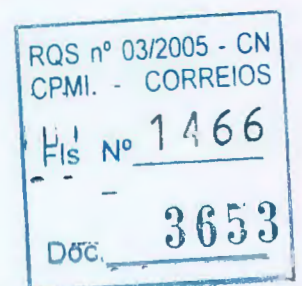
OBSERVAÇÃO

Não misturar memória registred e memória unbuffered. Memória não ECC pode ser instalada, mas recomenda-se utilizar memória ECC em um ambiente do servidor. Misturar memória não ECC com memória ECC faz com que todos os recursos de ECC sejam desativados.

O controlador detecta automaticamente os tamanhos e inicializa a memória, dependendo do tipo, quantidade, e velocidade das memórias DIMMs instaladas, e reporta a quantidade de memória e a alocação para o sistema através de registros de configuração.

OBSERVAÇÃO

Utilizar somente DIMMs homologadas para este servidor. Entrar em contato com o representante de vendas ou revendedor para obter uma lista atualizada de módulos de memória aprovados.



Relação entre *Bus* do Processador e Memória



A Placa Básica foi projetada utilizando o Intel® 82440GX AGPSet (440GX). Este dispositivo fornece suporte para interface com *bus* do processador de 100MHz, controlador de DRAM, interface com *bus* PCI, interface AGP (usada no InfoServer 3030LW para PCI-66/5V), e funções de gerenciamento de alimentação. O *bus* de memória no InfoServer 3030LW é otimizado para operação a 100MHz, utilizando memória principal SDRAM de 100MHz. A interface PCI é concordante com o padrão PCI 2.1, fornecendo um ambiente de sinalização de 33 MHz / 5V para controladores e *slots* incorporados no segmento único de PCI do InfoServer 3030LW. O controlador de memória 440GX suporta até 2 GB de memória ECC ou não ECC, utilizando dispositivos de DRAM síncrona (SDRAM) concordante com PC/100 em módulos DIMM adicionais. O ECC pode detectar e corrigir erros em um só bit, e também detectar erros em múltiplos bits.

Periféricos

Circuito Super I/O

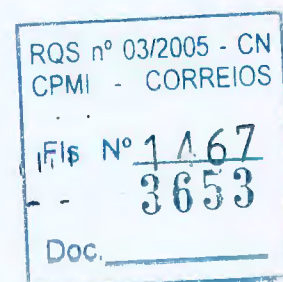
O dispositivo National† 87309 suporta duas portas seriais, uma porta paralela e uma unidade de disquete, além de teclado e *mouse* compatíveis com PS/2. A placa básica possui um conector para cada porta.

Portas Seriais

Cada porta serial pode ser configurada com uma entre quatro possíveis portas COMx, e cada uma pode ser habilitada separadamente. Quando habilitada, cada porta pode ser programada para gerar interrupções sensíveis a borda ou nível. Quando não habilitadas, as interrupções das portas seriais estão disponíveis para as placas de expansão.

Porta Paralela

O 87309 fornece um EPP (suportando níveis 1.7 e 1.9) bidirecional de 25 pinos compatível com o IEEE 1284. A programação dos registros do 87309 através do BIOS ativa a porta paralela e determina o endereço e a interrupção da porta. O modo ECP é suportado com dois canais de DMA possíveis. Quando desativada, a interrupção está disponível para placas de expansão.





Slots de Expansão

A placa básica possui um conector onde podem ser instaladas placas ISA longas. Recursos ISA:

- Velocidade de *Bus* até 8,33 MHz
- Endereçamento de memória de 16 bits
- Transferências tipo A a 5,33 Mbps
- Transferências tipo B a 8 Mbps
- Transferências de dados de 8 ou 16 bits
- Pronto para *Plug and Play*

A placa básica possui quatro conectores padrão PCI (PCI-33/32 bit) longas. Recursos PCI:

- Velocidade de *Bus* 33 MHz
- Endereçamento de memória de 32 bits
- Ambiente de sinais de 5 V
- Transferências modo *Burst* até 133 Mbps
- Transferências de dados de 8, 16 ou 32 bits
- Pronto para *Plug and Play*
- Paridade habilitada

A placa básica possui dois conectores universais PCI-66 (placas de 5 volts/3,3 volts projetadas para o conector de 3,3v - placas com apenas um entalhe - não caberão) de comprimento total. Recursos PCI:

- Velocidade de *bus* 66 MHz
- Endereçamento de memória de 32 bits
- Ambiente de sinais de 5 V/3,3 V
- Transferências modo *Burst* até 266 Mbps
- Transferências de dados de 8, 16 ou 32 bits
- Pronto para *Plug and Play*
- Paridade habilitada

OBSERVAÇÃO

Se instalar uma placa PCI-33 em um dos *slots* PCI-66, a velocidade do *Bus* para os dois *slots* será reduzida para 33 MHz.

Os componentes de algumas das placas de comprimento total instaladas no *slot* 6 podem interferir com os prendedores do conector para DIMM.





Vídeo

O circuito integrado Cirrus Logic CL-GD5480 64-bit VGA instalado na placa básica contém um controlador SVGA totalmente compatível com os seguintes padrões de vídeo: CGA, EGA, Hercules† Graphics, MDA e VGA. A configuração padrão vem com 2 MB de SGRAM de 16 ns integrada. O controlador de vídeo suporta resoluções de pixel de até 1600 x 1200 e até 16,7 milhões de cores.

O controlador SVGA suporta monitores VGA analógicos (frequência simples ou múltipla, entrelaçado ou não) com uma frequência retraço vertical não entrelaçado máxima de 100 Hz.

Não é possível adicionar memória de vídeo à placa básica. De acordo com o ambiente, o controlador exibe até 16,7 milhões de cores em algumas das resoluções de vídeo. Também fornece transferências de blocos de bits (BITBLT) de dados com aceleração por *hardware*.

Controlador SCSI

O controlador SCSI incorporado Adaptec AIC-7896 de função dupla fornece tanto as interfaces Ultra2 (LVDS) wide e Ultra wide SCSI quanto duas funções PCI independentes. O *slot* PCI 4 pode ser expandido para RAID, fornecendo suporte adicional para o controlador ARO1130 RAIDPort da Adaptec.

Não é necessário terminação ou carga resistiva para conectar dispositivos no controlador SCSI a não ser a terminação no dispositivo no final do cabo. O *bus* SCSI é terminado na placa básica com terminadores ativos que não podem ser desabilitados. O dispositivo na placa deve sempre encontrar-se em uma das extremidades do cabo do *bus*.

Controlador IDE

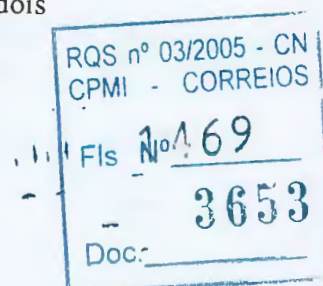
IDE é uma interface de 16 bits para unidades de disco inteligentes com controlador AT† integrado. O acelerador PCI/ISA/IDE, também conhecido como PIIX4e, é um dispositivo de funções múltiplas na placa básica que atua como um controlador Fast IDE baseado no *bus* PCI. O dispositivo controla:

- Operações em modo PIO e IDE DMA/*bus master*.
- *Timings* em Modo 4.
- Taxas de transferência de até 33 MB/s.
- *Bufferização* para PCI/IDE *burst transfers*.
- Modo IDE *Master/slave*
- Até dois dispositivos por canal; dois canais, IDE0 e IDE1

OBSERVAÇÃO

Comprimento máximo de 18-polegadas (45 cm) em cada canal IDE:

Pode-se conectar um cabo se sinais IDE de no máximo 45 cm cada, aos conectores IDE na placa básica. Cada cabo pode suportar dois dispositivos, um no final do cabo e um a 15 cm do final do cabo.



Controlador de Rede

A placa básica inclui uma solução de rede 10BASE-T/100BASE-TX baseada no circuito integrado Intel 82559 Fast Ethernet PCI Bus Controller. Como um *bus master* PCI, o controlador pode transferir dados em modo *burst* até a 132 MB/s. O controlador contém dois *buffers FIFO* de recepção e transmissão para prevenir perda de dados transmitidos enquanto espera para acessar o *bus* PCI. O controlador possui os seguintes recursos:

- Interface de 32-bit PCI *bus master* (ligada direto ao *bus*), compatível com a *PCI Bus Specification, Revision 2.1*.
- Estrutura de memória encadeada com encadeamento de transmissão dinâmica aperfeiçoado para melhoria no desempenho.
- Limiar de transmissão programável para melhorar a utilização do *bus*.
- Recepção adiantada da interrupção para processamento simultâneo de dados recebidos.
- Contadores no circuito integrado para gerenciamento de rede.
- Detecção automática e alternância automática para velocidade de rede de 10 ou 100 Mbps.
- Suporte a redes de 10 Mbps e 100 Mbps, capaz de operar em modo *full* ou *half duplex*, com transmissão *back-to-back* a 100 Mbps.

Os LEDs indicadores de estado da rede na placa básica indicam:

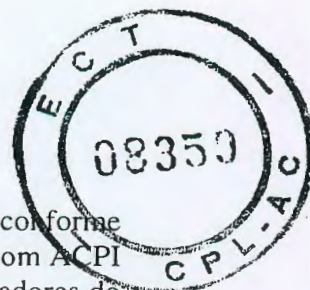
- Atividade de transmissão/recepção na LAN.
- Vínculo válido com a LAN.
- Modo de transferência de 10/100 Mbps.

Teclado e Mouse

O controlador de teclado e *mouse* é compatível com PS/2. O servidor pode ser travado automaticamente se não houver atividade de teclado ou *mouse* durante um período de tempo predefinido, se especificado através do SSU (Utilitário de Configuração do Sistema). Uma vez que o *timer* de inatividade tenha expirado, o teclado e o *mouse* não responderão até que a senha previamente armazenada seja digitada.



ACPI



A placa básica suporta a ACPI (Interface Avançada de Configuração e Alimentação) conforme definida pelas especificações ACPI 1.0 e PC97. Um sistema operacional compatível com ACPI pode colocar o sistema em um estado onde os discos rígidos param de girar, os ventiladores do sistema param e todo processamento é interrompido. Contudo, a fonte de alimentação ainda estará ligada e os processadores ainda estarão dissipando alguma energia, de forma que o ventilador da fonte de alimentação e o ventilador dos processadores continuarão funcionando.

O Placa Básica suporta os estados de inatividade s0, s1, s4 e s5. Com as próximas versões do Microsoft† Windows† 9X, que suportarão a ACPI, o BIOS dará suporte apenas para os estados de inatividade s0, s1 e s5. Com as próximas versões do Microsoft Windows NT†x, que suportarão a ACPI, a BIOS dará suporte apenas para os estados de inatividade s0, s1, s4 e s5.

- s0: Estado normal de execução.
- s1: Estado de inatividade do processador. Nenhum contexto será perdido neste estado e os caches do processador manterão sua coerência.
- s4: Hibernate (Hibernar) ou Save to Disk (Salvar em Disco): A memória e o estado da máquina são salvos em disco. Caso o botão liga/desliga seja pressionado ou ocorra outro evento que coloque o sistema em atividade, o estado do sistema será restaurado a partir do disco e retornará à operação normal. Isto pressupõe que nenhuma alteração tenha sido feita no hardware enquanto o sistema estava desligado.
- s5: Soft off (Desligamento condicional): Apenas a seção RTC do PIIX4 e o BMC continuam em execução neste estado.



ATENÇÃO

O sistema só está desligado quando a corrente alternada está desconectada.

Gerenciamento do Servidor

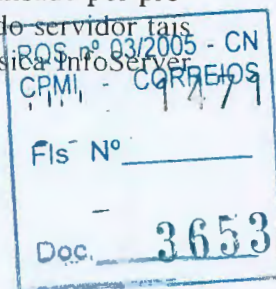
As funções de gerenciamento do servidor são implementados através de um microcontrolador.

Controlador de Gerenciamento da Placa Básica (BMC)

Todas funções de gerenciamento do servidor estão concentradas no BMC. O BMC e circuitos associados são alimentados a partir de uma linha espera de +5V_Standby, que permanece ativa quando a alimentação do servidor é desligada e o servidor continua conectado à corrente alternada.

Uma das principais funções do BMC é monitorar de forma autônoma os eventos de gerenciamento do sistema e registrar sua ocorrência no SEL (Registro de Eventos do Sistema) não volátil. Esses eventos incluem superaquecimento e sobrecarga de corrente, falhas no ventilador ou intrusão no gabinete. Para permitir um monitoramento preciso, o BMC mantém o SDR (Registro de Dados do Sensor), não volátil, a partir do qual as informações dos sensores podem ser recuperadas. O BMC possui uma interface ISA para informações de sensores SDR, de forma que softwares que estiverem sendo executados no servidor podem acessar e recuperar o estado atual do servidor.

O conteúdo do SEL pode ser recuperado após uma falha no sistema para ser analisado por profissionais de suporte que utilizarão ferramentas de software de gerenciamento de servidor tais como o Intel Server Control disponível no CD-ROM fornecido com a placa básica InfoServer 3030LW.



Uma vez que o BMC é alimentado pela linha de 5V_Standby, as informações SEL e SDR também estão disponíveis através do IMB (*Bus de Gerenciamento Inteligente*). Uma Emergency Management Card (Placa de Gerenciamento de Emergência), tal como a placa Intel® LANDesk® SMM (Módulo de Monitoramento do Servidor), disponível com o pacote LANDesk Server Manager Pro, pode acessar o SEL e possibilitar que este seja acessado de forma remota utilizando uma conexão por LAN ou linha telefônica. Enquanto estiver recebendo a corrente adequada, o BMC executa as seguintes tarefas:

- Monitora a temperatura e voltagem da placa básica.
- Monitora a presença do processador e controla o FRB.
- Detecta e indica falhas no ventilador da placa básica.
- Gerencia a interface SEL.
- Gerencia a interface de SDR Repository (Repositório de SDR).
- Monitora o relógio de anotação de hora SDR/SEL.
- Gerencia a interface de informações FRU (Unidade Substituível em Campo) da placa básica.
- Monitora o *timer* de alerta de gerenciamento do sistema.
- Monitora o *timer* periódico SMI.
- Gerencia o tratamento de NMI do painel frontal.
- Monitora o receptor de eventos.
- Gerencia o controlador ISA e a interface IMB.
- Controle do modo seguro, incluindo desativação do vídeo, monitoração de proteção contra gravação do disco flexível e inicialização do bloqueio/desbloqueio do painel frontal
- Gerencia o agente de inicialização dos eventos de sensor
- Controla Wake on LAN utilizando suporte a Magic Packet†

Console da Porta de Gerenciamento de Emergência (EMP)

A Console da EMP fornece uma interface para a EMP. Essa interface permite o gerenciamento remoto do servidor através de um modem ou de uma conexão direta (de porta serial a porta serial).

As operações de controle do servidor disponíveis através da Console EMP são:

- Conectar a servidores remotos
- Ligar ou desligar o servidor
- Reinicializar o servidor

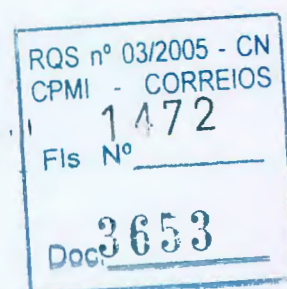
A Console EMP usa três utilitários de gerenciamento para monitorar o servidor:

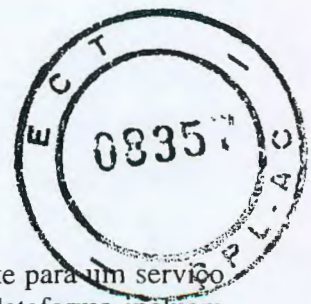
- Visualizador do SEL (SEL Viewer)
- Visualizador do SDR (SDR Viewer)
- Visualizador da FRU (FRU Viewer)

A Console EMP também possui um utilitário de *Phonebook* (Agenda de Telefones) que pode ser usado para criar e manter uma lista de servidores e seus números de telefone.

OBSERVAÇÃO

Tanto a EMP quanto a PEP Platform Event Paging (Pager de Eventos de Plataforma) dividem seu modem. A PEP tem prioridade sobre todos os aplicativos exceto a EMP. Se um alerta ocorrer, a PEP reinicializará seu modem e lhe enviará um aviso.





Pager de Eventos de Plataforma (PEP)

Através da PEP, o servidor pode ser configurado para discar automaticamente para um serviço de pager e avisá-lo quando um evento de plataforma ocorrer. Eventos de plataforma incluem temperatura fora do intervalo permissível, voltagem fora do intervalo permissível, intrusão no gabinete, falha no ventilador etc.

Se a PEP for ativada e o BMC receber ou detectar um novo evento, ele envia automaticamente um aviso por pager. Ele pode enviar um aviso se os processadores não estiverem funcionando ou se o software de sistema não estiver disponível.

A PEP necessita de um modem externo conectado à serial da EMP do servidor. Geralmente, esse será o conector serial da COM2.

Verificar no BIOS *Setup* da placa básica se o sistema BIOS inclui ou não um sistema PEP.

Segurança

Para ajudar a prevenir entrada ou utilização não autorizada do servidor, o software de gerenciamento do servidor Intel Server Control (Controle do Servidor Intel) monitora o interruptor de intrusão no sistema.

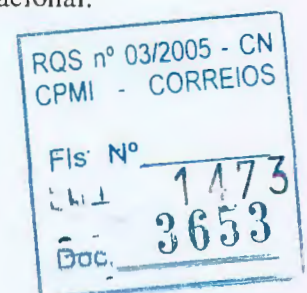
Segurança Através de Travas Mecânicas e Monitoramento

Se instalado, pode-se ativar o interruptor de alarme de intrusão no gabinete. Quando a porta lateral for aberta, o interruptor transmitirá um sinal de alarme para a placa básica, onde o BMC e o software de gerenciamento do servidor processa o sinal. O sistema pode ser programado para responder a uma intrusão desligando-se ou travando o teclado, por exemplo.

Segurança por Software

O BIOS *Setup* e o SSU (Utilitário de Configuração do Sistema) possuem diversos recursos de segurança para impedir acesso não autorizado ou acidental ao sistema. Uma vez que as medidas de segurança tenham sido ativadas, só será possível acessar o sistema depois de digitar a(s) senha(s) correta(s). Por exemplo:

- Ativar o *timer* de travamento do teclado de forma que o servidor solicita uma senha para reativar o teclado e o *mouse* após um período especificado de tempo (de 1 a 120 minutos).
- Definir e ativar uma senha de administrador.
- Definir e ativar uma senha de usuário.
- Definir o modo seguro para impedir entrada via teclado ou *mouse* e para impedir a utilização dos botões de *reset* e *power* do painel frontal.
- Ativar uma combinação de teclas de atalho para entrar no modo seguro rapidamente.
- Desativar a gravação na unidade de disquete quando o modo seguro estiver ativado.
- Desativar o acesso ao setor de inicialização do disco rígido do sistema operacional.





Utilizando Senhas

Pode-se definir uma senha de usuário, uma senha de administrador ou ambas as senhas. Se apenas a senha de usuário estiver definida, será necessário:

- Digitar a senha de usuário para entrar no *Setup* da BIOS ou no SSU.
- Digitar a senha de usuário para inicializar o servidor se a função *Password on Boot* (Senha ao Inicializar) estiver habilitada no *Setup* ou no SSU.
- Digitar a senha de usuário para sair do modo seguro.

Se apenas a senha de administrador estiver configurada, será necessário:

- Digitar a senha de administrador para entrar no *Setup* de BIOS ou no SSU.
- Digitar a senha de administrador para dar *boot* no servidor se a opção *Password on Boot* (Senha ao Inicializar) estiver ativada no *Setup* da BIOS ou no SSU.
- Digitar a senha de administrador para sair do modo seguro.

Se ambas as senhas estiverem habilitadas, será necessário:

- Digitar a senha de usuário para entrar no *Setup* da BIOS ou no SSU. Contudo, não será possível alterar muitas das opções.
- Digitar a senha de administrador caso queira entrar no BIOS *Setup* ou no SSU e acessar todas as opções.
- Digitar qualquer uma das senhas para dar *boot* no servidor se a função *Password on Boot* estiver ativada no *Setup* da BIOS ou no SSU.
- Digitar qualquer uma das senhas para sair do modo seguro.

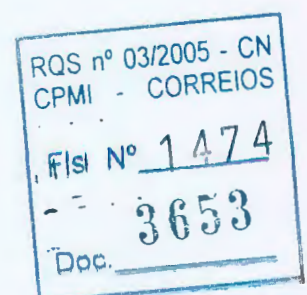
Modo Seguro

O modo seguro é configurado e habilitado pelo SSU. Quando o modo seguro estiver ativado:

- Será possível inicializar o servidor e o sistema operacional será executado, porém deve-se digitar a senha de usuário para poder utilizar o teclado e *mouse*.
- Não se pode desligar o sistema ou dar *reset* através das chaves do painel frontal.

O modo seguro não afeta as funções habilitadas através do módulo *Server Manager*, ou controle de alimentação através do relógio de tempo real.

Remover o servidor do modo seguro não altera o estado de ligado/desligado do sistema. Isso significa que se o botão liga/desliga for pressionado e liberado enquanto o sistema estava no modo seguro, o sistema não vai se desligar quando o modo seguro for desativado. Contudo, se o botão liga/desliga do painel frontal continuar pressionado quando o modo seguro for desativado, o servidor será desligado.





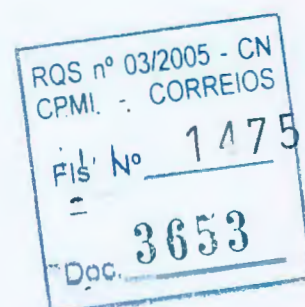
Resumo das Características de Segurança do Software

A tabela abaixo mostra os recursos de segurança de software e descreve a proteção que cada um deles oferece. Em geral, para configurar e habilitar a característica listada aqui, é preciso executar o SSU e ir para o menu Security Subsystem Group (Grupo de Subsistema de Segurança). A tabela também faz referência a outros menus do SSU e ao utilitário *Setup*.

Tabela 3. Funções de Segurança de Software

Função	Descrição
Modo Seguro	Como entrar no modo seguro: • A configuração e a ativação de senhas coloca automaticamente o sistema no modo seguro. • Caso seja definida uma combinação de teclas de atalho (através do SSU ou do <i>Setup</i> – Programa de Configuração), pode-se colocar o sistema no modo seguro simplesmente pressionando a combinação de teclas. Isso significa que não é preciso esperar o limite de tempo de inatividade. Quando o sistema está no modo seguro: O servidor pode inicializar e executar o sistema operacional, porém não será aceita entrada de dados através do <i>mouse</i> e teclado até que a senha de usuário seja digitada. Durante a inicialização, se for detectado um CD na unidade de CD-ROM ou um disquete na unidade A, o sistema pedirá uma senha. Quando a senha for digitada, o servidor inicializará a partir do CD ou disquete e desativará o modo seguro. Se não houver nenhum CD na unidade de CD-ROM ou disquete na unidade A, o servidor inicializará a partir do disco C e automaticamente entrará no modo seguro. Todos os recursos ativados do modo de segurança entram em vigor durante a inicialização. Para sair do modo seguro: digitar a(s) senha(s) correta(s).
Desativar escrita para disquete	No modo seguro, o servidor não inicializará a partir de um disquete nem escreverá em um disquete a menos que uma senha seja digitada. Para ativar este recurso, utilizar o Security Subsystem Group (Grupo de Subsistema de Segurança) do SSU. Para proteger os disquetes contra gravação quer o servidor esteja no modo de segurança ou não, utilizar o menu principal do <i>Setup</i>, Floppy Options (Opções do Disquete), e especificar Floppy Access (Acesso ao Disquete) como somente leitura.
Desabilitando botões de <i>reset</i> e <i>on/off</i>	Se esta função de proteção estiver habilitada pelo SSU, os botões <i>on/off</i> e de <i>reset</i> não operam quando em modo seguro.

continua



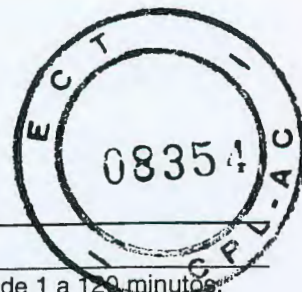
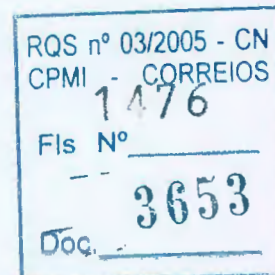
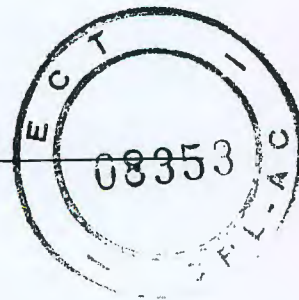


Tabela 3. Funções de Segurança de Software (continuação)

Função	Descrição
Definir um limite de tempo para que a entrada de dados via teclado e <i>mouse</i> não seja mais aceita Além disso, a tela também pode ser desativada, e a escrita em disquete pode ser proibida	Pode-se especificar e habilitar um período de inatividade de 1 a 120 minutos. Se não ocorrer atividade no teclado ou <i>mouse</i> durante o tempo especificado, tentativas de utilizá-los não serão aceitas. O monitor de vídeo ficará desativado e a unidade de disquete ficará protegida contra escrita (se estes recursos de segurança estiverem ativados através do <i>Setup</i> ou do SSU). Para retornar à atividade: digitar a(s) senha(s) correta(s).
Controlar o acesso utilizando o SSU: atribuir senha de administrador	Para controlar o acesso às definições ou alterações da configuração do sistema, definir uma senha de administrador e ativá-la através do <i>Setup</i> ou do SSU. Se ambas as senhas (de administrador e de usuário) estiverem habilitadas, qualquer uma delas poderá ser utilizada para inicializar o servidor ou ativar o teclado e/ou <i>mouse</i>, porém apenas a senha de administrador permitirá que o <i>Setup</i> e o SSU sejam alterados. Uma vez atribuída, a senha pode ser desabilitada alterando-a para uma sequência nula (teclas <Ctrl-D>) no menu <i>Change Password</i> (Alterar Senha) existente no menu Administrative Password Option (Opção de Senha de Administrador) encontrado no Security Subsystem Group. Para limpar a senha, caso não seja possível acessar o <i>Setup</i> ou o SSU, deve-se alterar o <i>jumper</i> Clear Password (Limpar Senha).
Controlar o acesso ao restante do sistema, além do SSU: definir uma senha de usuário	Para controlar o acesso ao sistema, atribuir uma senha de usuário e ativá-la através do <i>Setup</i> ou do SSU. Uma vez atribuída, a senha pode ser desabilitada alterando-a para uma sequência nula (teclas <Ctrl-D>) no menu <i>Change Password</i> (Alterar Senha) existente no menu Administrative Password Option (Opção de Senha de Administrador) encontrado no Security Subsystem Group (Grupo do Subsistema de Segurança). Para limpar a senha, caso não seja possível acessar o <i>Setup</i> ou o SSU, alterar o <i>jumper</i> Clear Password (Limpar Senha).
Boot sem teclado	O sistema pode ser inicializado com ou sem teclado. Antes do <i>Boot</i> durante os testes iniciais a BIOS automaticamente detecta e testa o teclado se estiver presente, e exibe mensagem. Não existe opção no SSU para habilitar ou desabilitar o teclado.
Seqüência de <i>Boot</i>	A seqüência especificada no menu do SSU Multi-<i>Boot</i> vai determinar a ordem de <i>boot</i>. Se o modo seguro estiver habilitado (senha de usuário configurada) será solicitada a senha antes do sistema completar o <i>boot</i>. Se o servidor estiver no modo seguro e a opção "<i>Secure Boot Mode</i>" também estiver habilitada, o sistema fará o <i>boot</i> completo mas irá exigir a senha antes de aceitar entradas de teclado ou <i>mouse</i>.



2 Atualizando



Ferramentas e Suprimentos Necessários

- Chave Phillips (#1 e #2)
- Ferramenta para remoção de *jumper* ou alicate de ponta fina
- Caneta ou lápis
- Pulseira antienstática e espuma condutiva (recomendado)

Avisos e Advertências

Esses avisos e advertências aplicam-se em todo o capítulo. Apenas o pessoal técnico qualificado deve configurar a placa básica.

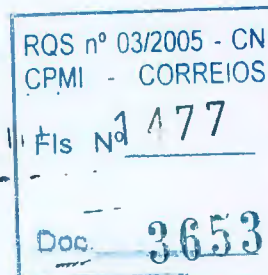
AVISOS

on/off do sistema: O botão *on/off* no painel frontal **NÃO DESLIGA** a alimentação CA. Para desligar a alimentação do sistema, deve-se desconectar o cabo CA do sistema ou a tomada da parede. Deve-se certificar de que o cabo de alimentação CA esteja desconectado antes de abrir o gabinete, adicionar ou remover qualquer componente.

Condições perigosas, Dispositivos, e Cabos: Condições de eletricidade podem estar presentes em cabos de alimentação, telefone, e comunicação. Desligar o sistema e desconectar os cabos de alimentação, sistemas de telecomunicações, redes, e modems ligados ao sistema antes de abri-lo. Caso contrário, pode resultar em ferimentos ou danos no equipamento.

ATENÇÃO

Descarga Eletrostática (ESD) proteção ESD: ESD pode danificar unidades de disquete, placas de expansão ou outros componentes. Recomenda-se que todos os procedimentos deste capítulo sejam executados em uma bancada protegida contra ESD. Se não houver uma disponível, providenciar uma proteção contra descarga eletrostática (ESD) utilizando uma pulseira antiestática conectada ao aterramento do gabinete do sistema – qualquer superfície não pintada – quando manusear os componentes.



Manuseio de placas e ESD: Deve-se sempre manusear placas cuidadosamente. Elas podem ser extremamente sensíveis para ESD. Deve-se segurar as placas apenas pelas bordas. Depois de remover a placa do sistema ou da embalagem protetora, deve-se colocá-la com a face dos componentes voltada para cima em uma superfície aterrada e livre de estática. Deve-se utilizar uma almofada condutiva, se disponível, mas não utilizar a embalagem protetora para esta finalidade. Não deslizar a placa sobre uma superfície.



Instalando e removendo jumpers: *Jumper* é um pequeno condutor metálico encapsulado de plástico que desliza sobre os dois pinos metálicos. *Jumpers* mais modernos possuem um pequeno puxador no topo que pode ser segurado com a ponta dos dedos ou com alicate de ponta fina. Se o *jumper* não tiver este puxador tomar cuidado quando utilizar o alicate para remover ou instalá-lo; segurá-lo pelo lado mais estreito com o alicate, nunca pelo lado mais largo. Segurar pelo lado largo pode danificar os contatos dentro do *jumper*, causando problemas intermitentes com a função controlada pelo *jumper*. Tomar cuidado para segurar levemente, e não apertar com o alicate ou outra ferramenta que utilizar para remover o *jumper*, pode-se entortar ou quebrar o pino da placa.

Placa Básica

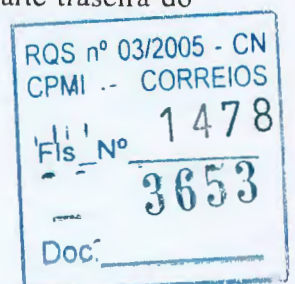
Instalando a Placa Básica

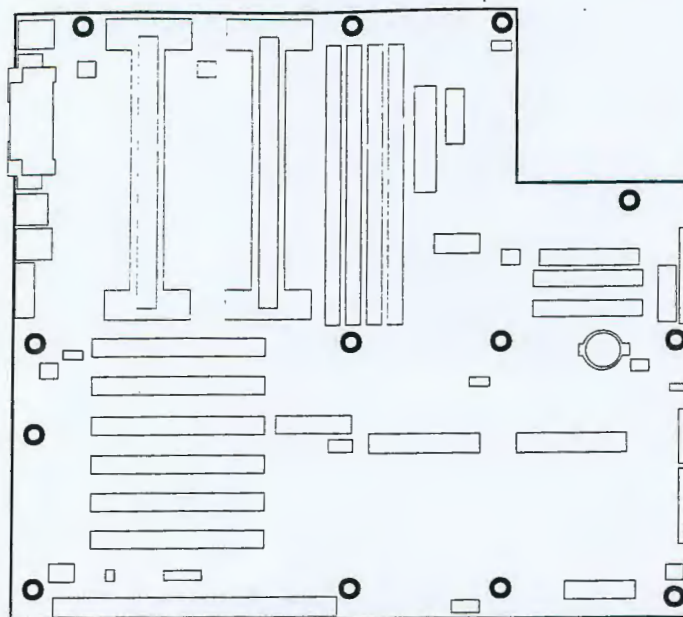


ATENÇÃO

A placa básica pode ser extremamente sensível para ESD, e sempre requer manuseio cuidadoso. Depois de remover a placa do sistema, deve-se colocá-la com a face dos componentes voltada para cima em uma superfície aterrada e livre de estática. Se a placa for colocada sobre uma superfície condutiva, os terminais da bateria podem entrar em curto-circuito. Se isso ocorrer resultará na perda dos dados da CMOS e perda da bateria. Não deslizar a placa sobre superfície.

1. Observar as precauções de segurança e ESD no início deste capítulo.
2. Inserir os parafusos através dos furos de fixação nos receptáculos do gabinete. Certificar-se de que a placa está corretamente posicionada, e apertar os parafusos firmemente.
3. Conectar todos os cabos internos à placa básica.
4. Reinstalar as placas de expansão.
5. Conectar os cabos internos às placas de expansão. Certificar-se de ligar os cabos de alimentação aos conectores de alimentação corretos.
6. Conectar todos os cabos dos dispositivos periféricos ao painel de I/O na parte traseira do servidor.
7. Executar o SSU para configurar o servidor.





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Figura 3. Localização dos Furos de Fixação da Placa Básica

Removendo a Placa Básica

ATENÇÃO

A placa básica pode ser extremamente sensível para ESD, e sempre requer manuseio cuidadoso. Depois de remover a placa do sistema, deve-se colocá-la com a face dos componentes voltada para cima em uma superfície aterrada e livre de estática. Se a placa for colocada sobre uma superfície condutiva, os terminais da bateria podem entrar em curto-circuito. Se isso ocorrer resultará na perda dos dados da CMOS e perda da bateria. Não deslizar a placa sobre superfície.

1. Observar as precauções de segurança e ESD no início deste capítulo.
2. Abrir o servidor e remover os periféricos e componentes obstruindo o acesso à placa básica. Ver o manual do gabinete para maiores informações.
3. Rotular e desconectar todos cabos internos nas placas de expansão.
4. Remover todas as placas de expansão.
5. Rotular e desconectar todos os cabos internos conectados à placa básica.
6. Remover os parafusos que prendem a placa básica e coloca-los em um local separado.
7. Remover a placa básica, colocando-a com o lado dos componentes para cima em uma superfície não condutiva e livre de estática ou em um embalagem antiestática.
8. Se existir, remover e guardar a chapa metálica EMI que cobre os conectores de I/O, na placa.

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Memória

Instalando Módulos DIMMs



ATENÇÃO

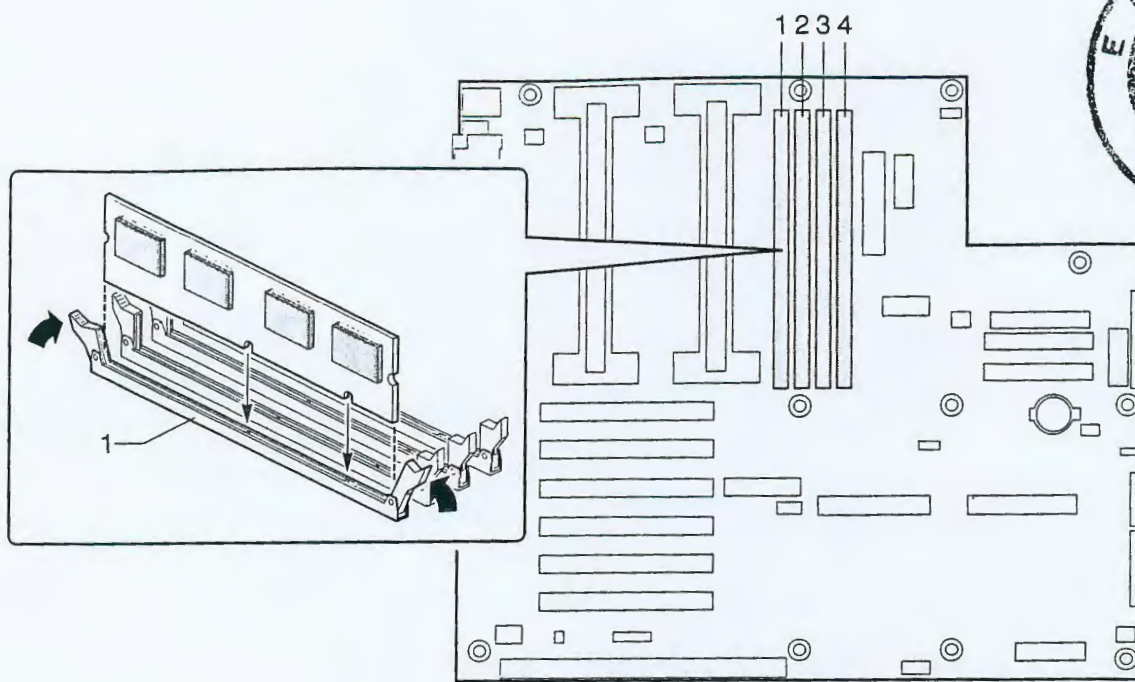
Instalar o DIMM com extremo cuidado. Aplicar pressão em excesso pode danificar o soquete. DIMMs são polarizados e devem ser instalados de uma única maneira.

Misturar diferentes metais pode causar posteriormente falhas de memória resultando em corrupção de dados. Instalar apenas DIMMs com conectores banhados a ouro em soquetes banhados a ouro.

Ver o Capítulo 1 para obter a capacidade e especificações das memórias.

1. Observar as precauções de segurança e ESD descritas no início deste capítulo.
2. Abrir o servidor.
3. Deve-se segurar o DIMM apenas pelas bordas, quando removê-lo da embalagem antiestática.
4. Orientar o DIMM de forma que os dois chanfros na face inferior do DIMM fiquem alinhados com os polarizadores do soquete no módulo de memória.
5. Inserir a borda inferior do DIMM no soquete, então pressionar firmemente para baixo o DIMM até que fique corretamente posicionado.
6. Empurrar cuidadosamente as alavancas ejetoras de plástico nas extremidades do soquete para a posição vertical.
7. Repita as etapas acima para instalar cada DIMM.
8. Fechar o servidor.
9. Conectar os cabos externos e o cabo de alimentação ao servidor.
10. Ligar o monitor e, em seguida, o servidor.

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Figura 4. Instalando Módulos DIMMs

Removendo Módulos DIMMs

ATENÇÃO

Remover o DIMM com extremo cuidado. Muita pressão pode danificar o soquete. Aplicar apenas pressão nos ejetores plásticos suficiente apenas para liberar os módulos DIMM.

1. Observar as precauções de segurança e ESD descritas no início deste capítulo.
2. Abrir o servidor.
3. Empurrar cuidadosamente as alavancas ejetoras de plástico para fora e para baixo até ejetar um DIMM do soquete.
4. Segurar o módulo apenas pelas suas bordas, tomando cuidado para não tocar seus componentes e os contatos dourados no conector de borda. Levantá-lo cuidadosamente do soquete e colocá-lo em embalagem antiestática.
5. Repetir estas etapas para remover outros DIMMs conforme necessário.
6. Fechar o servidor.
7. Conectar os cabos externos e o cabo de alimentação ao servidor.
8. Ligar o monitor e depois o servidor.



Processadores



AVISO

Se o servidor estiver em execução, os processadores e dissipadores de calor que estiverem instalados na(s) placa(s) de processador estarão quentes. Para evitar uma possível queimadura, tomar cuidado ao remover ou instalar componentes da placa básica que estejam localizados perto dos processadores.

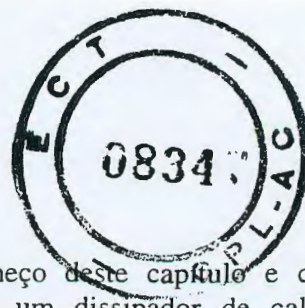
ATENÇÃO

O processador deve ser adequado: Pode-se danificar o servidor caso se instale um processador que seja inadequado ao servidor. Certificar-se de que o servidor possa suportar um processador mais novo e mais rápido (considerações térmicas e de alimentação). Para informações precisas sobre quais processadores utilizar, entrar em contato com o representante de atendimento ao consumidor.

O dissipador de calor deve ser adequado: De acordo com a configuração, o processador existente pode ter um dissipador de calor passivo. No caso de substituir o processador por outro mais rápido, ele deverá ter um dissipador de calor com ventilador (um ventilador ativo em vez de um dissipador de calor passivo). No caso de adicionar um segundo processador, ele deverá ter um dissipador de calor com ventilador. Se adicionar o segundo processador, ele deverá possuir um dissipador com ventilador. Quando adicionar um processador, deixar o já existente no conector *slot* 1 primário (mais próximo do centro da placa básica).

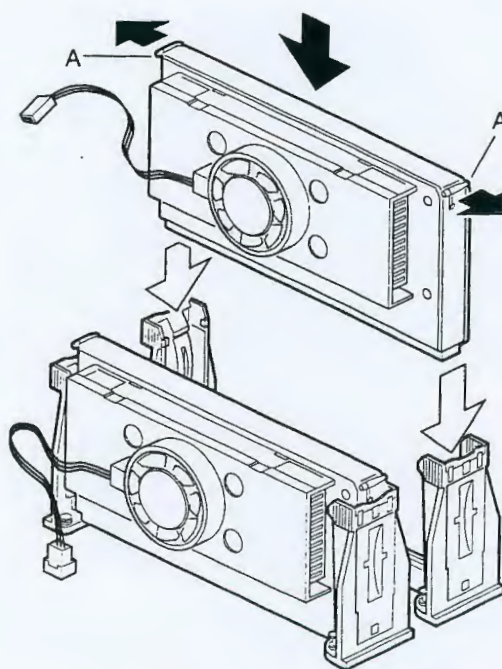
ESD (descargas eletrostáticas) e manuseio de processadores: Para reduzir o risco de danos ao processador por ESD deve-se seguir as instruções: (1) Tocar o gabinete de metal antes de tocar o processador ou a placa básica. Manter parte do corpo em contato com o metal do gabinete para dissipar as cargas estáticas enquanto manuseia o processador. (2) Evitar movimentos desnecessários.

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Removendo um processador

1. Observar as precauções de segurança e ESD no começo deste capítulo e cuidados adicionais fornecidos aqui. Se o processador possuir um dissipador de calor com ventilador, desconectar o cabo de alimentação (item B na figura abaixo) do conector na placa básica (C).
2. No decorrer da tarefa, colocar placas e processadores em superfície aterrada e livre de estática ou almofada de espuma condutiva.
3. Pressionar as travas do processador em direção ao centro do cartucho S.E.C. para liberá-lo do módulo de retenção (A).
4. Levantar o cartucho S.E.C., retirando do módulo de retenção.
5. Colocar o processador em um suporte de espuma condutiva e armazená-lo em uma embalagem livre de estática.



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Figura 5. Instalando um Processador

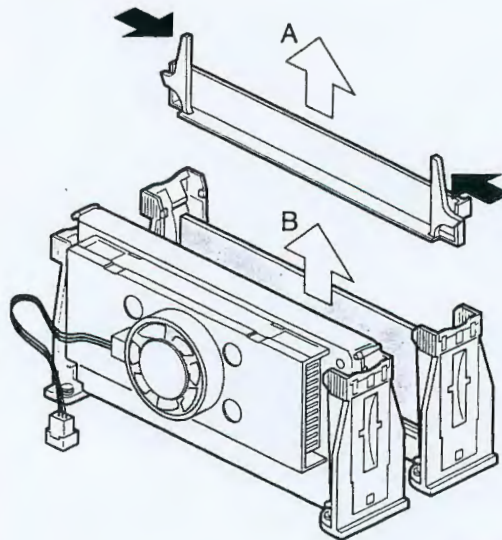
- A. Travas do processador
- B. Processador no cartucho S.E.C.
- C. Módulo de retenção

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Instalando um processador

1. Observar as precauções de segurança e ESD no começo deste capítulo e cuidados adicionais fornecidos aqui.
2. Caso o servidor tenha um processador e for adicionar um segundo, deve-se remover a placa de terminação do conector do processador secundário. Pressionar as presilhas no topo da placa de terminação (item A na figura) em direção ao centro para liberá-las do módulo de retenção. Levantar a placa e puxá-la para fora do módulo de retenção (B). Armazená-la de forma adequada.



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Figura 6. Removendo a Placa de Terminação

3. Se o servidor possuir um processador e for trocá-lo, deixar a placa de terminação intacta no soquete *Slot 1* secundário. Remover o processador que deseja substituir. Consultar "Removendo um Processador" na página 27.
4. Se o servidor possuir dois processadores, e for trocar um ou ambos, remover o(s) apropriado(s) ver "Removendo um Processador" na página 27.
5. Remover o novo processador da embalagem antiestática e coloca-lo em superfície aterrada e livre de estática ou em espuma condutiva.
6. Orientar o processador de forma que o dissipador de calor fique de frente para os conectores de I/O. Inserir o processador dentro do módulo de retenção. Pressionar firmemente, mantendo uma pressão igual nos dois lados da parte superior, até que o processador esteja encaixado.
7. Para travar o processador, empurrar as travas para fora até elas ajustarem no módulo de retenção (A na figura abaixo). As travas precisam estar presas para assegurar conexão elétrica adequada do processador.
8. Ligar o conector menor do fio de alimentação do ventilador no cartucho S.E.C. e o maior (b) no conector de três pinos na placa básica (C).
9. Após instalar o processador, configurar sua velocidade no *Setup* da BIOS.

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Trocando a Bateria de *Backup*

A bateria de lítio na placa básica alimenta o RTC (relógio de tempo real) por um período de até 10 anos com ausência de alimentação. Quando a bateria começar a ficar fraca, perderá voltagem e as informações do servidor armazenadas na RAM de CMOS no RTC (por exemplo, a data e a hora) talvez se tornem incorretas. Entrar em contato com o suporte técnico ou o vendedor para obter uma relação de dispositivos aprovados.



AVISO

Há perigo de explosão se a bateria for substituída incorretamente. Substituir somente pelo mesmo tipo de bateria ou por um tipo recomendado pelo fabricante. Seguir as instruções do fabricante para descartar as baterias usadas.



WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions



ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.



ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.



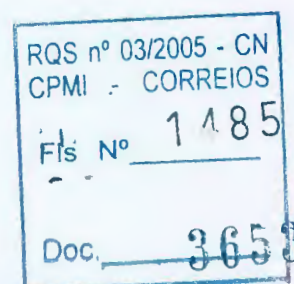
VARNING

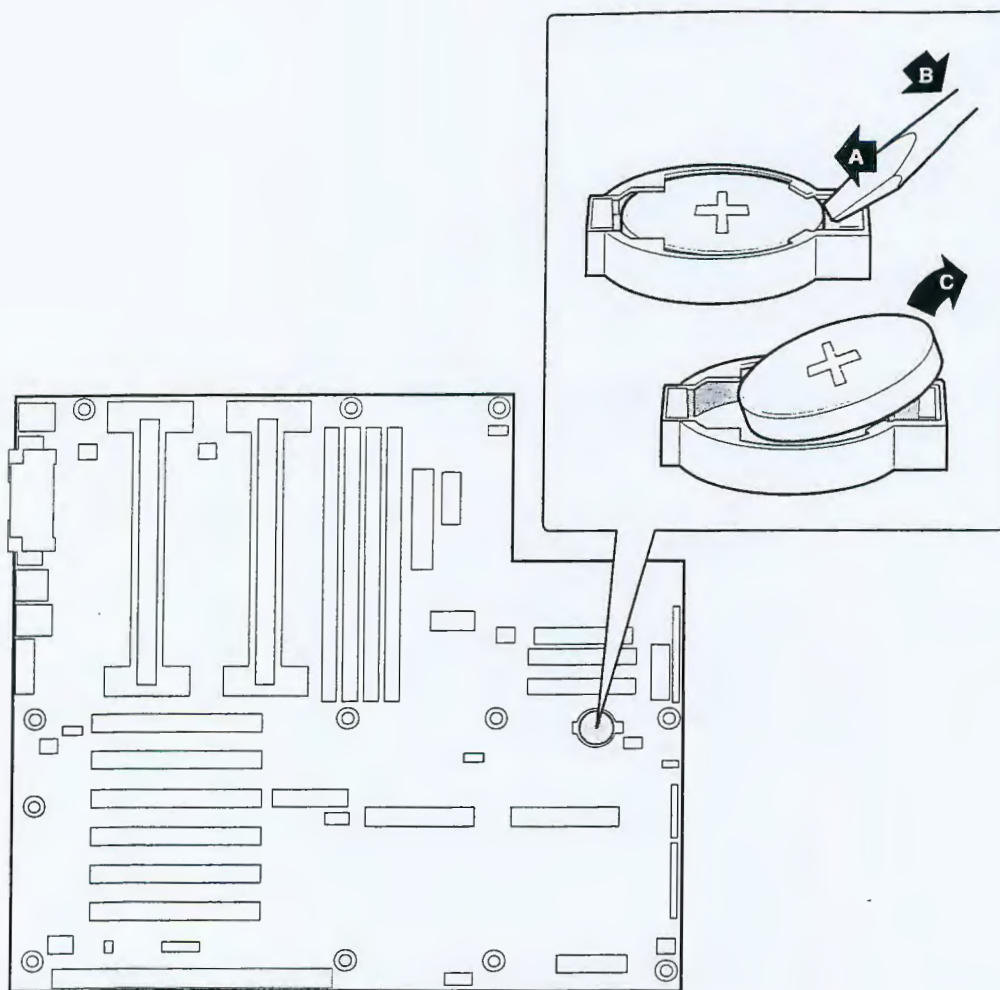
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.



VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo inoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty aristo valmistajan ohjeiden mukaisesti.

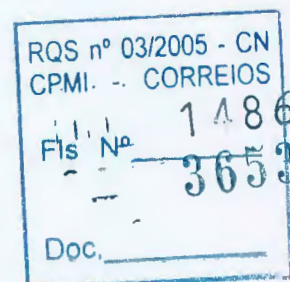




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Figura 7. Trocando a Bateria de Lítio

1. Observar as precauções de segurança de ESD descritas no início deste capítulo.
2. Abrir o gabinete.
3. Inserir a ponta de uma chave de fenda pequena ou equivalente embaixo da presilha de plástico no encaixe.
4. Empurrar cuidadosamente a chave de fenda para baixo até levantar a bateria.
5. Remover a bateria do soquete.
6. Descartar a bateria de acordo com a legislação local.
7. Remover a nova bateria de lítio da embalagem e, tomando cuidado para manter a polaridade correta, inseri-la no soquete de bateria.
8. Reinstalar o retentor plástico no soquete da bateria de lítio.
9. Fechar o gabinete.
10. Executar o SSU para restaurar a configuração do RTC.

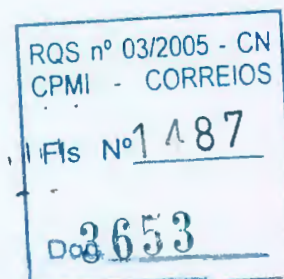


3 Software de Configuração e Utilitários

Este capítulo descreve o POST (Teste Automático de Inicialização) e os utilitários de configuração do servidor. A tabela abaixo descreve brevemente os utilitários.

Tabela 4. Utilitários de Configuração

Utilitário	Descrição e breve procedimento	Página
BIOS Setup (Programa de Configuração do BIOS)	Se o sistema não tiver uma unidade de disquete, ou a unidade estiver desativada ou configurada de forma incorreta, utilizar o <i>Setup</i> para habilitá-la. Alternativamente, pode-se mover o <i>jumper</i> da CMOS na placa básica da configuração padrão, Protect CMOS memory (Proteger Memória CMOS) para a configuração Clear (Limpar). Isso permitirá que a maioria das configurações do servidor sejam inicializadas. Para obter informações sobre este procedimento, consultar a seção "Jumper da CMOS" no Capítulo 5 deste manual. Depois executar o SSU para configurar o servidor.	35
System Setup Utility (SSU – Utilitário de Configuração do Sistema)	Utilizar para configuração extensiva dos sistemas integrados no sistema e de suas placas de expansão, e também para visualizar o registro de eventos do sistema, configurar a prioridade dos dispositivos de <i>boot</i> ou configurar as opções de segurança do sistema. O SSU pode ser executado do Server Configuration CD (CD de Configuração do Servidor) ou de um disquete de inicialização do DOS. As informações atribuídas através do SSU têm prioridade sobre as informações inseridas através do <i>Setup</i> da BIOS.	50
EMP Console (Console EMP)	Utilizado para acessar e monitorar o servidor de forma remota.	63
FRUSDR Load Utility (Utilitário de Carga FRUSDR)	Utilizado para atualizar os componentes em <i>flash</i> : FRU (Unidade de Substituição do Campo), SDR (Gravador de Dados dos Sensores) e DMI (Interface de Gerenciamento da Área de Trabalho).	71
BIOS Update Utility (Utilitário de Atualização do BIOS)	Utilizado para atualizar a BIOS ou recuperar-se de uma atualização corrompida do BIOS.	77
Firmware Update Utility (Utilitário de Atualização do Firmware)	Utilizado para atualizar a ROM em memória <i>flash</i> do BMC.	80
Utilizando o Utilitário SCSI Adaptec	Utilizado para configurar ou exibir as definições dos adaptadores de <i>host</i> SCSI e dispositivos SCSI integrados no servidor.	78



Teclas de Atalho

Utilizar o bloco numérico do teclado para digitar números e símbolos.

Tabela 5. Teclas de Atalho

Ação:	Combinação de Teclas
Apagar a memória e recarregar o sistema operacional (isso é o <i>reset</i> do sistema).	<Ctrl+Alt+Del>
Colocar o sistema no modo seguro imediatamente.	<Ctrl+Alt>+tecla de atalho (Definir a combinação de teclas com o <i>SSU</i> ou o <i>Setup</i> .)



Auto Teste de Inicialização (POST)

Cada vez que o sistema é ligado, o POST é executado. O POST verifica a placa básica, o processador, a memória, o teclado e a maioria dos dispositivos periféricos instalados. Durante o teste de memória, o POST exibe a quantidade de memória que foi capaz de acessar e testar. O tempo necessário para testar a memória depende da quantidade de memória instalada. O POST se encontra armazenado na memória *flash*.

1. Ligar o monitor de vídeo e o servidor. Alguns segundos depois o POST começa a ser executado.

2. Após o teste de memória, os seguintes avisos e mensagens serão exibidos na tela:

Press <F2> key if you want to run *SETUP*

Keyboard.....Detected

Mouse.....Detected

3. Se não for pressionado <F2> e não houver um dispositivo com um sistema operacional carregado, a mensagem acima será exibida durante alguns segundos enquanto o processo de *boot* continua e o sistema emitirá um bipe. Em seguida, esta mensagem será exibida:
Operating system not found

Se não for pressionado <F2> e houver um sistema operacional carregado, o processo de *boot* continuará e a seguinte mensagem será exibida:

Press <Ctrl><A> to enter SCSI Utility

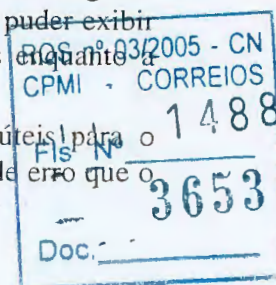
4. Pressionar <Ctrl+A> se houver dispositivos SCSI instalados. Quando o utilitário iniciar, seguir as instruções exibidas para configurar as definições do adaptador integrado de *host* SCSI e para executar os utilitários SCSI. Ver também "Utilizando o Utilitário SCSI Adaptec (Utilitário Adaptec SCSI)" na página 78. Se não entrar no utilitário SCSI, o processo de *boot* continuará.
5. Pressionar <Esc> durante o POST para exibir um menu de *boot* quando o POST terminar. A partir deste menu pode-se escolher o dispositivo de *boot* ou entrar no *Setup* da BIOS.

Depois que o POST terminar, o sistema emitirá um bipe.

O que será exibido na tela depois dependerá do sistema operacional; se ele está carregado e, em caso afirmativo, qual é.

Se o sistema parar antes que o POST seja completamente executado, ele emitirá um código de bipe indicando um erro fatal no sistema que requer atenção imediata. Se o POST puder exibir uma mensagem na tela de vídeo, fará com que o alto falante emita dois bipes enquanto a mensagem é exibida.

Observar a tela e anotar o código de bipe emitido; essas informações serão úteis para o representante técnico. Para obter uma listagem dos códigos de bipe e mensagens de erro que o POST pode gerar, consultar o capítulo "Resolvendo Problemas" neste manual.





Utilizando o *Setup* em BIOS

Esta seção descreve as opções do *Setup* da BIOS. Utilizar o *Setup* para alterar a configuração padrão do servidor. Pode-se executar o *Setup* com ou sem um sistema operacional presente. O *Setup* armazena a maioria dos valores de configuração em CMOS mantida por bateria. Os valores restantes são armazenados em memória *flash*. Os valores entram em vigor quando o servidor é inicializado. O POST utiliza esses valores para configurar o hardware. Se os valores e o hardware instalados não estiverem de acordo, o POST exibe uma mensagem de erro. Neste caso deve-se executar novamente o *Setup* para especificar a configuração correta.

Executando o *Setup*: Pode-se executar o *Setup* para modificar recursos da placa básica tais como:

- Selecionar uma unidade de disquete
- Selecionar uma porta paralela
- Selecionar uma porta serial
- Definir hora/data (para serem armazenadas no RTC)
- Configurar discos rígidos IDE
- Especificar a sequência de *boot*
- Habilitar a BIOS SCSI
- Especificar a velocidade do processador

Executar o SSU, não o *Setup*: Executar o SSU em vez do *Setup* para as seguintes tarefas:

- Adicionar ou remover qualquer placa ISA que não seja compatível com *Plug e Play*.
- Entrar ou alterar informações sobre uma placa.
- Alterar recursos do servidor (tais como interrupções, endereços de memória, atribuições de I/O) para opções selecionadas pelo usuário em vez de opções selecionadas pelo gerenciador de recursos da BIOS.

Registrar os Valores do *Setup* (Programa de Configuração)

Se for necessário restabelecer os valores padrão do *Setup* (após apagar a CMOS, por exemplo), executar o *Setup* novamente. Consultar as planilhas pode tornar a tarefa mais simples.

Se Não For Possível Acessar o *Setup*

Se a unidade de disquete estiver configurada de maneira inadequada, impedindo a execução do *Setup* a partir do disquete, será preciso limpar a memória CMOS. Abrir o servidor, alterar uma posição de *jumper*, utilizar o *Setup* para verificar e definir as opções da unidade de disquete, e recolocar o *jumper* na posição original. Para obter um procedimento detalhado, consultar o tópico "*Jumper CMOS*", no capítulo 5.





Iniciando o Setup

Pode-se entrar no *Setup* de várias formas:

- Quando o servidor é ligado, após o POST concluir o teste de memória.
- Quando der *reset* no servidor pressionando <Ctrl+Alt+Del> no sistema operacional DOS.
- Quando mover o *jumper* CMOS na placa básica para a posição "Clear CMOS". Para obter informações sobre este procedimento, consultar o tópico "CMOS Jumper", no capítulo 5.

Nas três condições relacionadas acima, depois de reinicializar, aparecerá na tela:

Press <F2> to enter SETUP

Em uma quarta condição, quando a CMOS/NVRAM tiver sido corrompida, aparecerão outras opções, mas não a <F2>:

Warning: cmos checksum invalid

Warning: cmos time and date not set

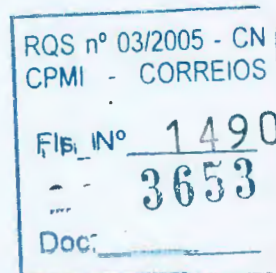
Nessa situação, a BIOS carregará os valores padrão para a CMOS e tentará o *boot*.

Menus do Setup

Para:	Pressionar
Obter ajuda em geral	<F1> ou <Alt+H>
Move entre os menus	← →
Voltar para o item anterior	↑
Ir para o próximo item	↓
Alterar o valor de um item	+ ou -
Selecionar um item ou exibir um submenu	<Enter>
Sair de um submenu ou sair do <i>Setup</i>	<Esc>
Redefinir os valores padrão do <i>Setup</i>	<F9>
Salvar e sair do <i>Setup</i>	<F10>

Quando ocorrer:	Significa
Na tela, uma opção é mostrada, mas não é possível selecionar ou mover para este campo.	A opção mostrada não pode ser alterada ou configurada. Ou a opção é auto configurada ou auto detectada, ou é preciso utilizar uma tela diferente de <i>Setup</i> , ou é preciso utilizar o SSU.
Na tela, a frase <i>Press Enter</i> é exibida ao lado da opção.	Pressionar <Enter> para mostrar o submenu que pode ser uma nova tela ou uma janela que se abre sobre a tela atual com algumas opções..

O restante desta seção relaciona os recursos que são exibidos na tela após pressionar a tecla <F2> para entrar no *Setup*. Nem todas as opções disponíveis estão descritas, devido a (1) algumas não são selecionáveis pelo usuário, sendo exibidas apenas para informação, e (2) muitas das opções são relativamente auto-explicativas.





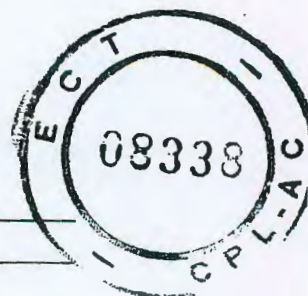
Menu Main (Principal)

As seguintes seleções podem ser efetuadas no menu Main. Utilizar os submenus para outras seleções.

Função	Opções	Descrição
System Time (Hora do sistema)	HH:MM:SS	Define a hora do sistema.
System Date (Data do sistema)	MM/DD/YYYY (MM/DD/AAAA)	Define a data do sistema.
Diskette A:	Disabled (Desativado) 360KB 1.2 MB 720KB 1.44/1.25 MB 2.88 MB	Seleciona o tipo de disquete.
Diskette B:	Disabled (Desativado) 360KB 1.2 MB 720KB 1.44/1.25 MB 2.88 MB	
Função	Opções	Descrição
Primary IDE Master		Entra no submenu.
Primary IDE Slave		Entra no submenu.
Secondary IDE Master		Entra no submenu.
Secondary IDE Slave		Entra no submenu.
Keyboard Features (Recursos de teclado)		Entra no submenu.
Processor Settings (Definições do Processador)		Entra no submenu.
Language (Idioma)	English (US) (inglês - EUA) Français (francês) Español (espanhol) Deutsch (alemão) Italiano	Seleciona o idioma a ser exibido pelo BIOS (sistema básico de entrada/saída).

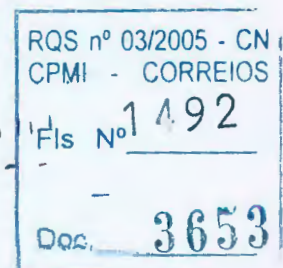


Submenu Primary/Secondary IDE Master and Slave (Submenu IDE Primário/Secundário Master/Slave)



Recurso	Opções	Descrição
Type (Tipo)	Auto (Automático) None (Nenhum) CD-ROM IDE Removable (Removível por IDE) ATAPI Removable (Removível por ATAPI) User (Usuário)	Auto (Automático) força o servidor a tentar uma detecção automática do tipo de unidade. None (Nenhum) informa ao servidor para ignorar essa unidade. CD ROM permite a entrada manual de alguns campos descritos abaixo. IDE Removable (Removível por IDE) permite a entrada manual de alguns campos descritos abaixo. ATAPI Removable (Removível por ATAPI) permite a entrada manual de alguns campos descritos abaixo. User (Usuário) permite a entrada manual de todos os campos descritos abaixo.
CHS Format (Formato CHS)		
Cylinders (Cilindros)	0 to 65535 (0 a 65535)	Número de cilindros na unidade. Este campo só pode ser alterado para tipo definido pelo usuário.
Heads (Cabeças)	1 to 16 (1 a 16)	Número de cabeças de leitura/gravação na unidade. Este campo só está disponível para tipo definido pelo usuário.
Sectors (Setores)	0 to 63 (0 a 63)	Número de setores por trilha. Este campo só está disponível para tipo definido pelo usuário.
Maximum Capacity (Capacidade máxima)	N/A (Não disponível)	Capacidade calculada da unidade a partir de cilindros, Cabeças e setores digitados. Este campo é apenas informativo.
LBA Format (Formato LBA)		
Total Sectors (Total de setores)	N/A (Não disponível)	Este campo é apenas informativo.
Maximum Capacity (Capacidade máxima)	N/A (Não disponível)	Este campo é apenas informativo.
Multi-Sector Transfer (Transferência de vários setores)	Disabled (Desativado) 2, 4, 8, or 16 sectors (2, 4, 8 ou 16 setores)	Determina o número de setores por bloco para transferências de vários setores. Este campo é apenas informativo para Type Auto.
LBA Mode Control (Modo de controle LBA)	Disabled (Desativado) Enabled (Ativado)	A ativação de LBA faz com que o endereçamento de bloco lógico seja utilizado no lugar de cilindros, cabeçotes e setores. Este campo é apenas informativo para Type Auto.
32 Bit I/O (I/O de 32 bits)	Disabled (Desativado) Enabled (Ativado)	A ativação permite transferências de dados IDE de 32 bits.

(continua)



Submenu Primary/Secondary IDE Master and Slave (continuação)



Recurso	Opções	Descrição
Transfer Mode (Modo de transferência)	Standard (Padrão) Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4 FPIO 3 / DMA 1 FPIO 4 / DMA 2	Seleciona o método para mover dados para a unidade e a partir dela. Este campo é apenas informativo para Type Auto.
Ultra DMA Mode (Modo Ultra DMA)	Disabled - (Desativado) Mode 0 (Modo 0) Mode 1 (Modo 1) Mode 2 (Modo 2)	Seleciona o modo Ultra DMA utilizado para mover dados para a unidade e a partir dela.

Submenu Keyboard (Submenu de Funções do Teclado)

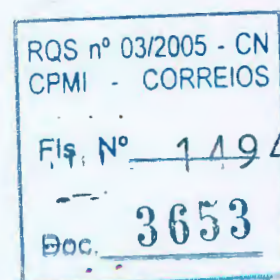
Função	Opções	Descrição
Num Lock	On (Ativado) Off (Desativado)	Seleciona o estado da tecla Num Lock.
Key Click (Clique na tecla)	Disabled (Desativado) Enabled (Ativado)	Ativa ou desativa o clique sonoro na tecla.
Keyboard auto-repeat rate (Taxa de repetição automática do teclado)	30/sec (30/seg) 26.7/sec (26,7/seg) 21.8/sec (21,8/seg) 18.5/sec (18,5/seg) 13.3/sec (13,3/seg) 10/sec (10/seg) 6/sec (6/seg) 2/sec (2/seg)	Seleciona a taxa de repetição das teclas.
Keyboard auto-repeat delay (Atraso da repetição automática do teclado)	1/4 sec (1/4 seg) 1/2 sec (1/2 seg) 3/4 sec (3/4 seg) 1 sec (1seg)	Seleciona o tempo de atraso antes de iniciar a repetição.

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Submenu Settings Processor (Processador de Definições)



Função	Opções	Descrição
CPU Speed Setting (Definição de velocidade da CPU)	350 MHz 400 MHz 450 MHz 500 MHz 550 MHz 600 MHz	Define a velocidade do(s) processador(es) instalado(s). ⚠ ATENÇÃO A tentativa de definir esta opção com uma velocidade maior que a apropriada para o(s) processador(es) instalado(s) pode causar danos ao(s) processador(es) ou impedir que o servidor seja inicializado até que a CMOS seja limpa.
CPU POST Speed Settings (Definições de velocidade de POST da CPU)	N/A (Não disponível)	Este campo é apenas informativo.
Processor Retest (Novo teste do processador)	Yes (Sim) No (Não)	Yes (Sim) instrui o BIOS a limpar o <i>status</i> histórico do processador e executar um novo teste em todos os processadores na próxima inicialização. O BIOS é redefinido automaticamente para No (Não) na próxima inicialização.
Memory Cache (Cache de memória)	Enabled (Ativado) Disabled (Desativado)	Ativa a cache do processador.
Processor 1 Stepping ID (ID de passos do processador 1)	N/A (Não disponível)	Este campo é apenas informativo.
Processor 1 L2 Cache Size (Tamanho do cache L2 do processador 1)	N/A (Não disponível)	Este campo é apenas informativo.
Processor 2 Stepping ID (ID de passos do processador 2)	N/A (Não disponível)	Este campo é apenas informativo.
Processor 2 L2 Cache Size (Tamanho do cache L2 do processador 2)	N/A (Não disponível)	Este campo é apenas informativo.





Menu Advanced (Menu Avançado)

Utilizar o menu avançado para executar as seleções a seguir. Utilizar os submenus para as três outras opções que aparecerem no Menu Advanced.

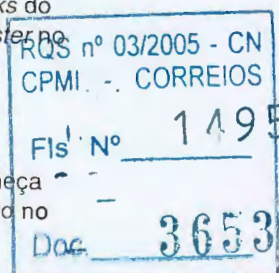
Função	Opções	Descrição
Installed OS (Sistema operacional instalado)	Other (Outros) Win95	Selecionará o Win95 caso seja inicializando um sistema operacional compatível com <i>Plug and Play</i> .
<i>Reset</i> Configuration Data (Redefinir dados de configuração)	No (Não) Yes (Sim)	Selecionar <i>Yes</i> se desejar limpar os dados de configuração do servidor durante a próxima inicialização. O sistema é redefinido automaticamente para <i>No</i> na próxima inicialização.
PCI Configuration (Configuração da PCI)		Entra no submenu.
Integrated Peripherals Configuration (Configuração de periféricos integrados)		Entra no submenu.
Advanced Chipset Control (Controle avançado do conjunto de chips)		Entra no submenu.
Use Multiprocessor Specification (Utilizar a especificação do multiprocessador)	1.1 1.4	Selecionar a versão da especificação de multiprocessador a ser utilizada. Alguns sistemas operacionais não suportam a versão 1.4.
Large Disk Access Mode (Modo de acesso a disco grande)	CHS LBA	Selecionar CHS o sistema operacional for DOS. Um disco grande contém mais de 1.024 cilindros, mais de 16 cabeças ou mais de 63 setores por trilha.
Delay on Option ROMs (Atraso em ROMs de opção)	Disabled (Desativado) Enabled (Ativado)	Força um pequeno atraso ao final de cada procura na opção ROM.

Submenu PCI Configuration (Submenu Configuração da PCI)

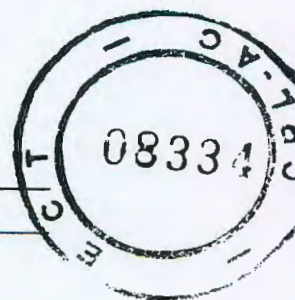
O menu PCI Configuration contém opções para acessar outros submenus.

Dispositivo PCI, Submenu Embedded SCSI (SCSI incorporada)

Característica	Opções	Descrição
Option ROM Scan (Procura da ROM de opção)	Enabled (Ativado) Disabled (Desativado)	Habilitar procura da ROM de opcionais do circuito SCSI interno. Existem 2 canais SCSI controlados pela mesma ROM.
Enable Master	Enabled (Ativado) Disabled (Desativado)	Habilitar todos dispositivos, como <i>bus master</i> PCI.
Latency Timer	Default (Padrão) 0020h 0040h 0060h 0080h 00A0h 00C0h 00E0h	Tempo mínimo garantido, em unidades de <i>clocks</i> do <i>bus</i> PCI, em que um dispositivo pode ser o <i>master</i> no <i>bus</i> PCI. ATENÇÃO Não alterar este campo a menos que conheça perfeitamente a prioridade deste dispositivo no <i>bus</i> PCI.



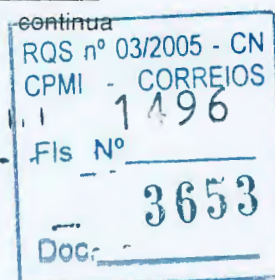
Submenus PCI Device, Slot 1 - Slot 6 (Dispositivo PCI, Slot 1 - Slot 6)



Características	Opções	Descrição
Enable Master	Enabled (Ativado) Disabled (Desativado)	Seleciona um dispositivo como <i>bus master</i> PCI.
Latency Timer	Default (Padrão) 020h 040h 060h 080h 0A0h 0C0h 0E0h	Tempo mínimo garantido, em unidade de <i>clock</i> de <i>bus</i> PCI, que um dispositivo PCI pode ser <i>master</i> no <i>bus</i> . ⚠ ATENÇÃO Não alterar estes valores a menos que conheça bem a prioridade deste dispositivo no <i>bus</i> PCI.

Submenu Integrated Peripheral Configuration (Configuração de Periféricos Integrados)

Características	Opções	Descrição
COM 1 (Porta COM 1)	Disabled (Desativado) Enabled (Ativado) Auto (Automático) OS Controlled (Controlado pelo sistema operacional)	Auto (Automático) força o BIOS a configurar a porta. OS Controlled força o sistema operacional a configurar a porta.
Base I/O Address	3F8 2F8 3E8 2E8	Seleciona o endereço de base de I/O para a COM 1.
Interrupt (Interrupção)	IRQ 3 IRQ 4	Seleciona a IRQ da porta COM 1.
COM2 (Porta COM 2)	Disabled (Desativado) Enabled (Ativado) Auto (Automático) PnP OS (Sistema operacional PnP)	Auto força o BIOS a configurar a porta. PnP OS força o sistema operacional a configurar a porta.
Base I/O Address	3F8 2F8 3E8 2E8	Seleciona o endereço base de I/O para a COM 2.
Interrupt (Interrupção)	IRQ 3 IRQ 4	Seleciona a IRQ para COM 2.



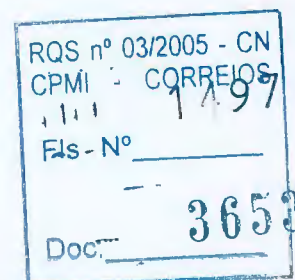
Submenu Peripheral Configuration (Configuração de periféricos) (continuação)



Recurso	Opções	Descrição
Parallel Port (Porta paralela)	Disabled (Desativado) Enabled (Ativado) Auto (Automático) PnP OS (Sistema operacional PnP)	Auto força o BIOS a configurar a porta. PnP OS força o sistema operacional a configurar a porta.
Mode (Modo)	Output only (Apenas saída) Bi-directional (Bidirecional) EPP ECP	Seleciona o modo de porta paralela.
Base I/O Address	378 278	Seleciona o endereço base de I/O para a LPT.
Interrupt (Interrupção)	IRQ 5 IRQ 7	Seleciona a IRQ para a LPT.
DMA Channels (Canais DMA)	DMA 1 DMA 3	Seleciona o DMA para a porta LPT (apenas para o modo ECP).
Floppy disk controller (Controlador de disquete)	Disabled (Desativado) Enabled (Ativado)	Habilita o controlador de disquete da placa básica.

Advanced Chipset Control (Configurações Avançadas do Chipset)

Características	Opções	Descrição
640-768K Memory Region (Região da memória de 640-768K)	Enabled (Ativado) Disabled (Desativado)	Enabled - Habilita passagem de ciclos ISA <i>master</i> e DMA para o <i>bus</i> PCI. Disabled – direciona estes ciclos para memória.
Delayed Transaction (Transação atrasada)	Enabled (Ativado) Disabled (Desativado)	Enabled – habilita o mecanismo de atraso de transações quando o PIIX4 é o alvo da transação PCI.
Passive Release (Liberação passiva)	Enabled (Ativado) Disabled (Desativado)	Habilita o mecanismo de liberação passiva na ativação do sinal PHOLD# quando o PIIX4 é o <i>Master</i> PCI.

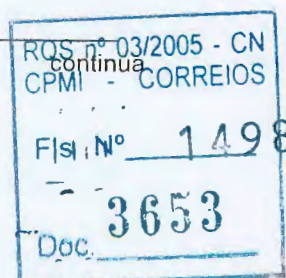


Menu Security (Menu de Segurança)

Utilizar o menu de segurança para fazer as seguintes seleções. Se habilitar o campo da Senha de Supervisor vai ser preciso digitar a senha para entrar no *Setup*. As senhas não são sensíveis a caracteres maiúsculo e minúsculo.



Função	Opções	Descrição
User Password is (A Senha do usuário é)	Clear (Limpar) Set (Definir)	Informativo apenas, usuário não pode modificar. Quando atribuída, pode-se desabilitar digitando uma seqüência nula de caracteres ou pelo <i>jumper clear password</i> na placa básica.
Supervisor Password is (A senha do supervisor é)	Clear (Limpar) Set (Definir)	Informativo apenas; não pode ser modificada pelo usuário.
Set User Password (Definir a senha do usuário)	Press Enter (Pressionar Enter)	Quando precionar a tecla <Enter>, uma senha é solicitada; pressionar a tecla ESC para anular. Uma vez definida, pode ser cancelada se for definida como uma seqüência de caracteres nula ou se o <i>jumper</i> de senha for apagado na placa básica (Ver <i>Jumpers</i> da placa básica, no Capítulo 5).
Set Supervisor Password (Definir a senha do supervisor)	Press Enter (Pressionar Enter)	Quando pressionar a tecla <Enter>, uma senha é solicitada; pressionar a tecla ESC para anular. Uma vez definida, pode ser cancelada se definida como uma seqüência de caracteres nula ou se o <i>jumper</i> de senha for apagado na placa básica (Ver <i>Jumpers</i> da placa básica, no Capítulo 5).
Password on Boot (Senha na inicialização)	Disabled (Desativado) Enabled (Ativado)	Exige a entrada de uma senha antes da inicialização. O sistema permanecerá no modo de segurança até que a senha seja digitada. Password on Boot (Senha na inicialização) tem precedência sobre Secure Mode Boot (Inicialização do modo de segurança).
Fixed Disk Boot Sector (Setor de inicialização do disco fixo)	Normal (Normal) Write Protect (Protegido contra gravação)	Protege contra gravação o setor de inicialização do disco rígido para proteger contra vírus.
Secure Mode Timer (Timer do modo de segurança)	Disabled (Desativado) 1 min 2 min 5 min 10 min 20 min 1 hr (1 h) 2 hr(2 h)	Período definido de inatividade do <i>mouse</i> ou teclado após o qual o modo seguro é ativado. Deve-se digitar uma senha para que o modo seguro funcione. Não pode ser habilitada sem que pelo menos uma senha esteja programada.
Secure Mode Hot Key (Ctrl-Alt-) (Tecla de acesso do modo de segurança -Ctrl-Alt-)	[] [A, B, ..., Z]	Tecla atribuída para iniciar o recurso Quicklock. Só poderá ser ativado se pelo menos uma senha estiver habilitada.



Menu Security (Segurança) (continuação)

Função	Opções	Descrição
Secure Mode Boot (Inicialização em modo seguro)	Disabled (Desativado) Enabled (Ativado)	Carrega o sistema em modo seguro. O usuário deve digitar a senha para destravar o sistema. Não pode ser habilitado sem que pelo menos uma senha esteja programada.
Video Blanking	Disabled (Desativado) Enabled (Ativado)	Apagar o vídeo quando o modo seguro estiver ativado. O usuário precisa digitar a senha para destravar o sistema. Não pode ser habilitado sem que pelo menos uma senha esteja programada.
Floppy Write Protect (Proteção contra gravação em disquete)	Disabled (Desativado) Enabled (Ativado)	Proteger o disquete contra gravação quando modo seguro estiver ativado. O usuário precisará digitar a senha para destravar o sistema. Não pode ser habilitado sem que uma senha esteja programada.
Front Panel Lockout (Bloqueio do painel frontal)	Disabled (Desativado) Enabled (Ativado)	Quando o modo seguro é ativado, as chaves de <i>reset</i> e <i>on/off</i> ficam desabilitadas. É preciso digitar a senha para destravar o sistema. Não será habilitado até que pelo menos uma senha seja estaje ativa.



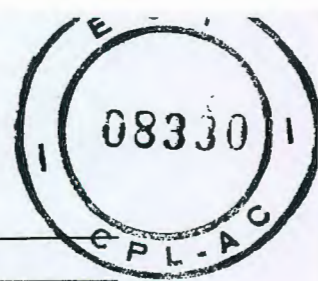
Menu Server (Servidor)

Pode-se executar as seguintes seleções no Menu do Servidor.

Função	Opções	Descrição
System Management (Gerenciamento do sistema)		Entra no submenu.
Console Redirection (Redirecionamento da console)		Entra no submenu.
PEP Management (Gerenciamento de PEP)		Entra no submenu.
Enable Sleep Button (Botão ativar suspensão)	Disabled (Desativado) Enabled (Ativado)	
PCI IRQs to I/O-APIC mappings (Mapeamentos de IRQs de PCI para APIC de I/O)	Disabled (Desativado) Enabled (Ativado)	Enabled – A BIOS pode descrever todos os 24 endereços de I/O do APIC na tabela MP para interrupções PCI. Não são todos MP dos sistemas operacionais e drivers que conseguem entender esta descrição das interrupções na tabela MP. Disabled – A BIOS utilizará apenas os 16 endereços de I/O do APIC na tabela MP para interrupções PCI. Todas interrupções PCI são roteadas para endereços de IRQ padrão ISA no I/O APIC. Todos sistemas operacionais trabalharão com as entradas de IRQ ISA padrão.

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Menu Server (Servidor) (continuação)

Função	Opções	Descrição
Processor Retest (Novo teste do processador)	Yes (Sim) No (Não)	Instruir a BIOS para apagar o histórico do processador e reexecutar os testes em todos processadores na próxima carga do sistema. A BIOS automaticamente altera para NO no próximo <i>boot</i> .
Assert NMI on PERR (Declarar NMI em PERR)	Disabled (Desativado) Enabled (Ativado)	Enabled (Ativado) gera uma NMI (interrupção não-mascarável) em um PERR (erro de paridade). Para ativar este recurso, a opção SERR (erro do sistema) deve ser ativada.
Assert NMI on SERR (Declarar NMI em SERR)	Disabled (Desativado) Enabled (Ativado)	Enabled (Ativado) gera uma NMI em SERR.

Submenu System Management (Gerenciamento do sistema)

Função	Opções	Descrição
Server Management Info (Informações de gerenciamento do servidor)		Entra no submenu.
System Event Logging (Registro de eventos do sistema)	Disabled (Desativado) Enabled (Ativado)	Quando ativado, os eventos do sistema são registrados pelo BIOS e BMC (controlador de gerenciamento da placa básica) no registro de eventos do sistema.
Clear Event Log (Limpar o registro de eventos)	No (Não) Yes (Sim)	Yes (Sim) apaga o SEL (registro de eventos do sistema) no BMC. O BIOS é redefinido automaticamente para NO (Não) na próxima inicialização.
EMP Password switch (Chave da senha EMP)	Disabled (Desativada) Enabled (Ativada)	Define a senha EMP (porta de gerenciamento de emergência).
EMP Password (Senha EMP)	[A..Z, 0..9]	Este campo apenas aparece quando a opção de Senha EMP estiver habilitada. Digitando a senha e pressionando <enter> a senha será enviada imediatamente para o BMC. Se soar o bip a senha não foi aceita. Se não se digitar a senha, qualquer um terá acesso ao servidor através da console EMP.
EMP Escape sequence (Sequência de escape EMP)	+++	Define a sequência de <i>escape</i> para o modem que está sendo usado para a EMP. Essa ação força o modem a entrar no modo de comando, que só será utilizado se o modo de conexão direta/ modem EMP for definido para o uso do modem.

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Submenu System Management (Gerenciamento do sistema) (continuação)

Função	Opções	Descrição
EMP Hangup Line String (Seqüência de Caracteres da linha de desativação EMP)	ATH	Define a Seqüência da Linha de Desativação do modem que está sendo usado para a EMP. Usada no modo de modem EMP.
Modem Init String (Seqüência de caracteres de inicialização do modem)	AT&F0S0=1S14=0&D	Define a seqüência de caracteres de inicialização do modem que está sendo usado para a EMP. Usada no modo de modem de EMP. Este campo possui apenas 16 caracteres. Seqüências de inicialização <i>High Modem</i> são a continuação desta com capacidade de entrar mais 4 caracteres.
High Modem Init String (Seqüência de caracteres ampliada de inicialização do modem)	0	Esta é a continuação da seqüência de inicialização do modem. Quando são digitados 16 caracteres no <i>Modem Init string</i> esta janela será apresentada para permitir a entrada de mais 4 caracteres.
EMP Access Mode (Modo de acesso à EMP)	Pre-boot Only (Apenas pré-inicialização) Always Active (Sempre ativo) Disabled (Desativado)	Pre-boot Only - EMP fica habilitado apenas durante POST. A porta COM2 será devolvida para utilização do sistema ao final do POST, quando iniciar a carga do sistema operacional. Always Active - A EMP está sempre ativada. A porta COM2 não pode ser usada pelo sistema operacional. Ela agora está dedicada ao uso da EMP. Disabled - EMP fica desabilitado. A porta COM2 fica sempre disponível para o sistema ou para a redireção da console.
EMP Restricted Mode Access (Acesso ao modo restrito EMP)	Disabled (Desativado) Enabled (Ativado)	Se definido como Enabled os controles de Power on/off e <i>Reset</i> do servidor via EMP não ficam disponíveis.
EMP Direct Connect/Modem Mode (Modo de conexão direta/modem EMP)	Direct Connect (Conexão direta) Modem Mode (Modo de modem)	Configura como a EMP conectará ao servidor. <i>Direct Connect</i> significa comunicação serial direta (sem modem) através da COM2 para a máquina console EMP. Modem <i>mode</i> - indica que um modem está conectado na COM2 para utilização da EMP.



Submenu Server Management Information (Informações de gerenciamento do servidor)

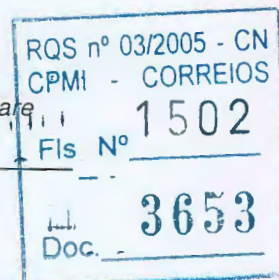
Os itens deste menu são definidos quando a placa básica é fabricada e, em geral, não podem ser alterados. Os dois últimos itens referem-se ao nível de firmware do BMC na placa básica e HSC (Controlador de discos HotSwap) do gabinete do servidor. Se algumas circunstâncias exigirem uma modificação no firmware da placa básica InfoServer 3030LW.



Função	Opções	Descrição
Board Part Number (Número de peça da placa)	Não disponível	Campo apenas informativo
Board Serial Number (Número de série da placa)	Não disponível	Campo apenas informativo
System Part Number (Número de peça do sistema)	Não disponível	Campo apenas informativo
System Serial Number (Número de série do sistema)	Não disponível	Campo apenas informativo
Chassis Part Number (Número de peça do gabinete)	Não disponível	Campo apenas informativo
Chassis Serial Number (Número de série do gabinete)	Não disponível	Campo apenas informativo
BMC Revision (Revisão do BMC)	Não disponível	Campo apenas informativo
Primary HSB Revision (Revisão do HSB primário)	Não disponível	Campo apenas informativo

Submenu Console Redirection (Redirecionamento da Console)

Função	Opções	Descrição
COM Port Address (Endereço da porta COM)	Disabled (Desativado) 3F8 2F8 3E8	Para especificar a porta de I/O de redirecionamento de console quando habilitado. 3F8 - normalmente é COM 1 2F8 - normalmente é COM2 O teclado/mouse e vídeo serão direcionados a essa porta. Destinado a ser usado apenas no modo de texto do DOS.
IRQ	Não disponível	Este campo é apenas informativo.
Baud Rate (Taxa de transferência)	9600 19.2k 38.4k 115.2k	Quando o redirecionamento da console é ativado, a taxa de transferência a ser usada é especificada.
Flow Control (Controle de fluxo)	No Flow Control (Nenhum controle de fluxo) CTS/RTS XON/XOFF CTS/RTS + CD	None (nenhum) impede o controle de fluxo. O controle fluxo CTS/RTS é por <i>hardware</i> . O controle de fluxo XON/XOFF é por <i>software</i> . O controle de fluxo CTS/RTS + CD é por <i>hardware</i> mais por detecção de portadora.

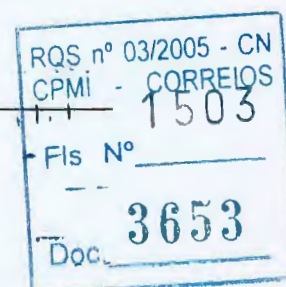


Submenu PEP Management (Gerenciamento de PEP)

Verificar na Configuração da BIOS da placa básica se a BIOS do sistema inclui PEP (page events de plataforma).

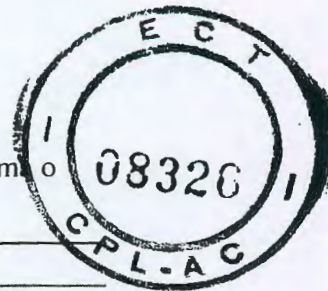


função	Opções	Descrição
PEP Filter Events (Eventos de filtro de PEP)		Entra no submenu.
PEP Enable (Ativar PEP)	Disable (Desativar) Enable (Ativar)	Ativa a PEP.
PEP Blackout Period (Período de blackout PEP)	[0..9]	Define o período de tempo entre páginas em minutos. O intervalo válido é de 0 a 10.
PEP Page String (Seqüência de caracteres de página da PEP)		Define a seqüência de caracteres utilizada para avisá-lo por pager. Geralmente, isso é um comando de atenção do modem, seguido do número do serviço de pager e, em seguida, da mensagem que deve aparecer no seu pager e de um comando para desligar do modem. Utilizar vírgulas para pausas de 1 segundo. Este campo só contém 16 caracteres. Os campos 16-31, 32-47 e 48-63 são uma continuação da seqüência de caracteres Page String (NV) (Seqüência de caracteres de página - NV) para poder digitar mais 48 caracteres para perfazer um total de 64.
16-31		Esta é uma continuação da seqüência de caracteres Page String (NV) (Seqüência de caracteres de página - NV). Pode-se digitar 16 caracteres no campo Modem Init String (Seqüência de caracteres de inicialização do modem), esse campo aparece para permitir a digitação de mais 16 caracteres.
32-47		Esta é uma continuação da seqüência de caracteres Page String (NV) (Seqüência de caracteres de página - NV). Quando digitar 16 caracteres no campo Block #1 (Bloco nº 1), esse campo aparece para permitir a digitação de mais 16 caracteres.
48-63		Esta é uma continuação da seqüência de caracteres Page String (NV). Quando digitar 16 caracteres no campo Block #2 (Bloco nº 2), esse campo aparece para permitir a digitação de mais 16 caracteres.
Send Test Page (Enviar mensagem de Teste)	Press Enter (Pressionar Enter) Send Test Page Now (Enviar mensagem de teste agora)	Para enviar uma mensagem de teste, selecionar "Send Test Page Now" ("Enviar mensagem de pager agora") no menu instantâneo.

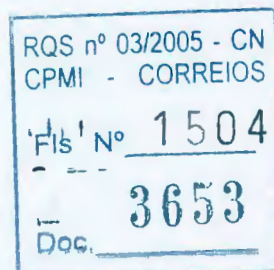


Submenu PEP Filter (Filtro de PEP)

Este submenu permite definir quais eventos ou condições de erro fazem com que o sistema o avise através de pager.



Função	Opções	Descrição
PEF Enable (Ativar PEF)	Disable (Desativar) Enable (Ativar)	Ativa a PEF (filtragem de eventos de plataforma). Se estiver ativada e ocorrer um dos eventos ativados abaixo, o servidor o avisará por pager utilizando as informações contidas em <i>Page String</i> (NV).
Temperature Sensor (Sensor de temperatura)	Disable (Desativar) Enable (Ativar)	
Voltage Sensor (Sensor de voltagem)	Disable (Desativar) Enable (Ativar)	
Fan Sensor (Sensor do ventilador)	Disable (Desativar) Enable (Ativar)	
Chassis Sensor (Sensor do gabinete)	Disable (Desativar) Enable (Ativar)	
Power Supply (Fonte de alimentação)	Disable (Desativar) Enable (Ativar)	
BIOS SMI Handle (Handle da SMI do BIOS)	Disable (Desativar) Enable (Ativar)	
BIOS POST (POST do BIOS)	Disable (Desativar) Enable (Ativar)	
FRB Sensor (Sensor do FRB)	Disable (Desativar) Enable (Ativar)	
Fatal NMI (NMI fatal)	Disable (Desativar) Enable (Ativar)	
Watchdog Timer Reset (Redefinição do timer watchdog)	Disable (Desativar) Enable (Ativar)	
System Restart (Reinicialização do sistema)	Disable (Desativar) Enable (Ativar)	





Menu Boot (Inicializar)

Utilizar o menu de *boot* para executar as seguintes seleções.

Função	Opções	Descrição
Boot--time Diagnostic Screen (Tela de diagnóstico de tempo de inicialização)	Disabled (Desativado) Enabled (Ativado)	
Boot Device Priority (Prioridade do dispositivo de inicialização)		Entra no submenu.
Hard Drive (Unidade de disco rígido)		Entra no submenu.
Removable Devices (Dispositivos removíveis)		Entra no submenu.

Submenu Boot Device Priority (Prioridade do dispositivo de Inicialização)

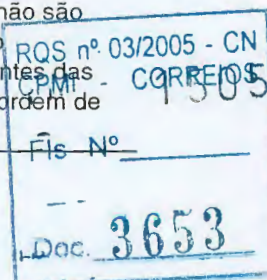
Utilizar as teclas de seta para baixo e para cima para selecionar o dispositivo. Pressionar as teclas <+> ou <-> para mover o dispositivo para cima ou para baixo na lista de prioridade.

Boot Priority (Prioridade de inicialização)	Dispositivo	Descrição
1.	Dispositivos removíveis	Tentar o <i>boot</i> de dispositivo de mídia removível.
2.	Unidade de disco rígido	Tentar o <i>boot</i> do disco rígido.
3.	Unidade de CD-ROM ATAPI	Tentar o <i>boot</i> da unidade CD-ROM ATAPI.
4.	Agente II do Serviço LANDesk (R)	Tentar o <i>boot</i> a partir da rede local.

Submenu Hard Drive (Unidade de Disco Rígido)

Utilizar as teclas de seta para baixo e para cima para selecionar o dispositivo. Pressionar as teclas <+> ou <-> para move-lo para baixo ou para cima na lista de prioridade.

Opção	Descrição
1. Hard Drive #1 (or actual drive string) (Unidade de disco rígido nº 1 - ou sequência de caracteres da unidade atual)	As unidades IDE terão um sufixo anexado à sequência de caracteres de identificação da unidade de disco. PM - unidade de disco rígido no (Primary Master Channel). PS - unidade de disco rígido no Primary Slave Channel). SM - unidade de disco no Secondary Master Channel)). SS - unidade de disco rígido no Secondary Slave Channel. Os CD-ROMs SCSI serão exibidos aqui, pois o BIOS SCSI interno trata CD-ROMs como unidades de disco rígido. O ZIP SCSI ou unidades removíveis também serão exibidas aqui. O ZIP IDE removível só aparecerá se a mídia removível for formatada como unidade de disco rígido.
2. Other Bootable Device (Outros dispositivos inicializáveis)	Abrange todos os dispositivos de <i>boot</i> que não são relacionados a BIOS do sistema através do mecanismo de especificação de inicialização da BIOS. Isso inclui todas as placas PCI que não são compatíveis com o <i>boot</i> e também placas ISA que não são compatíveis com PnP. As placas ISA serão inicializadas antes das placas PCI compatíveis com a inicialização não-BIOS (na ordem de exame do <i>slot</i> mais baixo para o mais alto).



Removable Devices (Dispositivos Removíveis)

Utilizar as teclas de seta para baixo e para cima para selecionar o dispositivo. Pressionar as teclas <+> ou <-> para move-lo para baixo ou para cima na lista de prioridades.



Opção	Descrição
1. Legacy Floppy Drive (Unidade de Disquete)	Refere-se à unidade de disquete de 3,5" interna. Mídia Removível IDE pode ser se exibida aqui se a mídia removível foi formatada emulando disquete.

Menu Exit (Sair)

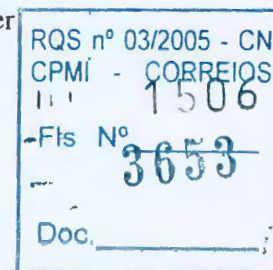
Utilizar este menu para executar as seguintes seleções. Selecionar uma opção utilizando as teclas de seta para baixo e para cima. Pressionar <Enter> para executar a opção. Ao pressionar <Esc> não sai deste menu. Selecionar um dos itens do menu ou da barra de menu para sair.

Opções	Descrição
Exit Saving Changes (Sair salvando as alterações)	Sair após gravar na NVRAM todos os valores de itens da Configuração modificados.
Exit Discarding Changes (Sair descartando as alterações)	Sair deixando a NVRAM sem modificações.
Load Setup Defaults (Carregar padrões de configuração)	Carregar valores de todos os itens da Configuração a partir de padrões personalizados salvos anteriormente.
Load Custom Defaults (Carregar padrões personalizados)	Carregar valores padrão de todos os itens da Configuração.
Save Custom Defaults (Salvar padrões personalizados)	Salva valores atuais da Configuração em padrões personalizados.
Discard Changes (Descartar as alterações)	Lê a partir da NVRAM valores anteriores de todos os itens da Configuração.
Save Changes (Salvar as alterações)	Gravar na NRAM todos os valores de itens da Configuração.

Utilizando o System Setup Utility (SSU)

O SSU se encontra no CD do software *Server Board Resource* do L440GX+ incluído na placa básica. O SSU fornece uma GUI (interface gráfica com o usuário) em um *framework* extensível para configuração do servidor. Para os sistemas L440GX+, o *framework* do SSU suporta as seguintes funções e recursos:

- atribui recursos a dispositivos da placa básica e placas de expansão antes de carregar o Sistema Operacional.
- permite especificar uma ordem de *boot* e opções de segurança do sistema.
- permite exibir e limpar o registro de eventos críticos do sistema.
- permite solucionar problemas do servidor quando o sistema operacional não estiver funcionando.
- Visualiza os dispositivos de I/O do servidor em nível do servidor.



Quando Executar o SSU

O SSU é um utilitário baseado em DOS que suporta operações de configuração estendida do sistema para os recursos da placa básica e das placas de expansão. Pode-se também ver os eventos críticos do sistema, ajustar o sistema de *boot* e opções de segurança. Utilizar o SSU quando for necessário:

- Adicionar ou remover placas que afetem a atribuição de recursos (portas, memória, IRQs, DMA)
- Modificar a ordem de *boot* dos dispositivos do servidor ou dos itens de segurança.
- Alterar as configurações do servidor
- Salvar a configuração do servidor
- Exibir ou apagar o registro de eventos do sistema

Se instalar ou remover uma placa ISA, precisará executar o SSU para reconfigurar o servidor. A execução do SSU é opcional para placas PCI e placas ISA *Plug and Play*.

O SSU é compatível com PCI e com a especificação ISA *Plug and Play*. Esse utilitário trabalha com qualquer arquivo de configuração compatível (.CFG) fornecido pelo fabricante de dispositivos periféricos.

A placa básica vem com um arquivo .CFG que descreve as características da placa e os recursos necessários do sistema. Os registros de configuração das placas de expansão PCI e ISA *Plug and Play* contêm o mesmo tipo de informações que o contido em um arquivo .CFG. Algumas placas ISA também incluem um arquivo .CFG.

O SSU utiliza as informações contidas nos arquivos .CFG, registros de configuração, *FLASH* e as informações digitadas para especificar uma configuração de sistema. Além disso, ele grava as informações de configuração na memória *flash*.

O SSU armazena os valores de configuração na memória *FLASH*. Esses valores entram em vigor quando se inicializa o servidor. POST verifica os valores com relação à configuração real do hardware; se eles não coincidirem, será gerada uma mensagem de erro. Em seguida, deve-se executar o SSU para especificar a configuração correta antes da inicialização do servidor.

O SSU sempre inclui um dígito de verificação com os dados de configuração para que a BIOS possa detectar qualquer possível corrupção de dados antes que ocorra a configuração real do hardware.

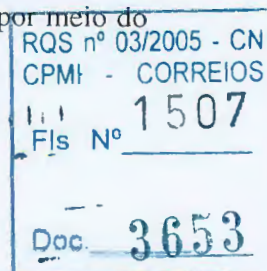
O Que Precisa Ser Feito

Executar o SSU diretamente a partir do CD de configuração de software, ou a partir do conjunto de disquetes DOS.

Se escolher executar o SSU a partir de um conjunto de disquetes do DOS, precisará criar disquetes do SSU a partir do CD do *Server Resource*, inicializando o CD e selecionado "Create Diskettes" (Criar disquetes). De forma alternativa, se houver uma estação de trabalho Windows 95 ou Windows NT, poderá inserir o CD nesse sistema e criar disquetes a partir do menu "Utilities" (Utilitários) da interface gráfica com o usuário.

Se sua unidade de disquete estiver desativada ou configurada de forma incorreta, deve-se utilizar o utilitário de configuração residente na memória *flash* para ativá-la, de modo que possa utilizar o SSU.

Se necessário, pode-se desativar a unidade após sair do SSU. As informações digitadas por meio do SSU anulam as digitadas por meio da Configuração.



Executando o SSU



• Executando o SSU Localmente

A execução do arquivo SSU.BAT fornecido na mídia do SSU inicializa esse utilitário. Se o servidor for inicializado diretamente a partir da mídia do SSU, o arquivo SSU.BAT será automaticamente executado. Se ele for inicializado a partir de uma mídia diferente, o SSU poderá ser inicializado manualmente ou através de outro aplicativo. Quando o SSU é inicializado no modo de execução local (o modo padrão), ele aceita a entrada do teclado e/ou *mouse*. O SSU apresenta uma GUI (interface gráfica com o usuário) baseada em VGA no monitor primário.

O SSU é executado a partir de uma mídia gravável ou não, removível ou não. Se ele for executado a partir de uma mídia não-gravável, as configurações de preferências do usuário (como cores da tela) não poderão ser salvas.

O SSU suporta o sistema operacional ROM-DOS V6.22. Ele pode ser executado em outros sistemas operacionais compatíveis com ROM-DOS, mas esses sistemas não são suportados. O SSU não funcionará a partir de um "modo DOS" em execução em um sistema operacional, como o Windows.

• Executando o SSU Remotamente

A execução remota do SSU exige um servidor remoto com uma placa SMM2 (modulo 2 do monitor de servidor LANdesk) e um sistema local com o software de Controle Remoto Disponível.

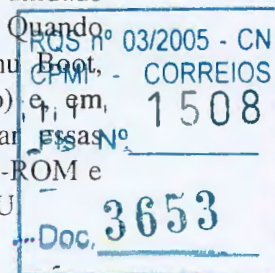
A placa SMM2 fornece suporte à memória de vídeo, teclado e redirecionamento de *mouse* para o servidor remoto. A console de Controle Remoto do sistema local exibe e envia a memória de vídeo e a entrada do usuário para o servidor remoto através de um modem ou link Ethernet. Como o SSU é executado exclusivamente no servidor remoto, qualquer arquivo necessário à execução do SSU deve estar disponível no servidor remoto (na mídia removível ou não).

Se conectar o sistema local ao servidor remoto através de uma rede ou de um modem, poderá ver a console, além de controlar o *mouse* e o teclado do servidor remoto.

Inicializando o SSU

O SSU é constituído de uma coleção de módulos baseados em tarefa e conectados a um *framework* comum chamado AF (*framework* de aplicativo). O AF fornece um ponto de partida para tarefas individuais e um local para a definição de informações de personalização. Para ter funcionalidade total, o SSU exige a disponibilidade dos arquivos AF.INI, AF.HLP, além de quaisquer arquivos .ADN e seus arquivos .HLP e .INI associados.

1. Ligar o monitor de vídeo e o sistema.
2. Existem duas maneiras de iniciar o SSU.
 - a. **Após criar um conjunto de três disquetes do SSU a partir do CD:** Inserir o primeiro disquete do SSU na unidade A e pressionar o botão *Reset* ou <Ctrl+Alt+Del> para reinicializar o servidor a partir do disquete.
 - b. **Diretamente a partir do CD do Server Resource:** Inserir o CD do *Server Resource* na unidade de CD ROM e pressionar o botão *Reset* ou <Ctrl-Alt-Del> para reinicializar o sistema. Quando solicitado, pressionar <F2> para entrar na Configuração da BIOS. A partir do menu *Boot*, selecionar a opção *Boot Device Priority* (Prioridade do dispositivo de inicialização) e, em seguida, selecionar CD-ROM como o dispositivo primário de inicialização. Salvar as definições e sair da Configuração da BIOS. O servidor será inicializado a partir do CD-ROM e da BIOS exibirá um menu de opções. Seguir as instruções do menu para inicializar o SSU.
3. Quando o SSU aparecer na tela, pressionar <Enter> para continuar.
4. O driver de *mouse* será carregado se estiver disponível; pressionar <Enter> para continuar.



5. Esta mensagem é exibida:

Please wait while the Application Framework loads....

6. Quando a janela principal do SSU for exibida, pode-se customizar a interface do usuário antes de continuar.

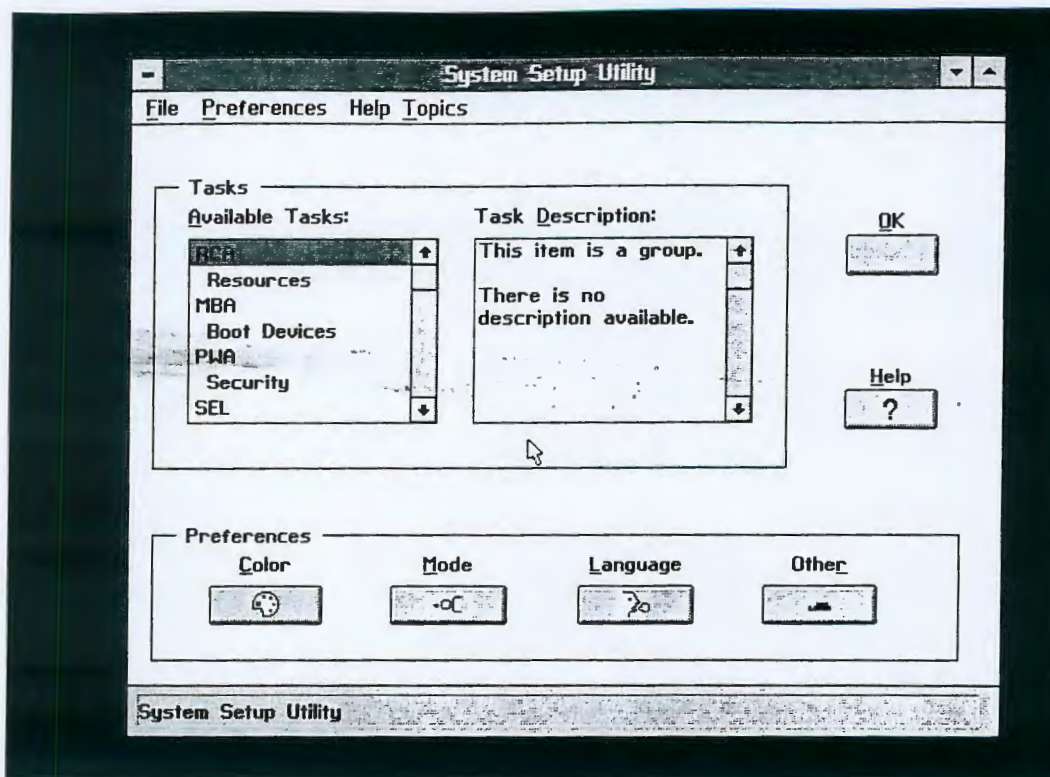


Figura 8. Janela Principal do *System Setup Utility*

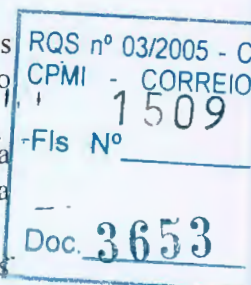
Customizando o SSU

O SSU permite personalizar a interface do usuário de acordo com a preferência do usuário. O AF define essas preferências e as salva no arquivo AF.INI para que tenham efeito na próxima vez em que o SSU for executado. Utilizar estas quatro opções configuradas pelo usuário:

- **Color** (Cor) - permite alterar as cores padrão associadas a diferentes itens da tela, com combinações de cores predefinidas. As alterações de cor são instantâneas.
- **Mode** (Modo) - permite definir o nível de habilidade desejado.
 - novice (iniciante)
 - intermediate (intermediário)
 - expert (avançado)

O nível de habilidade determina as tarefas que estão visíveis na seção Available Tasks (Tarefas disponíveis) e as ações executadas por cada tarefa. Para que uma nova definição de modo entre em vigor, deve-se sair do SSU e reinicializá-lo.

- **Language** (Idioma) - este botão permite alterar as seqüências de caracteres do SSU para seqüências de caracteres do idioma apropriado. Para que uma nova configuração de idioma entre em vigor, deve-se sair do SSU e reinicializá-lo.
- **Other** (Outras) - este botão permite alterar outras diversas opções do SSU. As alterações entram em vigor imediatamente.





Para alterar os valores padrão da interface:

Utilizar o *mouse* para clicar no botão correto da seção Preferences (Preferências) da janela principal do SSU.

ou

Utilizar as teclas Tab e de direção para realçar o botão desejado e pressionar a barra de espaços ou <Enter>.

ou

Acessar a barra de menus com o *mouse* ou com as teclas de acesso (Alt + letra sublinhada).

OBSERVAÇÃO

Se executar o SSU a partir de uma mídia não gravável, (como o CD-ROM), estas preferencias serão perdidas quando sair do SSU.

Iniciando uma Tarefa

É possível haver várias tarefas abertas ao mesmo tempo, embora algumas possam exigir um controle total para evitar possíveis conflitos. As tarefas atingem esse controle mantendo-se como o centro da operação até que a respectiva janela seja fechada.

Para iniciar uma tarefa:

1. Na janela principal do SSU, dar duplo clique no nome da tarefa em *Available Tasks* (Tarefas disponíveis) para exibir a janela principal da tarefa selecionada.

ou

Realçar o nome da tarefa e clicar em OK.

ou

Utilizar as teclas Tab e de direção para realçar o botão desejado e pressionar a barra de espaços ou <Enter>.

Janela do Resource Configuration Add-in (RCA)

O RCA possui três funções principais:

- Criar representações dos dispositivos que não podem ser descobertos pelo sistema (placas ISA)
- Modificar o conteúdo do sistema adicionando e removendo dispositivos
- Modificar os recursos utilizados por dispositivos

Utilizar o janela RCA para definir ou adicionar placas ISA clicando no botão apropriado. Para remover uma placa ISA, realçar a placa na seção Device na tela antes de clicar no botão. É possível inserir placas ISA tanto quanto forem os *slots* disponíveis.

1. Na janela principal do SSU, iniciar o RCA selecionando a tarefa "Resources" (Recursos) no cabeçalho do RCA na caixa de tarefas.

RQS nº 03/2005 - CN	
CPMI - CORREIOS	
Fls Nº	_____
	3653
Doc.	_____



2. Ao ser exibida, a janela RCA apresenta mensagens semelhantes às seguintes:
Baseboard: Server board Server board
PCI Card: Bus 00 dev 00 -- Host Processor Bridge
PCI Card: Bus 00 dev 0D -- Multifunction Controller
PCI Card: Bus 00 dev 0F -- Ethernet Controller
PCI Card: Bus 00 dev 12 -- Multifunction Controller
PCI Card: Bus 00 dev 14 -- VGA Controller
3. Para configurar um dispositivo, selecionar seu nome na seção Devices da janela do RCA e pressionar a barra de espaço ou <Enter>, ou clicar sobre ele.
4. É possível fechar a janela do RCA e retornar ao AF clicando no botão Close. Todas as alterações feitas serão mantidas na memória para serem utilizadas pelo RCA quando ele for executado novamente.
5. Salvar as alterações feitas clicando no botão Save. Ao salvar, a configuração atual é gravada em memória não volátil, onde ela estará disponível para o sistema após cada reinicialização.
6. Ao fechar a janela clicando no menu do sistema, o traço no canto superior esquerdo, todas as alterações são perdidas.

Definindo uma Placa ISA

Uma placa ISA é normalmente distribuída com um arquivo .CFG criado pelo fornecedor que especifica os recursos que a placa necessita para funcionar corretamente. Se o arquivo .CFG não estiver disponível, pode-se criá-lo manualmente ou definir a placa através do SSU. A definição de uma placa ISA consiste na especificação do nome da placa e dos recursos que ela consome. Isso permite que o RCA considere as exigências de recursos da placa ISA quando o RCA tentar resolver conflitos. As informações também serão usadas pelo BIOS do sistema para configurar o hardware quando o sistema for inicializado.

1. Para adicionar ou remover recursos da placa ISA, clicar nos botões de recursos apropriados, selecionar o valor desejado e clicar em Add (Adicionar) ou Remove (Remover).
2. Após preencher as informações necessárias, clicar em Save.
3. Para editar uma placa, clicar em Load para recuperar as informações da placa. Após efetuar as alterações, clicar em Save.
4. Para criar uma placa, clicar em New.
5. Para remover a definição atual de uma placa, clicar em Delete.

Adicionando e Removendo Placas ISA

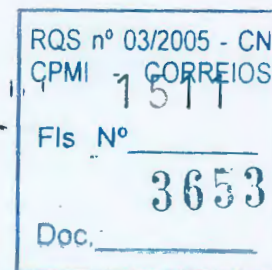
A adição e remoção de placas através do RCA proporciona um meio para que o RCA execute seus algoritmos de detecção de conflitos nos recursos solicitados pelas placas. Este procedimento alerta sobre possíveis problemas com essa placa específica na configuração atual.

• Para adicionar uma placa ISA:

1. Clicar em Add ISA Card na janela do RCA.
2. Especificar o diretório para o arquivo .CFG.
3. Selecionar o arquivo e clique em Ok.

• Para remover uma placa ISA:

1. Selecionar uma placa ISA válida na seção Devices da janela do RCA.
2. Clicar em Remove ISA Card.



Modificando Recursos

Pode ser necessário modificar os recursos de um dispositivo para ajustar exigências de sistemas operacionais, aplicativos e drivers e também para resolver conflitos.

- **Para modificar os recursos associados a um dispositivo:**

1. Destacar o dispositivo na seção Devices da janela do RCA.
2. Pressionar a barra de espaço ou <Enter>, ou dar clique duplo no dispositivo selecionado.

Isto exibirá as funções do dispositivo selecionado com as opções disponíveis e recursos associados com as opções.

- **Para fazer uma modificação:**

1. Destacar a função na janela Configuration.
2. Pressionar a barra de espaços ou <Enter>, ou dar clique duplo na função desejada. (isto atualiza as relações de opções e recursos disponíveis).
3. Pressionar a tecla de tabulação para obter a relação de opções, e pressionar <Enter>.
4. Utilizar as tecla de setas para selecionar a opção desejada e pressionar <Enter> novamente.
5. Se a opção permitir múltiplos valores para o recurso em particular, utilizar a tecla de atalho para selecionar o recurso e pressionar a barra de espaços ou dar duplo clique no recurso.
6. Selecionar o recurso desejado e clicar em Ok.



Utilização dos Recursos do Sistema

Ao clicar no botão Resource Use na janela Configuration, será exibida a janela System Resource Usage. Essa janela mostra os recursos utilizados pelos dispositivos. Essas informações são úteis para a escolha dos recursos caso ocorra um conflito. Os dispositivos podem ser organizados, de acordo com os recursos que desejar examinar, através das opções na seção Resources na tela. As informações sobre os recursos também podem ser gravadas em um arquivo de texto simples por meio dessa janela.

Suplemento de Opções de Inicialização Múltipla

Nessa janela, pode-se alterar a prioridade de inicialização de um dispositivo.

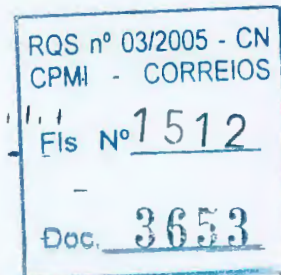
1. Selecionar um dispositivo.
2. Pressionar o botão <+> para movê-lo para cima na lista. Pressionar o botão <-> para movê-lo para baixo.

Funções de Segurança

Nessa janela, pode-se configurar as senhas do Usuário e do Administrador, e as opções de segurança.

Para Definir a Senha do Usuário

1. Clicar <User Password>.
2. Inserir a senha no primeiro campo.
3. Confirmar a senha inserindo-a novamente no segundo campo.



Para Alterar ou Apagar a Senha do Usuário

1. Clicar <User Password>.
2. Inserir a senha antiga no primeiro campo.
3. Inserir a nova senha no segundo campo (ou deixar em branco para apagar).
4. Confirmar a senha inserindo-a novamente no segundo campo (ou deixar em branco para apagar).

Para Definir a Senha do Administrador

1. Clicar <Administrator Password>.
2. Inserir a senha no primeiro campo.
3. Confirmar a senha inserindo-a novamente no segundo campo.

Para Alterar ou Apagar a Senha do Administrador

1. Clicar <Administrator Password>.
2. Inserir a senha anterior no primeiro campo.
3. Inserir a nova senha no segundo campo (ou deixe em branco para apagar).
4. Confirmar a senha inserindo-a novamente no segundo campo (ou deixar em branco para apagar).

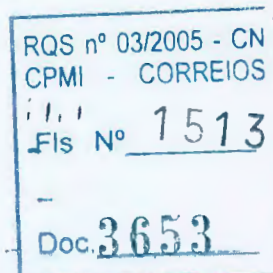
Opções de Segurança

Nessa janela, pode-se definir as outras opções de segurança:

- **Hot Key (Tecla de Acesso)** - Definir uma sequência de teclas que, ao serem pressionadas, colocarão o servidor no modo seguro.
- **Lock-Out Timer (Timer de Bloqueio)** - Definir um intervalo de tempo no qual, se não ocorrer nenhuma atividade, o servidor será colocado no modo seguro.
- **Secure Boot Mode (Modo de Inicialização Seguro)** - Força o servidor a inicializar diretamente no modo seguro.
- **Video Blanking (Vídeo em branco)** - Desliga o vídeo quando o servidor estiver no modo seguro.
- **Floppy Write (Gravação em disquete)** - Controla o acesso à unidade de disquete enquanto o servidor estiver no modo seguro.
- **Reset/Power Switch Locking (Bloqueio da Chave de Liga/Desliga-Reinicialização)** - controla os botões de *reset* e *on/off* quando o servidor estiver em modo seguro.

Gerenciador do SEL (Registro de Eventos)

Ao clicar na tarefa adicional, aparecerá o visualizador do SEL (Registro de Eventos do Servidor). Pode-se carregar e visualizar os dados atuais do SEL armazenados no BMC, salvar em um arquivo os dados do SEL atualmente carregados, visualizar dados do SEL salvos anteriormente ou limpar o SEL. O SEL Viewer (Visualizador do SEL) apresenta os seguintes menus:





File

O menu File apresenta as seguintes opções:

- **Load SEL...** Visualiza os dados de um arquivo do SEL previamente salvos.
- **Save SEL...** Salva em um arquivo os dados do SEL carregados no momento.
- **Clear SEL** Apaga os dados do SEL do BMC.
- **Exit** Finaliza SEL Viewer (Visualizador do SEL).

View

O menu View possui as seguintes opções:

- **SEL Info** Exibe as informações sobre o SEL (exibe apenas na tela).
- **All Events** Exibe os dados atuais do SEL a partir do BMC.
- **By Sensor** Exibe menu instantâneo permitindo visualizar dados de certo tipo de sensor.
- **By Event** Exibe menu instantâneo permitindo visualizar dados de certo tipo de evento.

Settings

O menu Settings possui as seguintes opções:

- **Display HEX/Verbose** Alterna entre os modos de exibição Hexadecimal/interpretado, nos registros do SEL.
- **Output Text/Binary** Determina se os dados do SEL serão salvos em um arquivo (como em File - Save - Arquivo - Salvar) em modo binário ou texto.

Help

O menu Help possui a seguinte opção:

- **About** Exibe informações sobre a versão do SEL Viewer.

Suplemento Gerenciador da FRU (Módulos Substituíveis)

Ao clicar na tarefa FRU Manager Add-in (Suplemento gerenciador da FRU), carrega-se o visualizador da FRU (Módulos Substituíveis). Pode carregar e visualizar os dados atuais da FRU armazenados no BMC, salvar em um arquivo os dados da FRU carregados no momento, visualizar os dados da FRU salvos anteriormente. O FRU Viewer (Visualizador da FRU) apresenta os seguintes menus:

File

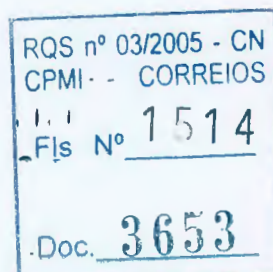
O menu File (Arquivo) apresenta as seguintes opções:

- **Load...** Visualiza os dados de um arquivo da FRU salvo anteriormente.
- **Save...** Salva em um arquivo os dados da FRU carregados no momento.
- **Save...** Salva em um arquivo os dados da FRU carregados no momento.
- **Exit** Sai do FRU Viewer.

View

O menu View apresenta as seguintes opções:

- **FRU Info** Exibe as informações sobre a FRU. Esses campos são somente para exibição.
- **All FRU Areas** Exibe os dados atuais da FRU a partir do BMC.
- **By Device Type** Exibe um menu instantâneo que permite a visualização apenas os dados de um determinado tipo de dispositivo.





Settings

O menu Settings apresenta as seguintes opções:

- **Display HEX/Verbose** Alterna entre os modos de exibição hexadecimal/interpretado, nos registros da FRU.
- **Output Text/Binary** Determina se os dados da FRU serão salvos no arquivo (como em File - Save - Arquivo - Salvar) no formato binário ou no formato detalhado.

Help

O menu Help apresenta a seguinte opção:

- **About** Exibe informações sobre a versão do FRU Viewer.

Gerenciador do SDR (Registro de Sensores)

Ao clicar na tarefa SDR Manager Add-in, deve-se carregar o visualizador do SDR (Registro de Dados do Sensor). Pode-se carregar e visualizar os dados atuais do SDR armazenados no BMC, salvar em um arquivo os dados do SDR carregados no momento, visualizar os dados do SDR salvos anteriormente. O SDR Viewer apresenta os seguintes menus:

File

O menu File (Arquivo) apresenta as seguintes opções:

- **Load ...** Visualiza os dados de um arquivo SDR salvo anteriormente.
- **Save ...** Salva em um arquivo os dados do SDR carregados no momento.
- **Save As ...** Salva em um arquivo os dados do SDR carregados no momento.
- **Exit** Sai do SDR Viewer.

View

O menu View (Exibir) apresenta as seguintes opções:

- **SDR Info** Exibe as informações sobre o SDR. Esses campos são somente para exibição.
- **All Records** Exibe os dados atuais do SDR a partir do BMC.
- **By Record Type** Exibe um menu instantâneo que permite que se possa visualizar apenas os dados de um determinado tipo de registro.

Settings (Definições)

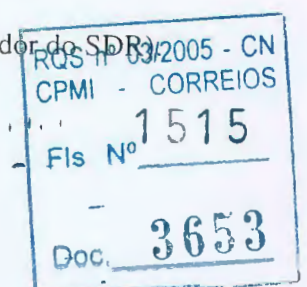
O menu Settings (Definições) apresenta as seguintes opções:

- **Display HEX/Verbose (Exibir Hexadecimal/Detalhado)** Alterna entre os modos de exibição Hexadecimal/interpretado, nos registros do SDR.
- **Output Text/Binary (Saída Texto/Binário)** Determina se os dados do SDR serão salvos em um arquivo (como em File - Save - Arquivo - Salvar) no formato binário ou texto.

Help (Ajuda)

O menu Help apresenta a seguinte opção:

- **About (Sobre)** Exibe informações sobre a versão do SDR Viewer (Visualizador do SDR).



Sair do SSU

Ao sair do SSU todas janelas serão fechadas.

1. Sair do SSU abrindo o item File (Arquivo) da barra de menu na janela SSU Main.
2. Clicar em Exit.

ou

Realçar Exit e pressionar <Enter>.



Pager de Eventos de Plataforma (PEP)

Com o PEP, o servidor pode ser configurado para discar automaticamente para um serviço de pager para avisá-lo quando ocorrer um evento relacionado ao gerenciamento do servidor. Os eventos de plataforma incluem temperatura e voltagem fora dos limites, intrusão no gabinete e falha no ventilador.

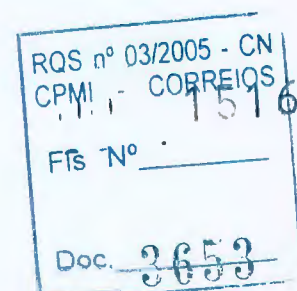
Se o PEP estiver ativo e o BMC receber ou detectar um novo evento, ele enviará automaticamente uma mensagem. Ele pode enviar uma mensagem se os processadores estiverem desativados ou se o software do sistema não estiver disponível.

O PEP precisa de um modem externo conectado à conexão serial EMP (Porta de Gerenciamento de Emergência) do servidor. Normalmente, esse é o conector serial COM2.

Verificar no *Setup* da BIOS da placa básica se o sistema BIOS inclui ou não o PEP.

Utilizando o Pager de Eventos de Plataforma

1. Entrar em *Setup*.
2. Entrar no submenu PEP Management a partir do menu Server.
3. Definir o campo PEP Enable como Enable.
4. Inserir sua sequência de caracteres de página no campo Page String na PEP. Essa sequência consiste no comando attention do modem (geralmente ATDT), o número do serviço de pager, várias vírgulas (cada uma correspondendo a uma pausa de 1 segundo), o número/mensagem que deseja que seja exibido no pager e o comando de desligar do modem (geralmente ATH). Será necessário fazer experiências com os períodos de tempo definidos para garantir que seja avisado através do pager de forma apropriada. Defina o campo Send Test Page (Enviar mensagem de teste) como Send Test Page Now (Enviar mensagem de teste agora) para permitir a geração de uma mensagem de teste.
5. Se deseja filtrar os eventos para que apenas determinados eventos originem uma mensagem, entre no submenu PEP Filter.
 - a. Definir o campo PEF Enable como Enable.
 - b. Ativar todos os eventos sobre os quais deseja ser notificado.
 - c. Sair do submenu PEP Filter.
6. Definir o período de tempo entre as notificações com o Page Blackout Field. Se deseja ser notificado a cada cinco minutos, definir o campo como 5. O intervalo varia de 0 a 10 minutos.
7. Sair de BIOS *Setup*.



Console de Porta de Gerenciamento de Emergência



A Console EMP é um software aplicativo projetado para ser executado em uma estação de trabalho do Windows 95 ou Windows NT 4.0 e que fornece uma interface do administrador do servidor à EMP do servidor InfoServer 3030LW. Essa interface permite o gerenciamento remoto do servidor através de um modem ou conexão direta.

As operações de controle do servidor disponíveis com a Console EMP são:

- Conectar a servidores remotos
- Ligar ou desligar o servidor
- Efetuar o *reset* do servidor

A Console EMP utiliza três gerenciadores adicionais para monitorar o servidor:

- SEL Viewer (Visualizador do SEL)
- SDR Viewer (Visualizador do SDR)
- FRU Viewer (Visualizador da FRU)

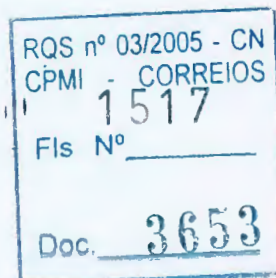
O gerenciador de console possui também um *phonebook*, que pode ser utilizado para criar e manter uma relação de servidores e seus números de telefone.

O software utilitário Console EMP está no CD de recursos do InfoServer 3030LW que é distribuído com o produto. Ele pode ser instalado diretamente a partir do CD em uma estação de trabalho ou a partir de disquetes que podem ser criados com a inicialização para o sistema operacional ROM-DOS, também disponível no CD, e a seleção de Create Diskettes.

Como a Console EMP Funciona

A EMP compartilha a porta COM2 com o sistema do servidor. Quando a EMP tem o controle da porta, ela opera em modo de comando. Quando o sistema possui o controle, a porta opera no modo de redirecionamento da console. Ao se conectar a um servidor, a Console EMP faz uma verificação para determinar o modo da porta COM2. Será mostrado a seguir como a console EMP funciona em cada estado:

- **Command state** —o estado normal da COM2. Neste estado a console EMP comunica com *firmware* do servidor, permitindo ao cliente efetuar o *reset* remotamente, ligar ou desligar o servidor. O cliente pode também visualizar as informações SEL(System Event Log), FRU (Field Replaceable Unit) do servidor ou tabelas SDR (Sensor Data Record).
- **Redirect state**—a console EMP funciona como uma janela de terminal PC ANSI, pela redireção da console via BIOS. Comandos digitados na janela do terminal são transmitidas através da BIOS para a console do servidor, e o texto exibido na console do servidor é exibido na console da janela do terminal EMP. Com a EMP neste estado, pode-se visualizar remotamente as mensagens de *boot*, acessar o *Setup* da BIOS, e executar aplicações DOS em modo texto através da janela terminal da console.



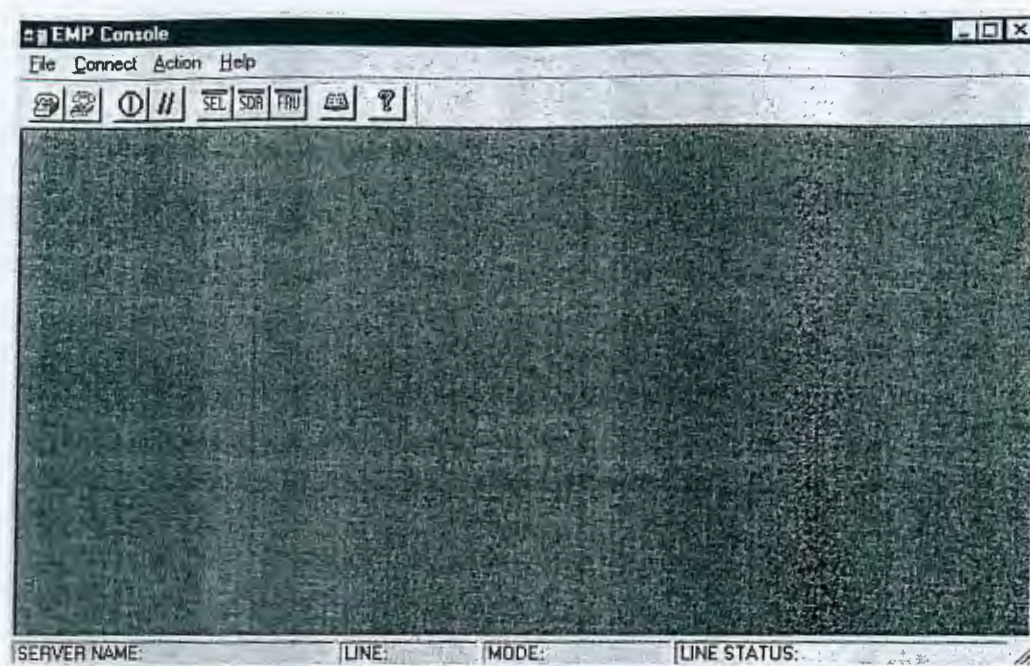


Figura 9. Console EMP em *Command State*



Figura 10. Console EMP em *Redirect State*

Figura 10 mostra a janela da Console EMP no modo de redirecionamento com a janela de terminal. O texto apresentado no monitor do servidor é exibido na janela Redirect.

A disponibilidade dos vários recursos da Console EMP é definida por dois fatores: o modo de acesso da EMP do BIOS e se a porta COM2 do servidor está configurada para o redirecionamento da console. Os três modos de acesso da EMP são disabled, pre-boot e always active.

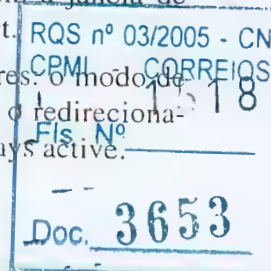




Tabela 6. Modos de Acesso da Console EMP (Servidor Configurado para Redirecionamento da Console)

Modo	Servidor desligado	Durante o POST do BIOS	Após a inicialização do sistema operacional
Disabled (Desativado)	A janela de redirecionamento é exibida, mas em branco	Janela de redirecionamento	Janela de redirecionamento
Pre-boot (Pré-inicialização)	Comandos da EMP disponíveis	Janela de redirecionamento*	Janela de redirecionamento
Always Active (Sempre ativo)	Comandos da EMP disponíveis	Janela de redirecionamento*	Comandos da EMP disponíveis

* O modo de operação pode ser modificado por seleções nas caixas de diálogo *Reset* e *Power on/off*. Essas são caixas de diálogo de controle do servidor disponíveis na Console EMP.

Tabela 7. Modos de acesso da Console EMP (Servidor não Configurado para Redirecionamento de Console)

Modo	Servidor desligado	Durante o POST	Após a inicialização do sistema operacional
Disabled (Desativado)	A janela de redirecionamento é exibida, mas em branco	A janela de redirecionamento é exibida, mas em branco	A janela de redirecionamento é exibida, mas em branco
Pre-boot (Pré-inicialização)	Comandos da EMP disponíveis	Comandos da EMP disponíveis	A janela de redirecionamento é exibida, mas em branco
Always Active (Sempre ativo)	Comandos da EMP disponíveis	Comandos da EMP disponíveis	Comandos da EMP disponíveis

Requisitos da Console EMP

Esta seção descreve os requisitos e as configurações necessárias para utilizar a Console EMP.

Sistemas operacionais:

- Windows 95 ou Windows 98
 - 16 MB de RAM, 32 MB recomendados
 - 20 MB de espaço em disco
- Windows NT
 - Windows NT 4.0
 - 24 MB de RAM, 32 MB recomendados
 - 20 MB de espaço em disco

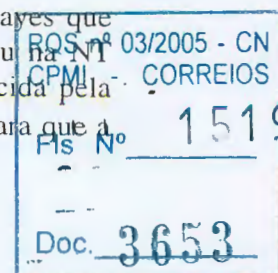
Configuração do cliente: A Console EMP suporta todas as portas COM no sistema do cliente e todos os modems compatíveis com o Windows NT/95.

Configuração do servidor: A Console EMP requer que a porta COM2 do servidor seja conectada a um modem externo ou diretamente conectada a um cabo serial.

Direct Connect Configuration: É necessário um cabo serial de modem nulo. Conectar uma extremidade do cabo à porta COM2 do servidor e a outra à porta da máquina Cliente.

Configuração de modem: No cliente, a Console EMP usa a API (Interface de Programas Aplicativos) do Windows para determinar se um modem está conectado e disponível. A Console EMP não configura o modem, ele deve ser pré-configurado no Windows.

Para dar suporte ao modem, o servidor deve utilizar um modem compatível com Hayes que suporte uma taxa de transmissão de 19.2k. O modem deve estar no Windows 95 ou na NT Hardware Compatibility List (Lista de Compatibilidade de Hardware do NT) fornecida pela Microsoft. O modem do servidor deve estar configurado no modo de auto-resposta para que a Console EMP seja capaz de conectar-se a ele.





Configurar o Servidor para a EMP

Para utilizar a EMP, é preciso configurar a BIOS do servidor de maneira específica. Essas definições são encontradas em dois submenus do menu *BIOS Server*, o submenu *System Management* e o submenu *Console Redirection*. A seção de definições da BIOS, encontrada anteriormente neste documento, mostra todas as opções disponíveis. Esta seção focaliza as definições que devem ser configuradas para que a EMP possa ser utilizada.

Submenu System Management

Todas as definições relativas à EMP ocorrem no menu principal *Server* (Servidor). Alterar apenas os itens abaixo; todas as outras definições devem permanecer as mesmas.

EMP Password Switch & EMP Password: Sempre que uma tentativa de iniciar uma conexão for realizada, será exibido um prompt para a senha do usuário. Se nenhuma senha da EMP estiver definida, então, qualquer pessoa poderá acessar a EMP clicando em OK.

Na área EMP Password do menu *Server*, a opção EMP Password Switch deve ser definida como ativada. Em seguida, digitar uma senha com até oito caracteres alfanuméricos. Se for ouvido um bipe a senha foi aceita.

EMP Access Modes: Escolher *Disabled*, *Pre-boot* ou *Always Active*, dependendo do tipo de acesso da EMP necessário. As tabelas acima mostram o que está disponível com uma determinada definição.

EMP Restricted Mode Access: Selecionar *restricted mode enabled* ou *disabled*. No modo *enabled*, a console EMP do servidor as opções de controle, *on/off* e *reset*, NÃO estão disponíveis. No modo *disabled*, estas opções ESTÃO disponíveis.

EMP Direct Connect/Modem Mode: Selecionar *Direct Connect* (Conexão Direta) se um cabo serial de modem nulo conectar diretamente a porta COM2 do servidor à máquina Cliente da Console EMP. Se eles estiverem conectados por meio de um modem, selecionar *Modem Mode*.

Submenu Console Redirection (Redirecionamento de Console)

Para utilizar a EMP, é preciso configurar as seguintes opções exatamente como apresentadas.

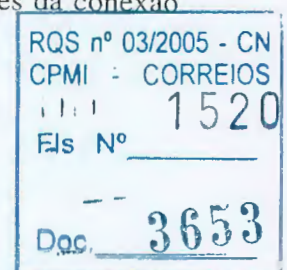
COM Port Address: Selecionar 2F8. Essa é a porta COM2 que deve ser utilizada pela EMP. A definição IRQ# (Nº do IRQ) é automaticamente preenchida com o número correto baseado na opção COM Port Address.

Baud Rate: Selecionar 19.2k.

Flow Control: Escolher CTS/RTS + CD.

Janela Principal da Console EMP

A janela principal da console EMP é uma interface gráfica de usuário (GUI) para acessar as operações de controle do servidor e para iniciar as funções de gerenciamento. Um menu e barra de utilitários no topo da interface gráfica possui opções para iniciar as aplicações e outras funções de suporte. Uma barra de estado na parte inferior apresenta informações da conexão como nome do servidor, estado da linha e modo.



Barra de Ferramentas

A barra de ferramentas da janela principal da Console EMP combina os comandos de controle do servidor e funções de gerenciamento disponíveis nos menus Connect e Action como mostrado a seguir:

	Exibe a caixa de diálogo Connect para permitir a conexão a um servidor selecionado.
	Desconecta do servidor conectado no momento.
	Exibe a caixa de diálogo Power On/Off.
	Exibe a caixa de diálogo Reset.
	Inicia o SEL Viewer.
	Inicia o SDR Viewer.
	Inicia o FRU Viewer.
	Exibe a caixa de diálogo Phonebook.
	Exibe a ajuda on-line.



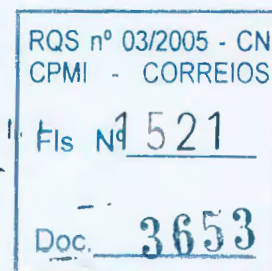
Barra de Status

A barra de *status* é exibida na parte inferior da janela principal. Ela contém as informações de *status* mostradas a seguir:

- **SERVER NAME:** O nome do servidor conectado durante a conexão via modem.
- **LINE:** O tipo de conexão de linha. Pode ser direta ou modem.
- **MODE:** Redirect of EMP (Redirecionamento da EMP), se a EMP tiver o controle da porta COM2.
- **LINE STATUS:** Fornece informações de *status* sobre a conexão do servidor. Por exemplo, se um servidor estiver conectado, a barra de *status* informará "Connected". Caso contrário, a linha ficará em branco.

Menu Principal da Console EMP

- **File**
 - **Exit** - Sai da console EMP.
- **Connect**
 - **Disconnect** - Desfaz a conexão do servidor.
 - **[Re]Connect** - Exibe a caixa de diálogo Connect.
 - Uma lista das cinco conexões de modem mais recentes. Clicar em um desses nomes de servidor para iniciar uma conexão.
- **Action**
 - **Power On/Off** - Exibe a caixa de diálogo Power on/off.
 - **Reset** - Exibe a caixa de diálogo Reset.
 - **SEL Viewer** - Exibe o SEL Viewer (Visualizador do SEL).
 - **SDR Viewer** - Exibe o SDR Viewer (Visualizador do SDR).
 - **FRU Viewer** - Exibe o FRU Viewer (Visualizador da FRU).
 - **Phonebook** - Exibe a caixa de diálogo Phonebook.



- **Help**
 - **Help Topics** - tópicos da Ajuda para a Console EMP.
 - **Help About** - fornece informações sobre a versão.



Operações de Controle do Servidor

Três operações de controle do servidor estão disponíveis no menu ou na barra de ferramentas na Console EMP: conexão do servidor remoto, ligar e desligar o servidor e efetuar o *reset* do servidor. O modo da console do servidor também pode ser alternado entre os modos EMP ativo e redirecionamento da BIOS por meio das opções *Post-power-up* e *reset*.

Connect

Quando [Re]Connect estiver selecionado no menu Connect, a caixa de diálogo Connect da Figura 11 será exibida. Essa caixa de diálogo permite a conexão a um servidor. Se a máquina Cliente já estiver conectada a um servidor, a iniciação de uma conexão gerará uma mensagem de aviso. A mensagem indica que a conexão existente será finalizada se continuar tentando iniciar a nova conexão. Vai ser solicitada a senha toda vez que for tentada uma nova conexão.

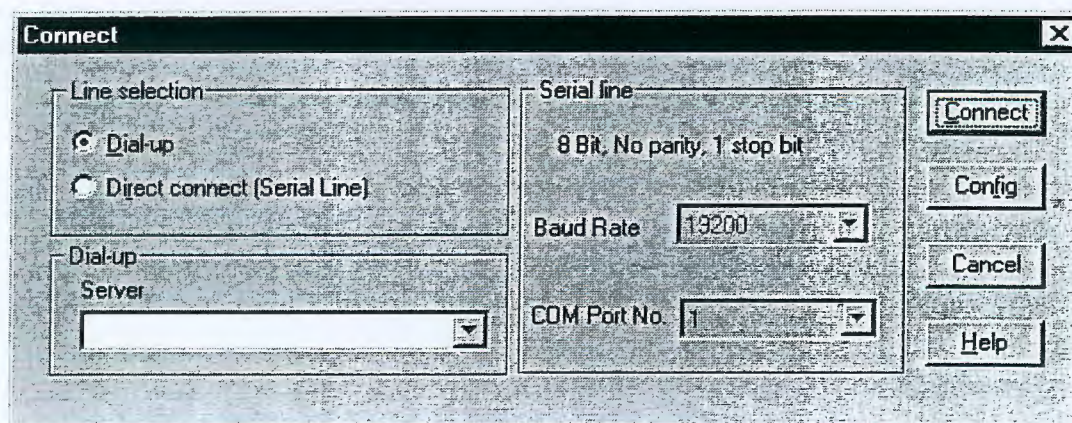
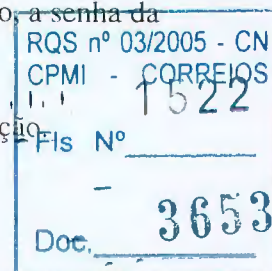


Figura 11. Caixa de Diálogo Connect

As opções disponíveis na caixa de diálogo são:

- **Line Selection** - Possibilita a distinção entre *direct* ou conexão via modem *dial-up* com o servidor.
 - **Dial-up** - conecta a um servidor selecionado com um modem.
 - **Direct connect (Serial Line)** - conecta diretamente ao servidor selecionado utilizando um cabo serial de modem nulo.
- **Server** - exibe a relação de servidores disponíveis. Pode-se selecionar ou digitar o nome do servidor; o servidor precisa ser selecionado quando a seleção *line* for *dial-up*.
- **Serial Line** - Essas opções são ativadas quando a seleção de linha está definida como Direct connect (Serial Line).
 - **Baud Rate** - Deve ser de 19200 para que a EMP se conecte de corretamente.
 - **COM Port No.** - Define o número da porta COM como a porta à qual o cabo serial de modem nulo está conectado.
- **Connect** - Inicia a conexão ao servidor conectado. Quando esse botão é clicado, a senha da EMP é solicitada.
- **Config** - Exibe a caixa de diálogo *Phonebook*.
- **Cancel** - Sai da caixa de diálogo Connect (Conectar) sem executar nenhuma ação.
- **Help** - Exibe as informações da Ajuda para essa caixa de diálogo.



Power On/Off

A seleção de Power On/Off no menu Action exibe a caixa de diálogo Power On/Off. Essa caixa de diálogo fornece comandos para ligar ou desligar remotamente o servidor.

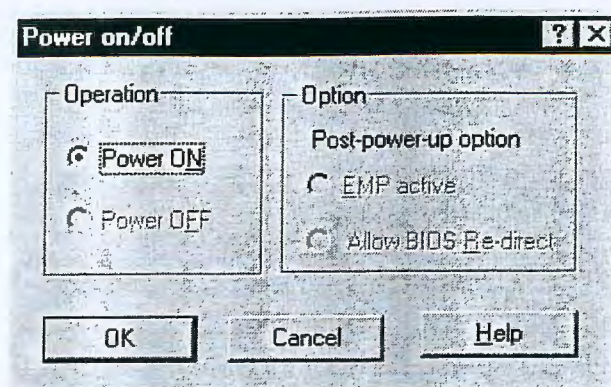


Figura 12. Caixa de Diálogo Power On/Off

As opções disponíveis na caixa de diálogo são:

- **Power ON** - Liga o servidor.
- **Power OFF** - Desliga o servidor. Essa opção não é permitida se o servidor estiver configurado no modo RESTRICTED para operações da EMP.
- **Post-power-up option** - Seleciona o modo do servidor para EMP ativo ou redirecionamento do BIOS. A definição estará disponível após a próxima vez que o servidor for ligado. A seleção padrão é *EMP active*.
- **Cancel** - Sai da caixa de diálogo Connect sem executar nenhuma ação.
- **Help** - Exibe as informações da Ajuda para essa caixa de diálogo.

Reset (Reinicializar)

A seleção de *Reset* no menu *Action* exibe a caixa de diálogo *Reset*. Essa caixa de diálogo fornece a capacidade de reinicializar remotamente o servidor com opções pós-reinicialização.

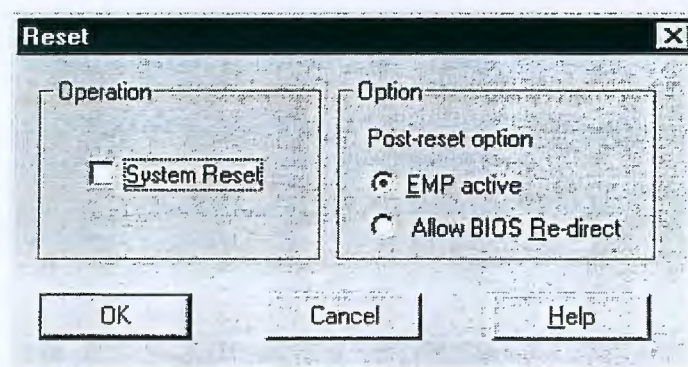
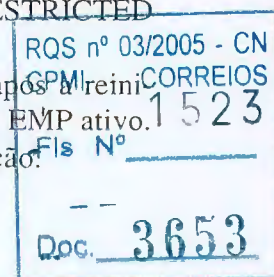


Figura 13. Caixa de Diálogo Reset (Reinicializar)

As opções disponíveis na caixa de diálogo são:

- **System Reset** - Reinicializa o servidor com as opções pós-reinicialização selecionadas. Essa operação não é permitida se o servidor estiver configurado em modo RESTRICTED para operações da EMP.
- **Post-reset option** - Define a opção pós-reinicialização que estará em vigor após a reinicialização. As opções são EMP active ou BIOS redirection. A seleção padrão é EMP ativo.
- **Cancel** - Sai da caixa de diálogo Connect (Conectar) sem executar nenhuma ação.
- **Help** - Exibe as informações da Ajuda para essa caixa de diálogo.



Phonebook (Agenda de Telefones)

A console EMP possui um *phonebook*, uma aplicação que armazena nomes e números de servidores em uma relação que pode ser atualizada através de adição, modificação e eliminação de entradas. Pode-se abrir o *Phonebook* a partir do menu principal e da barra de ferramentas, ou inicializada a partir da caixa de diálogo Connect, através do botão Config.

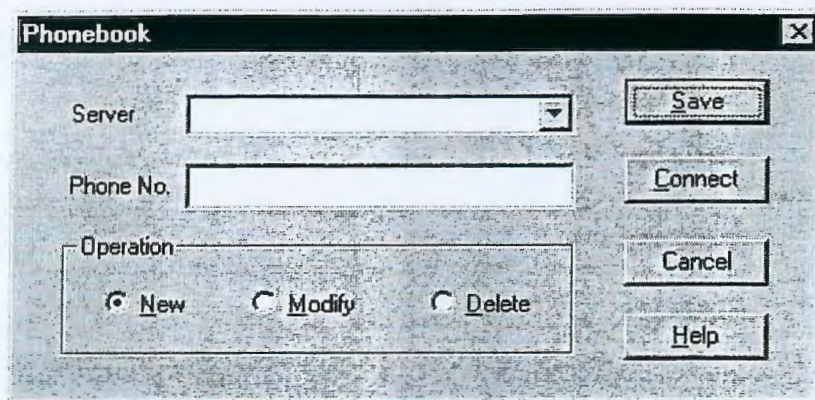
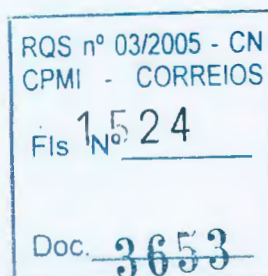


Figura 14. Caixa de Diálogo *Phonebook*

As opções disponíveis nessa caixa de diálogo são:

- **Server** - Exibe uma relação de nomes de servidores armazenada na *Phonebook*. Se o botão de opção **New** estiver selecionado na área **Operation**, essa área será limpa.
- **Phone No.** - Exibe o número de telefone do servidor selecionado. Se o botão de opção **New** (Novo) estiver selecionado na área **Operation**, essa área será limpa.
- **Operation**
 - **New** - Gera uma nova entrada no *phonebook*. Ao selecionar esta opção os campos *Server* e *Phone No.* serão limpos. É necessário clicar <Save> para adicionar a nova entrada no *phonebook*.
 - **Modify** - Edita uma entrada existente. Antes de selecionar esta opção, selecionar uma entrada existente na caixa *Server* para depois modificar o número do telefone. Clicar <Save> para registrar a entrada no *phonebook*.
 - **Delete** - Apaga um entrada do *phonebook*. Antes de selecionar esta opção, selecionar uma entrada existente na caixa *Server*. Clicar <Save> para apagar a entrada no *phonebook*.
- **Save** - Salva uma entrada nova ou modificada do *Phonebook* ou exclui uma entrada se o botão de opção **Delete** estiver selecionado.
- **Connect** - Exibe a caixa de diálogo *Connect* com o servidor selecionado na caixa de lista drop-down *Server* da *Phonebook* já preenchendo o campo *Server* da caixa de diálogo *Connect*.
- **Cancel** - Sai da caixa de diálogo *Connect* sem executar nenhuma ação.
- **Help** - Exibe as informações da Ajuda para essa caixa de diálogo.





Funções de Gerenciamento

SEL Viewer (Visualizador do SEL)

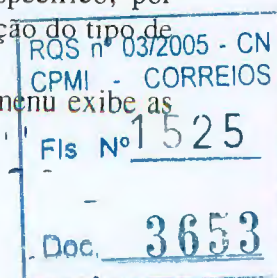
O SEL Viewer fornece acesso ao System Event Log (Registro de Eventos do Sistema) no servidor e pode exibir registros no formato hexadecimal ou de texto. As opções disponíveis através do SEL Viewer são:

- View the SEL from a saved file (Visualizar o SEL a partir de um arquivo salvo)
- Save the SEL to a file (Salvar o SEL em um arquivo)
- View SEL summary info (Visualizar as informações de resumo do SEL)
- View all SEL entries (Visualizar todas as entradas no SEL)
- View SEL entries by sensor type (Visualizar todas as entradas no SEL por tipo de sensor)
- View SEL entries by event type (Visualizar todas as entradas no SEL por tipo de evento)
- Set SEL display mode to either Hex or verbose mode (Definir o modo de exibição do SEL como modo hexadecimal ou detalhado)
- Set the SEL output file format to either text or binary format (Definir o formato do arquivo de saída do SEL como texto ou binário)
- Close the SEL Viewer (Fechar o SEL Viewer - Visualizador do SEL)
- Exit the EMP Console (Sair da Console EMP)

Menu de Opções do SEL Viewer (Visualizador do SEL)

As seguintes opções são encontradas na barra de menu do SEL Viewer (Visualizador do SEL):

- **File**
 - **Open** - visualiza os dados do SEL a partir de um arquivo salvo anteriormente se ele tiver sido armazenado em formato binário. A seleção do item de menu Open permite especificar um nome de arquivo pelo qual os dados são localizados. Se o arquivo não puder ser aberto, o programa exibirá uma mensagem de erro.
 - **Close** - fecha o SEL Viewer.
 - **Save** - salva os eventos do SEL em um arquivo no formato binário simples ou no formato de texto. O arquivo binário pode ser recuperado posteriormente. Após os dados serem salvos em um arquivo, a seleção dessa opção salvará os dados no arquivo salvo anteriormente. Se nenhum evento do SEL tiver sido recuperado, essa opção de menu não estará disponível.
 - **Save As** - salva os eventos do SEL em um novo arquivo no formato binário simples ou texto. O arquivo binário pode ser recuperado posteriormente. A seleção dessa opção permite especificar um nome de arquivo no qual os dados serão salvos. Se nenhum evento do SEL tiver sido recuperado, essa opção de menu não estará disponível.
 - **Exit** - Sai da Console EMP.
- **View**
 - **SEL Information** - Exibe informações de resumo do SEL como retornadas pelo servidor.
 - **All Events** - Exibe todos os eventos no SEL.
 - **By Sensor Type** - Exibe todos os eventos no SEL gerados por um tipo específico de sensor como voltagem, temperatura, etc. Um submenu permite selecionar o tipo de sensor a ser exibido.
 - **By Event** - Exibe todos os eventos no SEL de um tipo de evento específico; por exemplo, limite, digital ou discreto. Um menu instantâneo permite a seleção do tipo de evento a ser exibido.
 - **Settings** - Altera vários parâmetros operacionais do SEL Viewer. Esse menu exibe as seguintes sub-opções:



- **Display HEX/Verbose** - Alterna entre o modo hexadecimal e o modo interpretado de exibição dos registros do SEL.
- **Output Text/Binary** - Alterna entre as opções de salvar os eventos do SEL em um arquivo no formato binário ou texto.
- **Window** - Proporciona opções para a exibição das janelas atualmente abertas.
- **Help**
 - **Help Topics** - Tópicos da Ajuda da Console EMP.
 - **Help About** - Fornece informações sobre a versão.

SDR Viewer

O visualizador SDR permite visualizar os registros salvos no armazenador do SDR. As opções disponíveis através do visualizador SDR são:

- View all SDR records (Visualizar todos os registros do SDR)
- View SDR entries by SDR type (Visualizar as entradas no SDR por tipo)
- View SDR summary info (Visualizar as informações de resumo do SDR)
- Set SDR display mode to either Hex or verbose mode (Definir o modo de exibição do SDR para o modo hexadecimal ou texto)
- Close the SDR Viewer (Fechar o Visualizador SDR)
- Exit the EMP Console (Sair da Console EMP)

Menu de Opções do Visualizador SDR

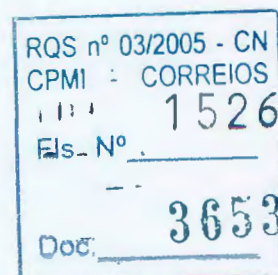
As opções de menu a seguir são encontradas na barra de menu do SDR Viewer:

- **File**
 - **Close** - fecha Visualizador do SDR.
 - **Exit** - sai da Console EMP.
- **View**
 - **Display all Records** - Exibe todos os registros do armazenador SDR.
 - **SDR Type** - Exibe os registros de um tipo de SDR específico. Seleciona um tipo de SDR a partir de um menu instantâneo que exibe todos os tipos de SDR disponíveis para o *hardware* especificado.
 - **SDR Information** - Exibe as informações resumidas do SDR.
- **Settings** - Altera os parâmetros operacionais do Visualizador do SDR. Esse menu exibe a seguinte sub-opção:
 - **Display HEX/Verbose** - Alterna entre o modo hexadecimal e o modo interpretado de exibição dos registros do SDR.
- **Window** - Proporciona opções para a exibição da janela aberta.
- **Help**
 - **Help Topics** - Tópicos da Ajuda da Console EMP.
 - **Help About** - Fornece informações sobre a versão.

Visualizador Field Replaceable Unit (FRU)

O visualizador de FRU permite visualizar os dados da FRU (Unidade Substituível no Campo) do servidor a partir da área de informações da Front Panel FRU do servidor. As opções disponíveis no FRU Viewer são:

- Visualizar todos os registros da FRU.
- Visualizar as informações de resumo da FRU.
- Definir o modo de exibição da FRU como hexadecimal ou texto.
- Fechar Visualizador da FRU.
- Sair da Console EMP.



Menu de Opções do Visualizador FRU (FRU Viewer)

As opções a seguir são encontradas na barra de menu do FRU Viewer:

- **File**
 - **Close** - Fecha o FRU Viewer.
 - **Exit** - Sai da Console EMP.
- **View**
 - **Display all Records** - Exibe todos os dados da FRU, que consistem nas informações sobre o gabinete, a placa e o produto.
 - **FRU Information** - Exibe as informações FRU resumidas.
- **Settings** - Permite alterar os parâmetros operacionais do Visualizador da FRU. Esse menu exibe a seguinte sub-opção:
 - **Display HEX/Verbose** - Alterna entre o modo hexadecimal e o modo interpretado.
- **Window** - Proporciona opções para a exibição das janelas atualmente abertas.
- **Help**
 - **Help Topics** - Tópicos da Ajuda da Console EMP.
 - **Help About** - Fornece informações sobre a versão.



Utilitário de Carga FRUSDR

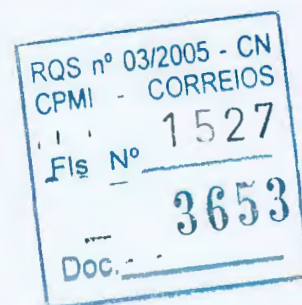
O utilitário de carga dos *Field Replacement Unit* (FRU) e *Sensor Data Record* (SDR) é um programa baseado no DOS utilizado para atualizar os componentes de armazenamento não-volátil (EEPROMs) da FRU e do SDR (nível de produto) e a DMI (Interface de Gerenciamento de Área de Trabalho), do subsistema de gerenciamento do servidor. O utilitário de carga

- Descobre a configuração do produto com base nas instruções em um arquivo de configuração *master*.
- Exibe as informações da FRU.
- Atualiza os dispositivos de armazenamento não-volátil (EEPROM) associados ao BMC (Controlador do Gerenciamento da Placa Básica) que contém as áreas do SDR e da FRU.
- Atualiza a área da DMI localizada no dispositivo de armazenamento não-volátil do BIOS.
- Trata de forma genérica os dispositivos da FRU que não podem ser associados ao BMC.

Quando Executar o Utilitário de Carga FRUSDR

É preciso executar o utilitário de carga FRUSDR toda vez que for efetuada uma atualização ou troca de *hardware* no servidor, excluindo placas de expansão, discos rígidos e memória. Se por exemplo forem trocados um conjunto de ventiladores será preciso executar o utilitário. Ele programa os sensores que precisam ser monitorados para o gerenciamento do servidor.

Como o firmware deve ser recarregado para inicializar de forma apropriada os sensores após a programação, desligar o servidor e remover os fios de alimentação de energia do servidor. Esperar aproximadamente 30 segundos e conectar novamente os fios de alimentação de energia.



O Passo Seguinte

O utilitário de carga FRUSDR pode ser executado diretamente a partir do CD Configuration Software (Software de Configuração) ou de disquetes criados a partir do CD. Ele pode ser extraído do CD através da inicialização desse CD e a através da seleção de "Make Diskettes", ou pela inserção do CD em um PC que estiver executando o Windows 95 ou NT e pela seleção da seção "Utilities".

OBSERVAÇÃO

Se a sua unidade de disquete estiver desativada ou inadequadamente configurada, deve-se utilizar o BIOS *Setup* para ativá-lo. Se necessário, pode-se desativar a unidade após ter concluído a execução do utilitário FRUSDR.



Como Utilizar o Utilitário de Carga FRUSDR

Esse utilitário é compatível com o ROM-DOS Ver. 6.22, MS-DOS⁺ Ver. 6.22 e versões posteriores. O utilitário aceita arquivos de carga CFG, SDR e FRU. O arquivo executável para o utilitário é o frusdr.exe. O utilitário requer os seguintes arquivos de suporte:

- um ou mais arquivos .fru descrevendo as unidades substituíveis de campo do sistema
- um arquivo .cfg descrevendo a configuração do sistema
- um arquivo .sdr descrevendo os sensores no sistema

Formato da Linha de Comando

O formato básico da linha de comando é:

```
frusdr [/?] [/h] [/d {dmi, fru, sdr}] [/cfg filename.cfg] /p
```

Comando	Descrição
frusdr	É o nome do utilitário.
/? ou /h	Exibe informações de uso.
/d {dmi, fru, sdr}	Exibe somente a área exigida.
/cfg filename.cfg	Utiliza o arquivo CFG personalizado.
/p	Faz uma pausa entre os blocos de dados.

Analizando a Linha de Comando

O utilitário de carga FRUSDR permite apenas uma função de linha de comando de cada vez. Uma função de linha de comando pode ser constituída de dois parâmetros; por exemplo, cfg nome_de_arquivo.cfg. Quaisquer parâmetros inválidos resultam na exibição de uma mensagem de erro e na saída do programa. Pode-se utiliza uma barra (/) ou um sinal de menos (-) para especificar as opções de linha de comando. O parâmetro /p pode ser usado junto com qualquer uma das outras opções.



Exibindo as Instruções de Utilização

Quando o utilitário estiver sendo executado com os parâmetros de linha de comando `/?` ou `/h`, a mensagem a seguir será exibida:

FRU & SDR Load Utility Version 3.0

Usage:	frusdr	Is the name of the utility.
	<code>/?</code> ou <code>/h</code>	Displays usage information.
	<code>/d {dmi,fru,sdr}</code>	Only displays requested area. (Exibe somente a área solicitada.)
	<code>/cfg</code>	Uses custom CFG file.
	<code>/p</code>	Pause between blocks of data.



Exibindo uma Determinada Área

Quando o utilitário é executado com o parâmetro da linha de comando `/d DMI`, `/d FRU` ou `/d SDR`, a área indicada é exibida. Cada área representa um sensor para cada dispositivo instrumentado no servidor. Se a função de exibição falhar devido à incapacidade de analisar os dados presentes ou a uma falha de hardware, o utilitário exibirá uma mensagem de erro e será encerrado.

Exibindo a Área DMI

Cada área DMI exibida, é encabeçada com o nome atribuído para a área DMI. Na área, cada campo possui o nome no cabeçalho o seguido pelo valor do campo em ASCII ou numérico.

Exibindo a Área de FRU

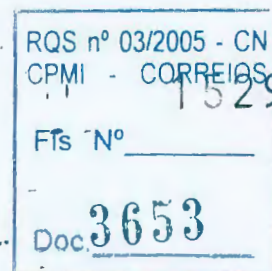
A área da FRU é exibida no formato ASCII quando o campo é ASCII ou numérico quando o campo é número. Cada área FRU exibida tem como cabeçalho o nome designado da área da FRU. Cada campo tem um cabeçalho de nome de campo seguido do campo em ASCII ou como um número. As áreas Board, Chassis e Product da FRU terminam com um END OF FIELDS CODE que indica que não há mais dados nessa área. A área Internal Use é exibida no formato hexadecimal, com 16 bytes por linha.

Exibindo a Área SDR

A área de armazenamento não volátil do SDR é exibida no seguinte formato hexadecimal. Os dados são separados por um cabeçalho Sensor Record Number X, onde X é o número desse registro de sensor na área do SDR. A próxima linha após o cabeçalho possui os dados do registro de sensor em formato hexadecimal delineado por espaços. Cada linha comporta até 16 bytes. Os dados em cada linha são seguidos pelos mesmos dados em formato ASCII; caracteres não imprimíveis são substituídos por um ponto (.).

Utilizando o Arquivo CFG Especificado

O utilitário pode ser executado com o parâmetro de linha de comando `- cfg filename.cfg`. O *filename* pode ser qualquer sequência de oito caracteres aceita pelo DOS. O utilitário carrega o arquivo CFG especificado e utiliza as entradas no arquivo de configuração para examinar o hardware e selecionar os SDRs corretos a serem carregados em armazenamento não volátil.



Exibindo Título e Versão do Utilitário

O utilitário exibe seu título:

FRU & SDR Load Utility, Version 3.0

Onde X.XX é o número de revisão do utilitário.



Arquivo de Configuração

O arquivo de configuração está em texto ASCII. O utilitário executa comandos formados por seqüências de caracteres presentes no arquivo de configuração. Esses comandos fazem com que o utilitário execute várias tarefas necessárias para carregar os SDRs corretos no armazenamento não volátil do BMC e possivelmente dispositivos genéricos da FRU. Alguns dos comandos podem ser interativos requerendo a intervenção do usuário.

Solicitando Informação de Nível de Produto FRU

Através da utilização de um Configuration File, o utilitário pode solicitar informações da FRU.

Filtrando Registros do Arquivo SDR (Sensor Data Record)

O arquivo *MASTER.SDR* possui todas os SDRs possíveis para o sistema. Esses registros talvez precisem ser filtrados com base na configuração atual do produto. O arquivo de configuração direciona a filtragem dos SDRs.

Atualizando a Área de Armazenamento Não Volátil SDR

Após o utilitário validar a área de cabeçalho do arquivo SDR fornecido, ele atualiza a área de depósito do SDR. Antes de programar, o utilitário limpa a área de depósito do SDR. O arquivo SDR é carregado por meio do arquivo .cfg. Em seguida, o utilitário filtra todos os SDRs marcados dependendo da configuração do produto definida no Configuration File. Os SDRs não marcados são automaticamente programados. O utilitário também copia todos os SDRs gravados para o arquivo SDR.TMP. Ele contém uma imagem do que foi carregado e o arquivo TMP também é útil para depurar o servidor.

Atualizando a Área FRU de Armazenamento não Volátil

Depois que a configuração é determinada, o utilitário atualiza a área de armazenamento não volátil da FRU. Primeiro ele verifica a área Common Header (Cabeçalho Comum) e a soma de verificação do arquivo FRU especificado. A Internal Use Area (Área de Uso Interno) é lida fora do arquivo .FRU especificado e é programada no armazenamento não volátil. As áreas Chassis, Board, Product e MultiRecord, se existirem, são lidas a partir do arquivo .FRU especificado. Em seguida, essas áreas são programadas no de armazenamento não volátil da FRU. Todas as áreas também são gravadas no arquivo FRU.TMP, que é utilizado para depurar o servidor.

Atualizando a Área de Armazenamento não Volátil DMI FRU

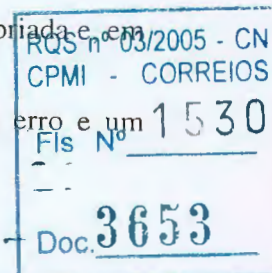
Após programar as áreas BMC da FRU, o utilitário, programará informações da FRU do gabinete, Board e Product para os campos da DMI, mas somente quando ditadas pelo Configuration File.

Se ocorrer uma falha, o utilitário exibirá uma mensagem de erro e será encerrado.

Limpando e Saindo

Se uma atualização foi executada com êxito, o utilitário exibe uma mensagem apropriada e, em seguida, é encerrado com um código de saída do DOS igual a zero.

Se o utilitário falhar, ele será encerrado imediatamente com uma mensagem de erro e um código de saída do DOS diferente de zero.



Atualizando a BIOS



Preparando para Atualização

Antes de atualizar a BIOS, registrar as configurações atuais do BIOS, obtendo o utilitário de atualização e fazendo uma cópia do BIOS atual.

Registrando as Configurações de BIOS Atuais

1. Inicializar o sistema e pressionar <F2> quando aparecer a mensagem:
Press <F2> Key if you want to run SETUP
2. Anotar as definições atuais do programa de configuração do BIOS.

OBSERVAÇÃO

Não pular a etapa 2. Essas definições serão necessárias para configurar o computador no final do procedimento de atualização.

Obtendo o Utilitário de Atualização

Pode-se atualizar para uma nova versão da BIOS utilizando o novo arquivo de BIOS e o utilitário de atualização, iFLASH.EXE. Pode-se obter o arquivo de atualização de BIOS e o utilitário de atualização iFLASH.EXE através do fornecedor de computador.

OBSERVAÇÃO

Ver as instruções distribuídas com o utilitário de atualização antes de tentar a atualização da BIOS.

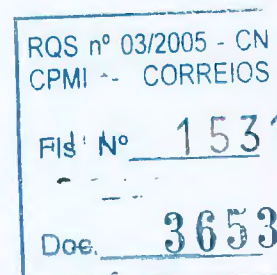
Esse utilitário de atualização permite:

- Atualizar o BIOS na memória *flash*.
- Atualizar a seção de idiomas do BIOS.

As etapas a seguir explicam como atualizar o BIOS.

Criando Disquete de *Boot*

1. Utilizar sistema DOS ou Windows 95 para criar o disquete.
2. Inserir o disquete na unidade A.
3. No prompt C:\, se for um disquete não formatado, digitar:
format a: /s
ou, se for um disquete formatado, digitar:
sys a:
4. Pressionar <Enter>.



Criando Disquete de Atualização de BIOS

O arquivo de atualização de BIOS é um arquivo comprimido e auto expansivo que contém os arquivos necessários para a atualização da BIOS.

1. Copiar o arquivo de atualização de BIOS para um diretório temporário no disco rígido.
2. No prompt C:\, mudar para o diretório temporário.
3. Para extrair o arquivo, digitar o nome do arquivo de atualização do BIOS, por exemplo:
10006BI1.EXE
4. Pressionar <Enter>. O arquivo extraído contém os seguintes arquivos:
LICENSE.TXT
README.TXT
BIOS.EXE
5. Ler o arquivo LICENSE.TXT, que contém o acordo de licença do software, e o arquivo BIOINSTR.TXT, que contém as instruções para a atualização do BIOS.
6. Inserir o disquete de inicialização na unidade A.
7. Para extrair o arquivo BIOS.EXE do disquete, mudar para o diretório temporário que contém o arquivo BIOS.EXE e digitar:
BIOS A:
8. Pressionar <Enter>.
9. O disquete agora contém a atualização do BIOS e os arquivos de recuperação.

Atualizando a BIOS

1. Dar *boot* no computador com o disquete A. A tela do utilitário de atualização da BIOS será exibida.
2. Selecionar Update Flash Memory From a File.
3. Selecionar Update System BIOS. Pressionar <Enter>.
4. Utilizar as teclas de seta para selecionar o arquivo .bio correto. Pressionar <Enter>.
5. Quando o utilitário pedir confirmação para gravar o novo BIOS na memória, selecionar Continue with Programming. Pressionar <Enter>.
6. Quando o utilitário mostrar a mensagem Upgrade is complete remover o disquete. Pressionar <Enter>.
7. Quando o sistema efetuar o *boot*, verificar a identificação do BIOS (número da versão) para se certificar de que a atualização foi bem sucedida.
8. Para entrar no *Setup* da BIOS, pressionar <F2> quando a seguinte mensagem for exibida:
Press <F2> Key if you want to run SETUP
9. Para uma operação adequada, carregar as configurações padrão do *Setup*. Para carregar os padrões, pressionar <F9>.
10. Para aceitar os padrões, pressionar <Enter>.
11. Definir as opções do *Setup* como as definições anotadas antes da atualização de BIOS.
12. Para salvar as definições, pressionar <F10>.
13. Para aceitar as definições, pressionar <Enter>.
14. Desligar o computador e dar *boot*.

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Recuperando a BIOS

É improvável que alguma coisa interrompa a atualização do BIOS; entretanto, se isso acontecer, a BIOS pode ser danificada. As etapas a seguir explicam como recuperar o BIOS se uma atualização falhar. O procedimento a seguir utiliza o modo de recuperação para o *Setup*.

OBSERVAÇÃO

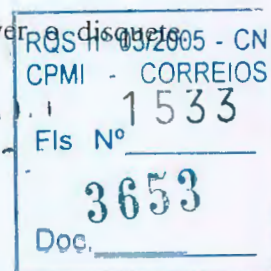
Devido à pequena quantidade de código disponível no bloco protegido da área de *boot*, não há suporte a vídeo. Não se verá nada na tela durante o procedimento. Monitorar o procedimento escutando o alto falante e observando o LED da unidade de disquete.

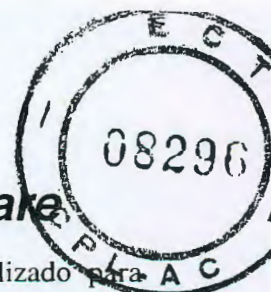
1. Desligar todos os dispositivos periféricos conectados ao computador. Desligar o computador.
2. Remover a tampa do computador.
3. Localizar o bloco de *jumper* J3J2.
4. Mover o *jumper Recovery Boot* dos pinos 9-10 para os pinos 10-11 (ver a 17 na página 100).
5. Inserir o disquete inicializável de atualização do BIOS na unidade de disco A.
6. Recolocar a tampa, ligar o computador, permitindo que efetue o *boot*. O processo de recuperação levará alguns minutos.
7. Ficar atento ao alto falante.
8. Dois bipes e o final da atividade na unidade A indicam o sucesso da operação.
9. Uma série de bipes contínuos indica que a recuperação da BIOS falhou.
10. Se a recuperação falhar, volte à etapa 1 e repetir o processo de recuperação.
11. Se a recuperação for bem sucedida, desligar o computador. Remover a tampa do computador e prosseguir com as etapas a seguir.
12. Mover o *jumper Recovery Boot* de volta para os pinos 9-10.
13. Recolocar a tampa do computador. Deixar o disco de inicialização na unidade A e ligar o computador.
14. Prosseguir com a atualização do BIOS (consultar a página 76).

Alterando o Idioma da BIOS

Pode-se utilizar o utilitário de atualização de BIOS para alterar o idioma que a BIOS exibe. Utilizar um disquete de inicialização contendo o utilitário *flash* da Intel e os arquivos de idioma.

1. Dar *boot* no computador com o disquete preparado para *boot* na unidade A. A tela do utilitário de atualização da BIOS será exibida.
2. Selecionar Update Flash Memory From a File.
3. Selecionar Update Language Set. Pressionar <Enter>.
4. Selecionar a unidade de disco A e utilizar as teclas de seta para selecionar o arquivo .lng correto. Pressionar <Enter>.
5. Quando o utilitário pedir confirmação para gravar o novo idioma na memória, selecionar Continue with Programming. Pressionar <Enter>.
6. Quando o utilitário exibir a mensagem Upgrade is complete remove the disquete. Pressionar <Enter>.
7. O computador será reinicializado e as alterações entrarão em vigor.





Utilizando o Utilitário de Atualização de *Firmware*

O utilitário de atualização de *Firmware* é um programa baseado em DOS utilizado para atualizar o código de *firmware* do BMC (Baseboard Management Controller). Executar este utilitário apenas se um novo código de *firmware* for necessário.

Executando o Utilitário de Atualização de *Firmware*

1. Criar um disquete de *boot*. A versão do DOS precisa ser 6.0 ou superior.
2. Colocar o utilitário de atualização de *firmware* (FWUPDATE.EXE) e o arquivo *.hex no disquete. Anotar o nome do arquivo *.hex pois será útil mais tarde.
3. Inserir o disquete na unidade e dar *boot*.
4. No prompt do DOS, executar o arquivo executável (FWUPDATE.EXE).
5. O utilitário exibirá uma tela de menu. Selecionar "Upload Flash".
6. O utilitário solicitará um nome de arquivo. Inserir o nome do arquivo *.hex.
7. O programa carregará o arquivo e, em seguida, perguntará se deve "Upload Boot Block". Pressionar "N" para prosseguir.
8. O programa perguntará em seguida se deve "Upload Operational Code". Pressionar "Y" para prosseguir.
9. Depois que o código operacional tiver sido atualizado e verificado, pressionar qualquer tecla para prosseguir. Em seguida, pressionar a tecla "ESC" para sair do programa.
10. Desligar o sistema e remover todos os disquetes.
11. Desconectar o cabo de alimentação de corrente alternada do sistema e espere 60 segundos.
12. Conectar o cabo de alimentação de corrente alternada e ligar o sistema.

Instalando Drivers de Vídeo

Depois de configurar o sistema, instalar os drivers de vídeo para aproveitar os recursos da controladora de vídeo Cirrus Logic CL-GD5480 super VGA incorporada à placa.

- O CD L440GX+ Resource inclui drivers de vídeo para serem usados com o DOS e com o Windows NT. Verificar o arquivo README.TXT no CD para obter informações sobre a instalação desses drivers.
- Para outros sistemas operacionais, consultar as instruções do Sistema Operacional para instalação de drivers de dispositivo.

Utilizando o Utilitário SCSI Adaptec

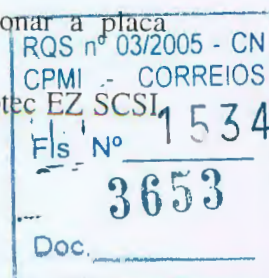
O utilitário SCSI Adaptec detecta os adaptadores de *host* SCSI na placa básica. Esse utilitário é executado a partir do BIOS e é utilizado para

- Alterar valores padrão.
- Verificar e/ou alterar as definições de um dispositivo SCSI que possam estar em conflito com outros dispositivos no servidor.

Executando o Utilitário SCSI

1. Quando esta mensagem for exibida no monitor de vídeo:
Press Ctrl-A to run SCSI Utility...
2. Pressionar <Ctrl+A> para executar esse utilitário. Ao ser exibido, selecionar a placa adaptadora do servidor que deseja configurar.

Outro utilitário Adaptec que está disponível no CD L440GX+ Resource é o Adaptec EZ SCSI. Ele foi criado para ser instalado a partir de disquetes em DOS ou Windows.





4 Solucionando Problemas

Este capítulo auxilia a identificação e a solução de problemas que podem ocorrer enquanto o sistema estiver sendo utilizado.

Efetuando *Reset* do Sistema

Para executar:	Pressionar:
<i>Reset por Software</i> , que limpa a memória do sistema e recarrega o sistema operacional.	<Ctrl+Alt+Del>
Apagar a memória do sistema, reinicializar o POST e recarregar o sistema operacional.	Reinicialização
Partida a frio. Desligar e, em seguida, ligar o sistema. Isso limpa a memória do sistema, reinicializa o POST, recarrega o sistema operacional e interrompe todos os periféricos.	Desligar/Ligar

Efetuando *Boot* Resistente a Falhas

Efetuar o *boot* resistente a falha assegura que o sistema não irá parar por um problema de *boot*. Dois contadores de tempo são implementados no BMC que automaticamente efetuam o *reset* do sistema se ele parar por alguma razão.

- FRB 2 - temporizador de 5 segundos. Se o processador primário não entrar em até 5 segundos o sistema efetuará o *reset* automaticamente alternando para o processador secundário (se instalado. Senão tentará novo *boot* pelo primário).
- FRB 3 - temporizador de 7 minutos. Se o sistema não acordar até o final do POST em 7 minutos será efetuado um novo *reset* do sistema e nova tentativa de *boot*. Assume-se que o processador primário falhou independente do que possa ter provocado o travamento. O processador primário é desligado e o sistema tentará *boot* do secundário (se instalado. Senão será tentado *boot* do primário novamente). Memória ou placa de expansão com defeito podem causar uma falha FRB 3.

Todas as falhas são registradas no histórico de eventos do sistema.

O sistema guardará na memória todos erros FRB e os exibirá ao final do POST até que a opção *Processor Retest* seja selecionada no utilitário de *Setup* da BIOS.

RQS nº 03/2005 - CN
CPMI - CORREIOS
Fls Nº 1535
Doc. 3653

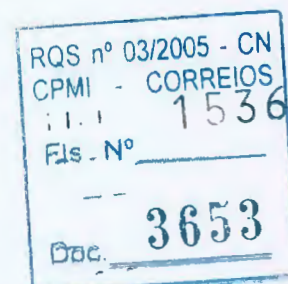


Primeira Inicialização do Sistema

Problemas que podem ocorrer na primeira inicialização do sistema são usualmente causados por instalação ou configuração incorretos. Defeitos de *hardware* são a causa menos freqüente.

Lista de Verificação

- ☐ Todos os cabos estão conectados e seguros corretamente?
- ☐ A placa de terminação do processador ou processadores estão totalmente ajustadas em seus *slots* na placa básica?
- ☐ Todas as placas suplementares ISA e PCI estão totalmente ajustadas em seus *slots* na placa do servidor?
- ☐ Todas as definições de chave e *jumper* na placa básica estão corretas?
- ☐ Todas as chaves de configuração e *jumpers* nas placas de expansão e periféricos estão corretos? Para verificar estas configurações, consultar a documentação dos fabricantes dos periféricos. Se aplicável, assegurar que não há conflitos – por exemplo, duas placas de expansão compartilhando a mesma interrupção.
- ☐ Todos os DIMMs SDRAM estão instalados corretamente?
- ☐ Todos os dispositivos periféricos estão instalados corretamente?
- ☐ Se existe uma unidade de disco rígido no sistema, ela está formatada ou configurada adequadamente?
- ☐ Todos os *drivers* de dispositivos estão instalados corretamente?
- ☐ A configuração feitas com o SSU estão corretas?
- ☐ O sistema operacional está adequadamente carregado? Consultar a documentação do sistema operacional.
- ☐ A chave *on/off* do sistema no painel frontal do servidor foi pressionada (a luz de sistema ligado está acesa)?
- ☐ O cabo de alimentação do sistema está ligado na tomada NEMA 5-15R para 100-120 V~ ou uma tomada NEMA 6-15R para 200-240 V~?
- ☐ Existe tensão na tomada da parede?



Executando Novos Softwares de Aplicação



Os problemas que ocorrem quando um novo *software* é executado são usualmente relacionados ao *software*. O *software* não funcionar por falha no equipamento é menos freqüente, especialmente se outros *softwares* funcionam corretamente.

Lista de Verificação

- ☐ O sistema atende aos requisitos mínimos de hardware para o *software*? Consultar a documentação do *software*.
- ☐ O *software* é uma cópia autorizada? Se não, providenciar uma, cópias não autorizadas freqüentemente não funcionam.
- ☐ Se o *software* for executado a partir de um disquete, a cópia está boa?
- ☐ Se o *software* for executado a partir de um disco CD-ROM, este disco está riscado ou sujo?
- ☐ Se o *software* for executado a partir de um disco rígido, o *software* está corretamente instalado? Todos os procedimentos necessários foram seguidos e os arquivos instalados?
- ☐ Todos os *drivers* de dispositivos estão instalados corretamente?
- ☐ O *software* está corretamente configurado para o sistema?
- ☐ O *software* está sendo utilizado corretamente?

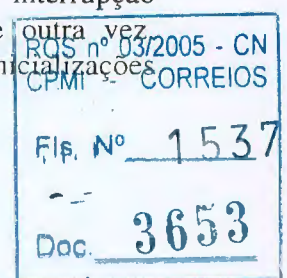
Se o problema persistir, contatar com o representante do serviço ao cliente do fabricante do *software*.

Após Executar o Sistema Corretamente

Problemas que ocorrem depois que o *hardware* e o *software* do sistema estão sendo executados corretamente freqüentemente indicam falha no equipamento. Entretanto, muitas situações que são fáceis de corrigir também podem causar tais problemas.

Lista de Verificação

- ☐ Se o *software* estiver sendo executado a partir de disquete, tentar uma nova cópia do mesmo.
- ☐ Se o *software* estiver sendo executado a partir de um disco de CD-ROM tentar um disco diferente para ver se o problema ocorre com todos os discos.
- ☐ Se o *software* for executado a partir de um disco rígido, tentar executar a partir de um disquete. Se o *software* executar corretamente, pode haver problemas com a cópia no disco rígido. Reinstalar o *software* no disco rígido, e tentar executá-lo novamente. Verificar se todos os arquivos necessários estão instalados.
- ☐ Se os problemas são intermitentes, pode ser um cabo com mau contato, sujeira no teclado (se o teclado não estiver funcionando corretamente), uma fonte de alimentação no limite, ou falhas aleatórias nos componentes.
- ☐ Se houver suspeita de que tenha ocorrido variação momentânea de voltagem, interrupção de energia ou "blackout" parcial, carregue novamente o *software* e tente outra vez (Sintomas de variações de voltagem incluem oscilação no vídeo, reinicializações inesperadas do sistema e a não resposta do sistema aos comandos do usuário).



OBSERVAÇÃO

Erros aleatórios nos arquivos de dados: Possíveis erros aleatórios nos arquivos de dados podem estar ocorrendo devido a picos de voltagem na rede elétrica. Os sintomas descritos acima, podem indicar que há picos de voltagem na rede elétrica. Pode-se instalar um filtro de linha entre a alimentação da parede a entrada do sistema.



Mais Procedimentos para Resolver Problemas

Esta seção proporciona uma abordagem mais detalhada para a identificação de um problema e a localização de sua origem.

Preparando o Sistema para Diagnóstico

ATENÇÃO

Desligar os dispositivos antes de desconectar os cabos: Antes de desconectar qualquer cabo de periférico do sistema, desligar o sistema e todos os dispositivos periféricos externos. A falha na execução desse procedimento pode causar danos ao sistema e/ou aos dispositivos periféricos.

1. Desligar o sistema e todos os dispositivos periféricos externos. Desconectar todos eles do sistema, com exceção do teclado e do monitor de vídeo.
2. Certificar-se de que o cabo de alimentação do sistema esteja ligado em uma tomada de CA apropriadamente aterrada.
3. Certificar-se de que o monitor de vídeo e o teclado estejam corretamente conectados ao sistema. Ligar o monitor de vídeo. Definir os controles de brilho e de contraste para pelo menos dois terços de seus intervalos máximos (ver a documentação fornecida com o monitor de vídeo).
4. Se o sistema operacional geralmente é carregado a partir da unidade de disco rígido, certificar-se de que não há disquete na unidade A. Caso contrário, colocar um disquete contendo o sistema operacional na unidade A.
5. Ligar o sistema. Se o LED da alimentação de energia não acende, consultar “Indicador Luminoso de Sistema Ligado não Acende”.

Monitorando o POST

Consultar o Capítulo 3.



Verificando a Operação Apropriada dos Indicadores Luminosos

08291

Ao determinar a configuração do sistema, o POST testa a presença de cada dispositivo de armazenamento de massa instalado no sistema. Na verificação de cada dispositivo, seu indicador luminoso de atividade deve ser ligado por um breve período. Verificar o seguinte:

- ☐ O indicador luminoso de atividade da unidade de disquete acende brevemente? Se não, ver "O Indicador Luminoso da Unidade de Disquete Ativa Não Acende".
- ☐ Se uma segunda unidade de disquete for instalada, o indicador luminoso acende brevemente? Se não, ver "O Indicador Luminoso da Unidade de Disquete Ativa Não Acende".
- ☐ Se existe uma unidade de disco rígido ou dispositivos SCSI instalados no sistema, o indicador luminoso da atividade da unidade de disco rígido no painel de controle acende brevemente? Se não, ver "O Indicador Luminoso de Atividade da Unidade de Disco Rígido não Acende".

Confirmando a Carga do Sistema Operacional

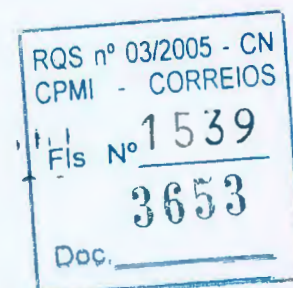
Após a inicialização do sistema, o *prompt* do sistema operacional é exibido na tela. O *prompt* varia de acordo com o sistema operacional. Se o *prompt* do sistema operacional não for exibido, consultar "Primeira Inicialização do Sistema" na página 80.

Problemas Específicos e Ações Corretivas

Esta seção fornece soluções possíveis para estes problemas específicos:

- O indicador luminoso de alimentação de energia não acende.
- Não há bipe e nem um padrão incorreto de bipes.
- Nenhum caractere é exibido na tela.
- Os caracteres são exibidos de maneira distorcida ou incorreta na tela.
- Os ventiladores de resfriamento do sistema não giram.
- O indicador luminoso de atividade da unidade de disquete não acende.
- O indicador luminoso de atividade da unidade de disco rígido não acende.
- O indicador luminoso de atividade da unidade de CD-ROM não acende.
- Existem problemas no *software* aplicativo.
- O CD-ROM de *boot* não é detectado.

Tentar as soluções na ordem indicada. Se o problema não for corrigido, contatar o serviço autorizado.



Indicador Luminoso de Sistema Ligado não Acende



Verificar o seguinte:

- ☐ O sistema está operando normalmente? Caso esteja, o LED de indicação de sistema ligado provavelmente está defeituoso ou o cabo do painel frontal da placa básica está solto.
- ☐ Existem outros problemas com o sistema? Caso existam, verificar os itens relacionados em "Os ventiladores do sistema não giram de forma apropriada".

Se todos os itens estiverem corretos, mas os problemas persistirem, contatar com o representante de serviços ou com o revendedor autorizado para obter ajuda.

Não Aparecem Caracteres na Tela

Verificar o seguinte:

- ☐ O teclado está funcionando? Verificar se o indicador luminoso "Num Lock" está funcionando.
- ☐ O monitor de vídeo está conectado e ligado?
- ☐ Os controles de luminosidade e de contraste do monitor de vídeo estão apropriadamente ajustados?
- ☐ As definições das chaves no monitor de vídeo estão corretas?
- ☐ O cabo de sinal do monitor de vídeo está instalado de forma apropriada?
- ☐ O controlador de vídeo incorporado à placa está ativado?

Se estiver sendo utilizada uma placa de expansão de vídeo, fazer o seguinte:

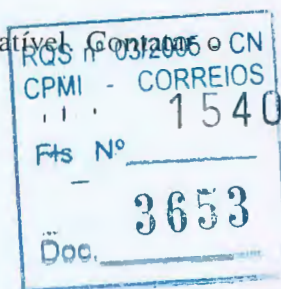
1. Verificar se a placa controladora de vídeo está totalmente inserida no conector da placa do servidor.
2. Reinicializar o sistema para que as alterações entrem em vigor.
3. Se os caracteres continuam não aparecendo depois de reinicializar o sistema e POST emitir um som de bip, anotar a sequência de bips ouvida. Esta informação pode ser útil para o serviço de assistência técnica. Ver "Códigos da Porta-80 e Códigos de Contagem Regressiva" na página 89.
4. Se não ouvir o bip e os caracteres não aparecerem, a tela do monitor de vídeo ou o controlador de vídeo podem estar defeituosos. Verificar isto tentando utilizar o monitor em outro sistema ou um monitor diferente neste sistema. Contatar o suporte ao usuário do vendedor.

Os Caracteres Estão Distorcidos ou Incorretos

Verificar o seguinte:

- ☐ Os controles de luminosidade e de contraste estão apropriadamente ajustados no monitor de vídeo? Consultar a documentação do fabricante.
- ☐ Os cabos de sinal do monitor de vídeo e de alimentação de energia estão apropriadamente instalados?

Se o problema persistir, o monitor pode estar defeituoso ou de tipo incompatível. Contatar o suporte ao usuário do vendedor.



Os Ventiladores do Sistema não Giram de Forma Adequada



Se os ventiladores de resfriamento do sistema não estão funcionando de forma adequada, os componentes do sistema podem estar danificados.

Verificar o seguinte:

- ☐ A alimentação em CA está disponível na tomada da parede?
- ☐ O cabo de alimentação de energia está adequadamente conectado ao sistema e à tomada da parede?
- ☐ A chave *on/off* foi pressionada?
- ☐ O indicador luminoso de alimentação de energia está aceso?
- ☐ Um dos motores do ventilador parou (utilizar o subsistema de gerenciamento do servidor para verificar o *status* dos ventiladores)?
- ☐ Os conectores de alimentação dos ventiladores estão adequadamente conectados à placa básica?
- ☐ O cabo do painel frontal está conectado à placa básica?
- ☐ Os cabos da fonte de alimentação estão adequadamente conectados à placa básica?
- ☐ Existem cabos em curto devido a cabos comprimidos ou *plugs* de conectores de energia forçados nos soquetes dos conectores de forma incorreta?

Se as chaves e as conexões estão corretas, e a alimentação CA está disponível na tomada da parede, entrar em contato com o representante de serviços ou com o revendedor autorizado para obter ajuda.

O Indicador Luminoso da Unidade de Disquete Ativa Não Acende

Verificar o seguinte:

- ☐ Os cabos de alimentação e de sinal da unidade de disquete estão apropriadamente instalados?
- ☐ Todas as chaves e *jumpers* relevantes da unidade de disquete estão corretamente definidos?
- ☐ A unidade de disquete está adequadamente configurada?
- ☐ O indicador luminoso de atividade da unidade de disquete está sempre aceso? Caso esteja, o cabo de sinal pode estar conectado de forma incorreta.

Se estiver utilizando a controladora de disquete incorporada à placa, utilizar o SSU para se certificar de que "Onboard Floppy" está definida como "Enabled". Se estiver utilizando uma placa controladora de disquete no *slot* de expansão deixar "Onboard Floppy" na posição "Disabled". Para executar o SSU, consultar o capítulo 3.

Se o problema persistir, pode existir um problema com a unidade de disquete, com a placa básica ou com o cabo de sinal da unidade. Entrar em contato com o representante de serviços ou com o revendedor autorizado para obter ajuda.



O Indicador Luminoso de Atividade da Unidade de Disco Rígido não Acende



Se houver um ou mais unidades de disco rígido no sistema, verificar o seguinte:

- ☐ Os cabos de alimentação e de sinal da unidade estão adequadamente instalados?
- ☐ As chaves de configuração e *jumpers* relevantes na unidade de disco rígido e na placa adaptadora estão na posição correta?
- ☐ A controlador IDE integrado à placa está habilitado? (Apenas para discos rígidos IDE)
- ☐ A unidade de disco rígido está adequadamente configurada?

OBSERVAÇÃO

O LED do disco rígido no painel frontal indica dispositivos IDE e SCSI: O indicador luminoso de atividade da unidade de disco rígido no painel frontal acenderá quando uma unidade de disco rígido IDE ou um dispositivo SCSI gerenciado pela controladora SCSI integrada à placa estiver sendo utilizada. Esse LED não sinaliza a atividade do CD-ROM.

O Indicador Luminoso de Atividade de Unidade de CD-ROM não Acende

Verificar o seguinte:

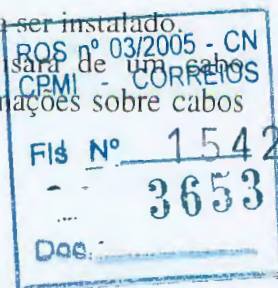
- ☐ Os cabos de alimentação e de sinal da unidade de CD-ROM estão adequadamente instalados?
- ☐ Todos os *jumpers* e chaves relevantes da unidade estão definidos corretamente?
- ☐ A unidade está adequadamente configurada?
- ☐ A controlador IDE incorporado à placa está ativada?

OBSERVAÇÃO

O LED do disco rígido no painel frontal indica dispositivos IDE e SCSI: O indicador luminoso de atividade da unidade de disco rígido no painel frontal acenderá quando uma unidade de disco rígido IDE ou um dispositivo SCSI gerenciado pela controladora SCSI integrada à placa estiver sendo utilizada. Esse LED não exibe a atividade do CD-ROM.

Não há Conexão com o Servidor

- ☐ Certificar-se que esteja utilizando os drivers que são distribuídos com o CD Configuration Software do sistema para a controladora de rede incorporada à placa.
- ☐ Certificar-se de que o driver está carregado e os protocolos ativos.
- ☐ Certificar-se de que o cabo da rede está firmemente ligado ao conector no painel traseiro do sistema e de que o Link LED da controladora da rede está aceso (visível no painel traseiro). Se o cabo estiver ligado mas o problema persistir, experimentar outro cabo.
- ☐ Certificar-se de que a porta do conector está configurada para o mesmo modo duplex que a controladora da rede.
- ☐ Conferir com o administrador de rede local qual software de rede precisa ser instalado.
- ☐ Se estiver conectando diretamente dois servidores (sem *host*), precisará de um cabo trançado (consultar a documentação do conector para obter mais informações sobre cabos trançados).



- ☐ Verificar os LEDs da controladora da rede que estão visíveis através de uma abertura no painel traseiro do sistema.

Problemas com a Rede

O servidor é interrompido quando os drivers são carregados.

- ☐ Alterar as definições de interrupção na BIOS PCI. Ver “Dicas de instalação de PCI” abaixo.

O diagnóstico é aprovado, mas há falhas na conexão.

- ☐ Certificar-se de que o cabo de rede está firmemente conectado.
- ☐ Certificar-se de especificar o tipo de *frame* correto no arquivo NET.CFG.

O Link LED não acende.

- ☐ Certificar-se de ter carregado os drivers de rede.
- ☐ Verificar todas as conexões de cabo.
- ☐ Experimentar outra porta no *hub*.
- ☐ Certificar-se de estar utilizando o tipo correto de cabo entre a placa de rede e o *hub*. Alguns *hubs* requerem um cabo trançado (*crossover*) enquanto outros requerem um cabo direto. Para obter mais informações sobre trançamento de cabos verificar a documentação do *hub*.

O Activity LED não acende.

- ☐ Certificar-se de ter carregado os drivers de rede corretos.
- ☐ A rede pode estar ociosa. Tentar acessar um servidor.

O Controlador de rede parou de funcionar quando foi instalada uma placa de expansão.

- ☐ Certificar-se de que o cabo está conectado à porta a partir do controlador integrado à rede.
- ☐ Certificar-se de que o BIOS PCI é atual. Consultar “Dicas de Instalação de PCI” abaixo.
- ☐ Certificar-se a outra placa suporta compartilhamento de interrupções. Ver também se o sistema operacional suporta interrupções compartilhadas. O OS/2 não suporta.
- ☐ Reapertar a placa de expansão.

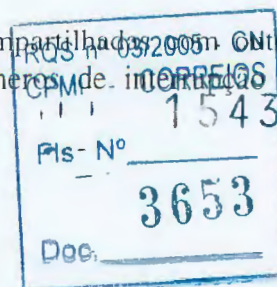
A placa de expansão parou de funcionar sem motivo aparente.

- ☐ Tentar reapertar o placa e depois tentar um *slot* diferente se necessário.
- ☐ Os arquivos do driver de rede podem ter sido corrompidos ou excluídos. Excluir e, em seguida, reinstalar os drivers.
- ☐ Executar o programa de diagnóstico.

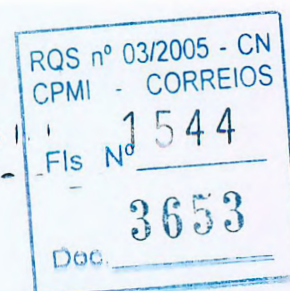
Dicas de Instalação de PCI

Algumas dicas comuns sobre PCI estão relacionadas abaixo.

- ☐ Reservar interrupções (IRQs) e/ou endereços de memória especificamente para adaptadores ISA. Isto previne que as placas PCI tentem utilizar os mesmos recursos que as placas ISA utilizam. Utilizar o SSU para manter controle dos recursos dos adaptadores ISA.
- ☐ Alguns drivers podem exigir interrupções que não estejam compartilhadas. Outros drivers PCI. O SSU pode ser utilizado para ajustar os números de interrupções de



dispositivos PCI. Talvez seja necessário alterar as definições em alguns drivers para que as interrupções não sejam compartilhadas.



Problemas com o *Software* Aplicativo



Se houver problemas com o *software* aplicativo, proceder da seguinte maneira:

- ☐ Verificar se o *software* foi configurado adequadamente para o sistema. Ver a documentação de instalação e operação do *software* para obter instruções de como configurar e utilizar o *software*.
- ☐ Experimentar outra cópia do *software* para ver se o problema está na cópia que está sendo utilizada.
- ☐ Certificar-se de que todos os cabos foram instalados corretamente.
- ☐ Verificar se os *jumpers* da placa básica foram definidos corretamente. Ver capítulo 5.
- ☐ Se outro *software* for executado corretamente no sistema, contatar com o revendedor sobre o *software* com falha.

Se o problema persistir, contatar o representante do serviço ao cliente do revendedor do *software*.

O CD-ROM de *Boot* Não foi Encontrado

Verificar o seguinte:

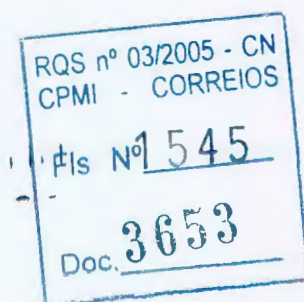
- ☐ A BIOS está configurada para permitir que o CD-ROM seja o primeiro dispositivo de *boot*?

Erros e Mensagens Informativas

Quando o sistema é ligado, o POST exibe mensagens informativas sobre o sistema. Se ocorrer alguma falha, o POST emitirá bipes codificados que indicam erros de *hardware*, *software* ou *firmware*. Se o POST exibir uma mensagem na tela do monitor de vídeo, o alto falante um bipe duplo quando a mensagem for exibida.

Códigos da Porta-80 e Códigos de Contagem Regressiva

Depois que a placa de vídeo tiver sido inicializado com êxito, a BIOS indicará a fase de testes atual durante o POST, enviando um código hexadecimal de 2 dígitos para a localização 80h de I/O. Se uma placa ISA do POST da porta-80h estiver instalada, ela exibirá o código de 2 dígitos em um par de LEDs de exibição hexadecimal.



Mensagens e Códigos de Erro do POST



As seguintes mensagens e códigos de erro são representantes de várias condições identificadas pela BIOS. As seqüências de caracteres e os números de erros exatos podem ser diferentes dos relacionados aqui.

Tabela 8. Códigos da Porta 80

Códigos Normais da Porta 80	Bips	Erro
02		Verificando o modo real
12		Restaurando a palavra de controle do processador durante o <i>boot</i> a quente
24		Colocando o segmento do registro ES para 4GB
04		Obtendo o tipo do processador
06		Inicializando o <i>hardware</i> do sistema
18		Inicializando o <i>timer</i> 8254
08		Inicializando os registradores do <i>PCIset</i> com os valores iniciais do POST
C4		Inicializando flag na CMOS
11		Carregando os registros alternativos com os valores iniciais do POST
0E		Inicializando I/O
0C		Inicializando os valores iniciais do POST
16	1-2-2-3	<i>Checksum</i> da ROM de BIOS
17		Desligando a cache
28		Determinando o tamanho automático DRAM
2A		Limpando a RAM básica de 512K
2C	1-3-4-1	Falhas de RAM no endereço linha xxxx*
2E	1-3-4-3	Falhas de RAM nos <i>bits</i> de dados xxxx* do <i>byte</i> inferior do <i>bus</i> de memória
2F		Inicializando cache L2 se habilitada na CMOS
38		Espelhando a ROM de BIOS do Sistema
20	1-3-1-1	Teste de atualização DRAM
29		Inicialização do Post Memory Manager (PMM)
33		Inicialização do Post Dispatch Manager
34		Testando CMOS
C1		Inicialização do Post error manager
09		Colocando o <i>flag</i> do POST
0A		Inicializando registradores do processador e microcódigo da CPU
3A		Determinando o tamanho automático do <i>cache</i>
0B		Habilitando o <i>cache</i> do processador
0F		Inicializando <i>bus</i> local IDE (não utilizado)
10		Inicializando Gerenciamento de Alimentação (não utilizado no Infoserver)
14		Inicializando o controlador de teclado
1A		Inicializando a controladora DMA 8237
1C		Efetando <i>reset</i> do controlador de interrupções programáveis
22	1-3-1-3	Testando o controlador de teclado 8742

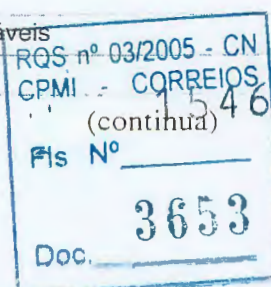




Tabela 8. Códigos da Porta 80 (continuação)

Códigos Normais da Porta 80	Bips	Erro
32		Testando a frequência do <i>clock</i> do processador e velocidade de <i>boot</i> do processador
67		Inicializando e registrando a outra CPU via SMM através do <i>bus</i> APIC
69		Inicializando manipulador SMI para todos processadores
00		Esperando o segundo processador executar o manipulador INIT SMI
F4		Saindo do manipulador SMI (processador secundário executou halt no SMI)
3C		Configurando os registradores avançados de <i>PCIset</i> e <i>reset</i> co coprocessador
3D		Carregando os registros alternativos com os valores de CMOS
42		Inicializando vetores de interrupção
46	2-1-2-3	Verificando a mensagem de <i>copyright</i> da ROM
45		Inicializando todos dispositivos pré-PNP
49		Inicializando <i>bus</i> PCI e dispositivos (também lê ESCD e aloca recursos)
48		Comparando a configuração do vídeo com a da CMOS (VGA ou MDA)
4A		Inicializando todos os adaptadores de vídeo no sistema
4C		Espelhando a ROM de BIOS de vídeo
24		Colocando o segmento do registro ES para até 4GB (CPU em <i>big real mode</i>)
59		Inicialização do Post display manager (erros de vídeo agora visíveis)
22		Testando teclado (somente na "warn reset")
52		Testando o controlador de teclado
54		Ligando o clique do teclado, se habilitado
76		Habilitando teclado
58	2-2-3-1	Testando interrupções inesperadas
4B		Mostrando a tela <i>QuietBoot</i> (não utilizada no N440BX)
4E		Mostrando mensagens de <i>copyright</i>
50		Mostrando o tipo e a velocidade do processador
51		Inicialização EISA (Não utilizado no N440BX)
5A		Exibindo mensagem "Press F2 to enter SETUP"
5B		Desabilitando a cache L1 da CPU para teste de memória
5C		Testando RAM entre 512 e 640k
60		Testando memória estendida
62		Testando linhas de endereço da memória estendida
64		Saltando para <i>User Patch1</i>
66		Configurando de registradores avançados de <i>cache</i>
68		Habilitando <i>caches</i> externos e do processador
6A		Mostrando o tamanho do <i>cache</i> externo
6C		Mostrando mensagens sobre espelhamento
6E		Mostrando segmentos não disponíveis
70		Mostrando mensagens de erro

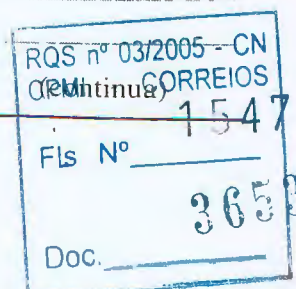




Tabela 8. Códigos da Porta 80 (continuação)

Códigos Normais da Porta 80	Bips	Erro
72		Verificando erros de configuração
74		Testando relógio de tempo real
7C		Colocando vetores de interrupção no <i>hardware</i>
7E		Testando coprocessador se presente
80		Não utilizado
88		Inicializando a área de Dados da BIOS, <i>timeout</i> para controladora de disco rígido, paralela, serial. Limpa <i>flag</i> desligando CMOS
8A		Inicializando a Área de Dados BIOS Estendida
81		Inicialização de dispositivos <i>Late post core</i>
87		Configurando dispositivos MCD
85		Inicializando os dispositivos PnP ISA compatíveis com PC, serial, paralela etc.
82		Não utilizado
84		Limpendo interrupções da detecção das portas COM
86		Redireção de Console inicializada
83		Configurando controlador de disco integrado
89		Habilitando NMI
8C		Inicializando o controlador de unidade de disquete
90		Detectando e inicializando os discos rígidos
8B		Detectar e testar o <i>mouse</i> ou dispositivo auxiliar no controlador de teclado.
95		Instalando CD-ROM para <i>boot</i>
92		Saltando para <i>User Patch2</i>
C5		Inicializando áreas GPNV do DMI
98	1-2	Procurando por ROMs de opção. Um bip longo, dois curtos se falhar
93		Procurando por memória <i>User Flash</i> ROM com tabela de inicialização de MP (inicia segundo processador e o coloca em <i>halt</i>)
9C		Configurando Administrador de energia (não usado)
9D		Habilita segurança
9E		Habilitando interrupções de <i>hardware</i>
A0		Colocando o horário do dia
A2		Verificando chave do teclado
A4		Inicializando a taxa de repetição do teclado
C2		Inicializa tabela DMI
C3		Registra erros de POST através do administrador de erros de POST e dos SEL e BMC. Atualizada bits VID e presença de memória para o BMC e erros FRB, (watchdog timeout, BIST ou falhas de CPU).
A8		Apagando a mensagem F2
AA		Procurando pelo acionamento da tecla F2
AC		Entrando <i>SETUP</i>

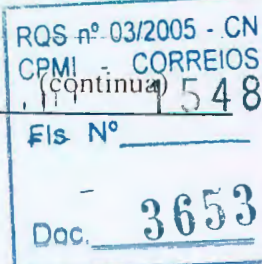
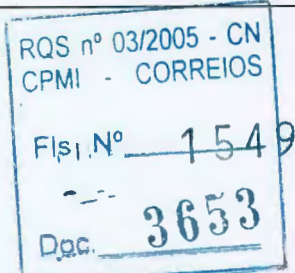




Tabela 8. Códigos da Porta 80 (continuação)

Códigos Normais da Porta 80	Bips	Erro
AE		Retirando o <i>flag</i> do POST
B0		Liga o <i>boot</i> seguro se habilitado (segurança do painel frota, vídeo desligado, proteção de escrita na unidade de disquete) Verifica erros
B2		POST concluído – preparando para inicializar Sistema Operacional
B4	1	Um bip curto antes de iniciar a carga do sistema
B5		Exibe <i>Quietboot</i> (não utilizado)
BE		Apagando a tela
B6		Verificando a senha (opcional)
BC		Apagando as verificações de paridade
BA		Não utilizado
B7		Configuração ACPI (tabela de configuração na memória e BDA)
BD		Mostrando o menu <i>MultiBoot</i> se for pressionado ESC
BF		Exibindo resumo de configuração do sistema (se habilitado)
8F		Obtendo total de discos rígidos e colocando no BDA
91		Programando discos rígidos IDE (timing, PIO modem, etc)
9F		Salvando o número total de discos rígidos (SCSI e ATA) no BDA
97		Completando tabela MP (<i>checksum</i>)
99		Verificando discos rígidos <i>smart</i>
C7		Preparando para carregar o sistema operacional, limpando áreas gráficas e PMM.
C0		Tentando o <i>boot</i> com o INT 19 retorna para modo de vídeo 3 desabilita PMM retorna para modo real desabilita gate A20 limpa memória do sistema efetua <i>reset</i> na pilha chama INT 19 Manipulação de erros de POST (pode ocorrer a qualquer tempo durante o POST)
DO		Erros do Administrador de interrupções
D2		Erro de interrupção não conhecida
D4		Erros de interrupção pendentes
D6		Inicializando erros da ROM opcional
D8		Erro ao desligar
DA		Movendo Blocos Estendidos
DC		Erro <i>Shutdown</i> 10





Erros de POST e Mensagens

Os códigos e mensagens de erro a seguir são representativas para as várias condições identificadas na BIOS. A sequência exata e o número do erro podem ser diferentes dos relacionados abaixo.

Tabela 9. Erros de POST e Mensagens

Código	Mensagem de Erro	Pausa na ocorrência
0162	BIOS unable to apply BIOS update to processor 1	Sim
0163	BIOS unable to apply BIOS update to processor 2	Sim
0164	BIOS does not support current stepping for processor 1	Sim
0165	BIOS does not support current stepping for processor 2	Sim
0200	Failure Fixed Disk	Não
0210	Stuck Key	Não
0211	Keyboard error	Não
0212	Keyboard Controller Failed	Sim
0213	Keyboard locked - Unlock key switch	Sim
0220	Monitor type does not match CMOS - Run SETUP	Não
0230	System RAM Failed at offset	Não
0231	Shadow RAM Failed at offset	Não
0232	Extended RAM Failed at offset	Não
0250	System battery is dead - Replace and run SETUP	Sim
0251	System CMOS checksum bad - Default configuration used	Sim
0260	System de error	Não
0270	Real time clock error	Não
0297	ECC Memory error in base (extended) memory test in Bank xx	Sim
02B2	Incorrect Drive A type - run SETUP	Não
02B3	Incorrect Drive B type - run SETUP	Não
02D0	System cache error - Cache disabled	Não
02F5	DMA Test Failed	Sim
02F6	Software NMI Failed	Não
0401	Invalid System Configuration Data - run configuration utility	Não
None	System Configuration Data Read Error	Não
0403	Resource Conflict	Não
0404	Resource Conflict	Não
0405	Expansion ROM not initialized	Não
0406	Warning: IRQ not configured	Não
0504	Resource Conflict	Error
0505	Expansion ROM not initialized	Não
0506	Warning: IRQ not configured	Não
0601	Device configuration changed	Não
0602	Configuration error - device disabled	Não
8100	Processor 0 failed BIST	Sim
8101	Processor 1 failed BIST	Sim

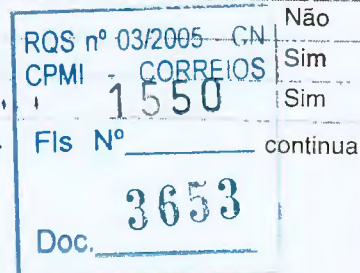
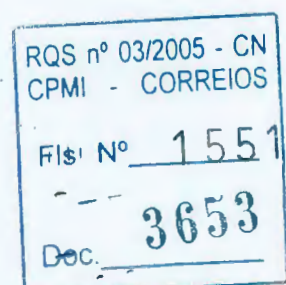




Tabela 9. Erros de POST e Mensagens (continuação)

Código	Mensagens de Erro	Pausa na ocorrência
8104	Processor 0 Internal Error (IERR) failure	Sim
8105	Processor 1 Internal Error (IERR) failure	Sim
8106	Processor 0 Thermal Trip failure	Sim
8107	Processor 1 Thermal Trip failure	Sim
8108	Watchdog Timer failed on last boot, BSP switched	Sim
810A	Processor 1 failed initialization on last boot	Sim
810B	Processor 0 failed initialization on last boot	Sim
810C	Processor 0 disabled, system in Uni-processor mode	Sim
810D	Processor 1 disabled, system in Uni-processor mode	Sim
810E	Processor 0 failed FRB Level 3 timer	Sim
810F	Processor 1 failed FRB Level 3 timer	Sim
8110	Server Management Interface failed to function	Sim
8120	IOP sub-system is not functional	Sim
8150	NVRAM Cleared by <i>Jumper</i>	Sim
8151	NVRAM Checksum Error, NVRAM cleared	Sim
8152	NVRAM Data Invalid, NVRAM cleared	Sim

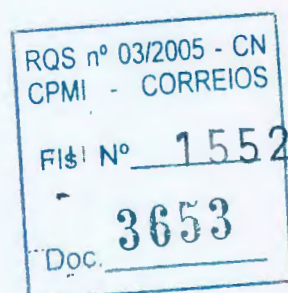


5 Referência Técnica



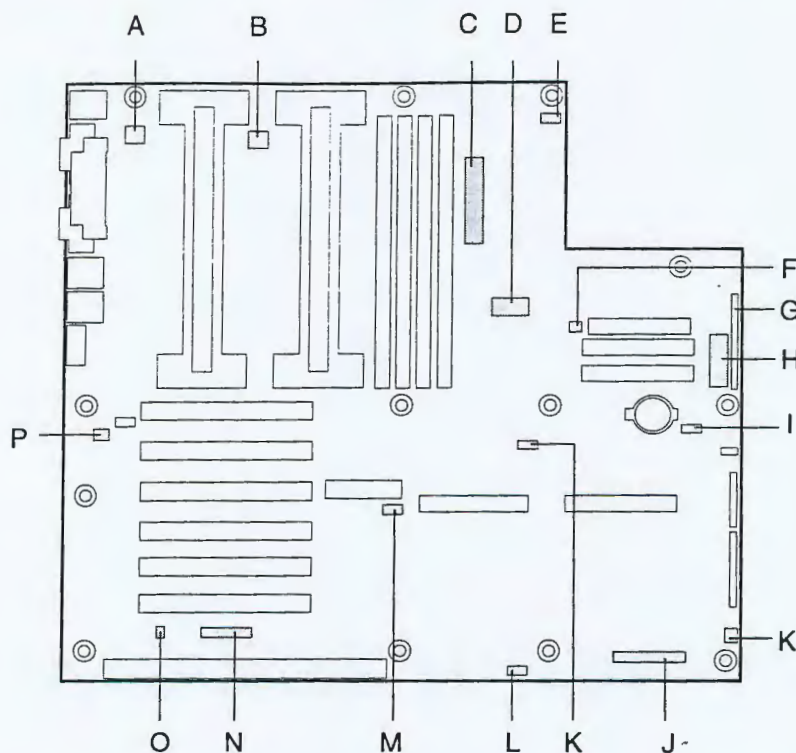
Este capítulo descreve o seguinte:

- Especificações do ambiente
- Interrupções de placa
- Avisos sobre EMC (Compatibilidade Eletromagnética)



Conectores

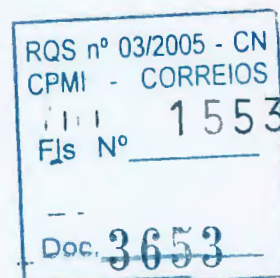
A figura mostra localização de conectores na placa básica. Esta seção fornece informações sobre conectores.



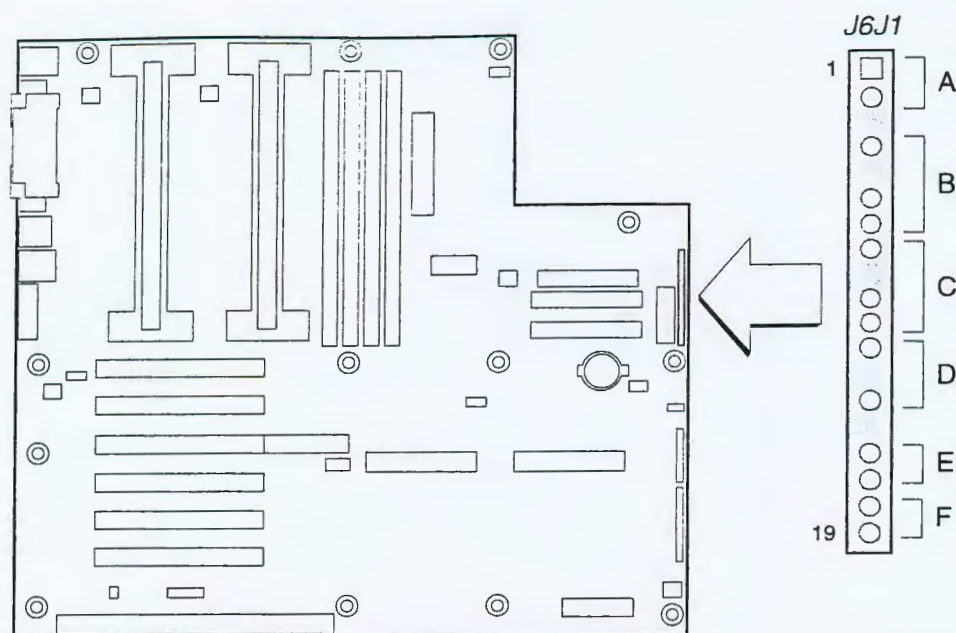
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Figura 15. Localizações de Conectores

- | | |
|--|---|
| A. Conector do ventilador do dissipador proc 2 | J. Conector do ventilador 1 |
| B. Conector do ventilador do dissipador proc 1 | K. Conector do SMM (módulo monitor do servidor) |
| C. Conector de alimentação principal (Main) | L. Conector para Wake on LAN externo |
| D. Conector de alimentação auxiliar ATX | M. Conector de BUD |
| E. SM IMB | N. Conector do LED de disco rígido |
| F. Conector do ventilador 2A | O. Cabeçalho ICMB |
| G. Conector do painel frontal ATX | P. Conector de intrusão no gabinete |
| H. Conector do painel frontal, 16 pinos | Q. Conector do ventilador 2B |
| I. ISOL IMB | |



Conector do Painel Frontal ATX



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Figura 16. Conectores do Painel Frontal ATX

Tabela 10. Pinagem de Conectores do Painel Frontal ATX

Conector	Pino	Sinal
A. Chave liga/desliga	1	Chave liga/desliga
	2	TERRA
	3	N/C
B. LED de atividade do disco rígido	4	Corrente limitada +5V
	5	Chave
	6	LED de atividade do disco rígido
	7	Corrente limitada +5V
C. Alto falante	8	TERRA
	9	N/C
	10	PIEZO_IN
	11	SPKR_HDR
D. LED de alimentação	12	Corrente limitada +5V
	13	N/C
	14	TERRA
	15	N/C
E. Chave de reinicialização	16	TERRA
	17	Chave de reinicialização
F. Chave de inatividade	18	TERRA
	19	Chave de inatividade

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CPMI - CORREIOS
Fls. Nº 1554
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Conector de Alimentação Principal (Main)



Tabela 11. Pinagem do Conector de Alimentação Principal (Main)

Pino	Sinal	Pino	Sinal
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	COM	15	COM
4	+5V	16	PS_ON
5	COM	17	COM
6	+5V	18	COM
7	COM	19	COM
8	PWR_OK	20	-5V
9	+5VSB	21	+3.3V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM

Interface do Ventilador

A placa básica possui cinco conectores de ventilador com 3 pinos, blindados e polarizados. Dois deles encontram-se próximos aos soquetes dos processadores (um para cada processador) para serem utilizados por dissipadores de calor com ventiladores com tacômetro.

OBSERVAÇÃO

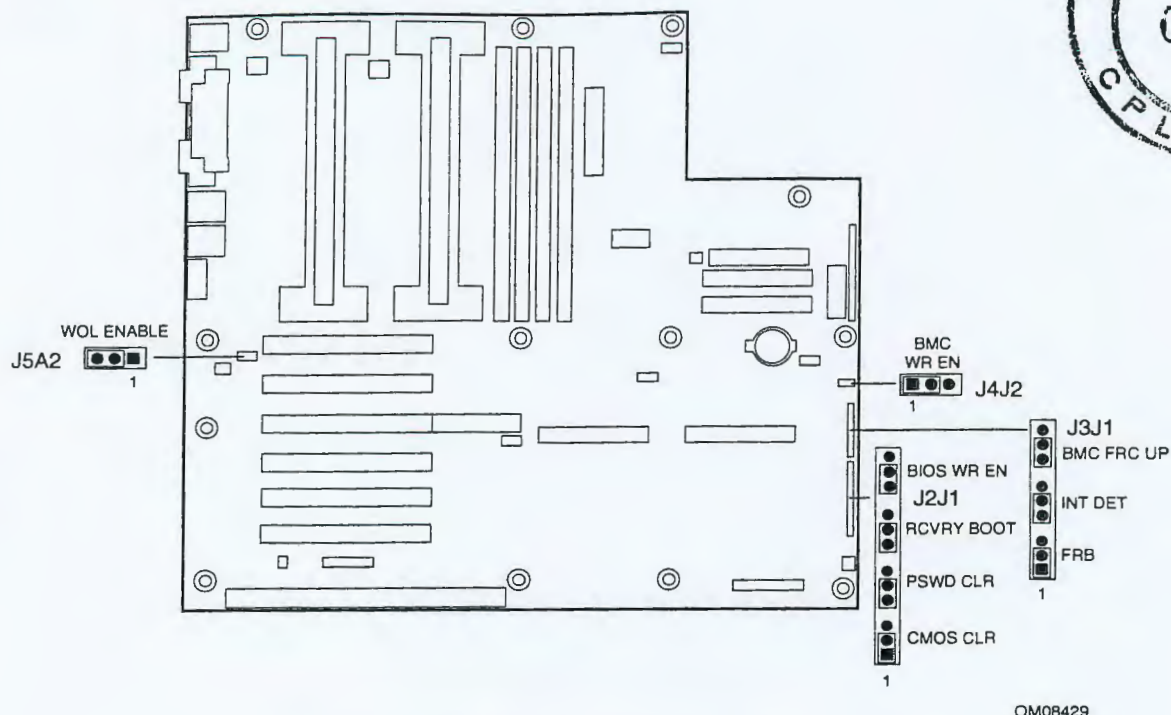
Os conectores dos ventiladores 2A e 2B não podem ser utilizados simultaneamente. Se ligar ventiladores em ambos os conectores, os ventiladores não funcionarão de maneira adequada.

Tabela 12. Pinagem de Conectores do Ventilador

Pino	Sinal
1	Terra
2	+12V
3	Sensor do ventilador



Jumpers da Placa Básica

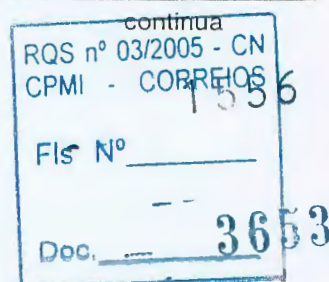


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Figura 17. Localizações de Jumpers

Tabela 13. Resumo de Jumpers da Placa Básica

Bloco de Jumpers	Nome do jumper	Pinos (padrão em negrito)	O ele faz após o reset
J5A2	WOL ENABLE	1-2, Desativado	Desativa o recurso Wake On LAN. Caso a fonte de alimentação não forneça 0.8 A de corrente de espera de +5 V, é necessário mover o jumper Ativar WOL para essa posição.
		2-3, Ativado	Ativa o recurso Wake On LAN.
J4J2	BMC WR EN	1-2, Proteger	O bloco inicialização BMC está protegido contra gravação.
		2-3, Apagar/Programar	O bloco de inicialização BMC pode ser apagado e programado.
J3J1	FRB	1-2, Ativar	A operação FRB está ativada (o sistema é inicializado a partir do processador 1 se o processador 0 falhar).
		2-3, Desativar	O FRB está desativado.
J3J1	INT DET	5-6, Ativar	A chave instalada no gabinete indica quando a tampa foi removida.
		6-7, Desativar	A chave de intrusão encontra-se desativada.



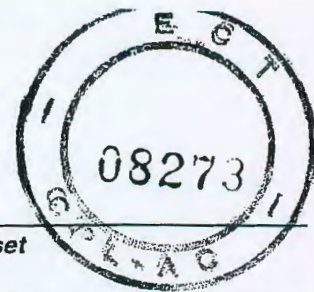


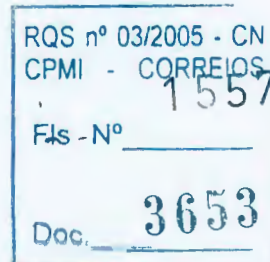
Tabela 13. Resumo do Jumper da Placa Básica (continuação)

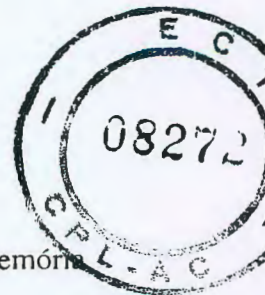
Bloco de Jumpers	Nome do Jumper	Pinos (padrão em negrito)	O ele faz após o reset
J3J1	BMC FRC UP	9-10, Normal	O sistema é inicializado normalmente.
		10-11, Programar	O sistema tenta atualizar o firmware do BMC.
J2J1	CMOS CLR	1-2, Proteger	Preserva o conteúdo da NVRAM.
		2-3, Apagar	Substitui o conteúdo da NVRAM com a configuração padrão do fabricante.
J2J1	PSWD CLR	5-6, Proteger	Mantém a senha de sistema atual.
		6-7, Apagar	Limpa a senha.
J2J1	RCVRY BOOT	9-10, Normal	O sistema tenta inicializar utilizando o BIOS armazenado em memória <i>flash</i> .
		10-11, Recuperação	O BIOS tenta executar uma inicialização de recuperação, carregando o código do BIOS a partir de um disco flexível para o dispositivo <i>flash</i> . Tipicamente, isso é utilizado quando o código do BIOS tiver sido corrompido.
J2J1	BIOS WR EN	13-14, Proteger	O bloco de inicialização do BIOS está protegido contra gravação.
		14-15, Apagar/Programar	O bloco de inicialização do BIOS pode ser apagado e programado.

Procedimento Geral para Alterar a Definição do Jumper

O procedimento geral abreviado para alterar uma definição de configuração é o mesmo para a maioria das funções de *jumper*.

1. Observar a segurança e as precauções ESD do início deste capítulo.
2. Desligar todos os periféricos conectados e a alimentação do sistema, e desconectar o cabo de alimentação CA.
3. Remover a tampa lateral. Não será necessário remover a placa básica do gabinete e, provavelmente, não será necessário remover as placas de expansão.
4. Localizar os *jumpers* de configuração na borda da placa básica, na parte frontal do sistema.
5. Mover os *jumpers* para pinagem especificada para a configuração desejada.
6. Reinstalar a tampa lateral, conectar o cabo de alimentação e ligar o sistema para que a alteração seja efetivada.
7. Dependendo da função do *jumper*, talvez seja necessário repetir essas etapas para que o *jumper* voltar a sua definição original.





Jumper CMOS

Os *jumper*s nos pinos 1, 2 e 3 controlam se as definições armazenadas na NVRAM (memória não-volátil) da CMOS são preservados durante o *reset* do sistema.

Procedimento para restaurar a CMOS e o RTC do sistema aos valores padrão:

1. Consultar "Procedimento Geral para Alterar a Definição do *Jumper*" na página 101.
2. Mover o *jumper* da CMOS dos pinos 1 e 2 para os pinos 2 e 3 (a posição Clear CMOS memory).
3. Reinstalar a tampa lateral por segurança e conectar o cabo de alimentação ao sistema.
4. Ligar o sistema. Esperar o POST ser concluído e as mensagens "NVRAM cleared by *jumper*" e "Press F2 to enter *Setup* (Pressionar F2 para entrar no *Setup*)" serem exibidas. Isso reprogramará automaticamente a CMOS e o RTC a suas definições padrão.
5. Entrar no *Setup* e fazer as alterações necessárias (por exemplo, alterar o dispositivo de boot). Pressionar F10 para salvar a nova configuração do *Setup* e sair do *Setup*.
6. Desligar o sistema e desconectar o cabo de alimentação do sistema.
7. Remover a tampa lateral novamente.
8. Mover o *jumper* dos pinos 2 e 3 de volta para os pinos 1 e 2.
9. Reinstalar a tampa lateral e conectar o cabo de alimentação ao sistema.
10. Executar o *Setup* de BIOS ou o SSU para verificar as definições corretas. Ver o capítulo 3.

Jumper de Senha

O *jumper* nos pinos 5, 6 e 7 controlar se as senhas de usuários e administrativas serão mantidas ou apagadas durante a reinicialização do sistema.

Procedimento para apagar a senha atual e digitar uma nova:

1. Consultar "Procedimento Geral para Alterar a Definição do *Jumper*" na página 101.
1. Mover o *jumper* de senha dos pinos 5 e 6 para os pinos 6 e 7.
2. Reinstalar a tampa lateral para sua segurança e conectar o cabo de alimentação ao sistema.
3. Ligar o sistema e esperar a conclusão do POST. Essa ação apaga a senha automaticamente.
4. Desligar o sistema e desconectar o cabo de alimentação.
5. Remover novamente a tampa lateral.
6. Mover o *jumper* dos pinos 6 e 7 de volta para os pinos 5 e 6.
7. Reinstalar a tampa lateral e conectar o cabo de alimentação ao sistema.
8. Executar o SSU para especificar uma nova senha. Consultar o capítulo 3.





Jumper Recovery Boot

O *jumper* nos pinos 9, 10 e 11 controla se o sistema vai tentar inicializar utilizando a BIOS programada na área de bloco de inicialização da memória *flash*. Só deve ser utilizado se a área operacional do BIOS for danificada ou precisar ser atualizada. Antes de fazer isso, entrar em contato com o representante de serviços local.

Procedimento para desabilitar a recuperação do *boot*:

1. Consulta "Procedimento Geral para Alterar a Definição do *Jumper*" na página 101.
2. Mover o *jumper* para recuperar o *boot* das posições 9 e 10 para as posições 10 e 11.
3. Reinstalar a tampa lateral por segurança e conectar o cabo de alimentação ao sistema.
4. Ligar o sistema, e inserir o disquete com o utilitário *Flash Memory Update Utility* na unidade A. Após a inicialização do sistema, o alto falante emite um único bipe e o processo de recuperação é iniciado. Isso demora de três minutos. Quando o processo de recuperação for concluído, o alto falante emitirá dois bipes.

No modo de recuperação, não existe exibição de tela no monitor. O teclado é desativado assim que o sistema recupera o BIOS automaticamente. Os seguintes códigos de bipe descrevem o *status* da recuperação.

Código de bipe	Mensagem
2	Conclusão bem sucedida, sem erros.
4	O sistema não consegue dar <i>boot</i> do disquete. Disquete pode não conter sistema.
Série contínua bipes breves	Os arquivos de recuperação de BIOS incorretos estão sendo usados e/ou o <i>jumper</i> da memória <i>flash</i> está na posição incorreta.

5. Desligar o sistema, desconectar o(s) cabo(s) de alimentação CA e remover a tampa lateral esquerda.
6. Mover o *jumper* dos pinos 9 e 10 para os pinos 10 e 11 para ativar o modo de normal de *boot*.
7. Recolocar a tampa lateral esquerda, remover o disquete da unidade A e conectar o(s) cabo(s) de alimentação ao sistema.
8. Após executar o modo de recuperação especial, executar o SSU para especificar uma nova senha. Consultar o capítulo 3.

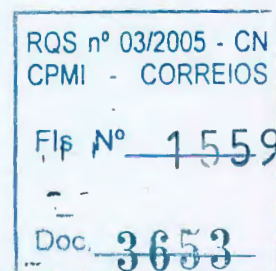
Jumper de Proteção de Bloco de Boot

O *jumper* nos pinos 13, 14 e 15 controla se o bloco de *boot* da BIOS será protegido contra apagamento e reprogramação.



ATENÇÃO

Deixar o *jumper* de bloco de *boot* na posição padrão de fábrica: A programação incorreta do bloco de *boot* impedirá o sistema de evitar o *boot*. A programação só deve ser feita por uma pessoa qualificada tecnicamente. O procedimento requer um "Utilitário de Atualização de Bloco de Inicialização" especial. Para obter mais informações, entrar em contato com o distribuidor ou com representante de vendas.





Procedimento para permitir o apagamento e a reprogramação do bloco de *boot*:

1. Consultar “Procedimento Geral para Alterar a Definição do *Jumper*” na página 101.
2. Mover o *jumper* do bloco de *boot* dos pinos 13 e 14 para os pinos 14 e 15 para apagar e reprogramar o bloco de *boot* do BIOS.
3. Reinstalar a tampa lateral por segurança e conectar o cabo de alimentação ao sistema.
4. Executar o utilitário de atualização do bloco de *boot*.
5. Desligar o sistema e desconectar o cabo de alimentação.
6. Remover a tampa lateral.
7. Mover o *jumper* dos pinos 14 e 15 de volta para os pinos 13 e 14 para proteger contra gravação o bloco de *boot* do BIOS.
8. Reinstalar a tampa lateral e conectar o cabo de alimentação.

***Jumper* para Habilitar o *Timer* FRB**

O *jumper* nos pinos 5, 6 e 7 controla os *timers* do FRB.

Procedimento para desativar o *timer* do FRB:

1. Ver “Procedimento Geral para Alterar a Definição do *Jumper*” na página 101.
2. Mover o *jumper* de inicialização de recuperação dos pinos 5 e 6 para os pinos 6 e 7.
3. Reinstalar a tampa lateral por segurança e conectar o cabo de alimentação ao sistema.
4. Ligar o sistema e aguardar a conclusão do POST.
5. Executar o SSU para configurar o sistema. Consultar o capítulo 3.

***Jumper* de Detecção de Intrusão do Gabinete**

O gabinete contém uma chave de alarme que enviará um sinal de notificação ao software de gerenciamento do servidor se uma tampa for removida. O *jumper* nos pinos 9, 10 e 11 controla se esse recurso de alarme será ativado ou desativado.

Procedimento para desativar a chave de intrusão do gabinete:

1. Consultar “Procedimento Geral para Alterar a Definição do *Jumper*” na página 101.
2. Mover o *jumper* de detecção de intrusão do gabinete dos pinos 9 e 10 para os pinos 10 e 11 para desativar a chave de alarme.
3. Reinstalar a tampa lateral para sua segurança e conectar o cabo de alimentação ao sistema.
4. Ligar o sistema e aguardar a conclusão do POST.
5. Executar o SSU para configurar o sistema. Ver o capítulo 3.

Para ativar a chave de intrusão, seguir as etapas acima, mas mover o *jumper* de volta para os pinos 9 e 10.

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6 Informações Regulamentares e de Integração



Conformidade com os Regulamentos

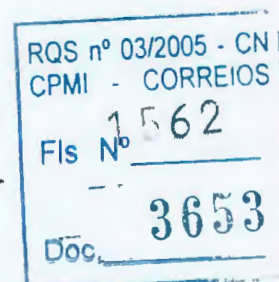
Esta placa básica do servidor, quando instalada corretamente em um sistema *host* compatível, está em conformidade com as seguintes regulamentações de segurança e da EMC.

Tabela 14. Regulamentos de segurança

Regulamento	Título
UL 1950/CSA950-95, 3ª edição, datada 28-07-95	Padrões de Segurança para Equipamentos de Tecnologia de Informação, incluindo Equipamentos Elétricos de Negócios. (Estados Unidos e Canadá)
EN 60 950, 2ª Edição, 1992 (com as Emendas 1, 2, 3 e 4)	Padrões de Segurança para Equipamentos de Tecnologia de Informação, incluindo Equipamentos Elétricos de Negócios. (Comunidade Européia)
IEC 950, 2ª edição, 1991 (com as Emendas 1, 2, 3 e 4)	Padrões de Segurança para Equipamentos de Tecnologia de Informação, incluindo Equipamentos Elétricos de Negócios. (Internacional)
EMKO-TSE (74-SEC) 207/94	Resumo das alterações nórdicas feitas ao padrão EN 60950. (Noruega, Suécia, Dinamarca e Finlândia)

Tabela 15. Regulamentos da EMC

Regulamento	Título
FCC Classe B	Título 47 do Código de Regulamentação Federal, Artigos 2 e 15, Subitem B, referentes a emissores não intencionais de radiação. (Estados Unidos)
CISPR 22, 2ª Edição, 1993 (Classe B)	Limites e métodos para medição de Características de Interferências de Rádio em Equipamentos de Tecnologia de Informação. (Internacional)
VCCI Classe B (ITE)	Regulamentos para Implementação de Controle Voluntário de Interferências de Frequências de Rádio por Equipamentos de Processamento de Dados e Máquinas Eletrônicas para Escritório. (Japão)
EN55022 (1994) (Classe B)	Limites e métodos para medição de Características de Interferências de Rádio em Equipamentos de Tecnologia de Informação. (Europa)
EN50082-1 (1992)	Padrão de Imunidade Genérica; a conformidade atual é determinada através de testes com IEC 801-2, -3 e -4. (Europa)
ICES-003 (1997)	Padrão para Equipamentos Causadores de Interferências, Aparelhos Digitais, Classe B (Incluindo CRC c. 1374) (Canadá).



O conjunto de circuito impresso tem as seguintes marcas de certificação de produto:

- Marca de Reconhecimento Conjunta do UL: Consiste de um pequeno c seguido por um UR invertido e estilizado e por um pequeno US (lado dos componentes)
- Marca de reconhecimento do fabricante: Consiste em logotipo do fabricante reconhecido pelo UL, junto com o coeficiente de inflamabilidade (94V-0).
- Número de Arquivo de UL das placas-mães: E139761 (lado dos componentes)
- Número de Série PB: Número de peça da placa de circuitos Intel XXXXXX-ZZZ (Lado de soldagem).
- Marca "+" da bateria: localizada ao lado do componente da placa, bem próxima ao compartimento da bateria.
- Marca de CE: A marca de CE também deve estar na embalagem.
- Marca de tique C- australiana: Consiste em um círculo sólido com uma marca de seleção branca e o código de fornecedor N232.

Instruções para Instalação



ATENÇÃO

Seguir estas instruções para satisfazer as medidas de segurança e as exigências regulamentares ao instalar este conjunto de placa.

Ler e seguir cuidadosamente todas estas instruções e as instruções fornecidas com o computador *host* e módulos associados. Se as instruções do computador *host* estiverem inconsistentes com estas instruções ou com as instruções dos módulos associados, entrar em contato com o departamento de suporte técnico do fornecedor para saber o procedimento para garantir que seu computador esteja em conformidade com as medidas de segurança e regulamentos exigidos. O não cumprimento destas instruções e das instruções dos fornecedores do computador *host* e módulos aumentará os riscos à segurança e poderá resultar na não conformidade com a legislação e normas locais.

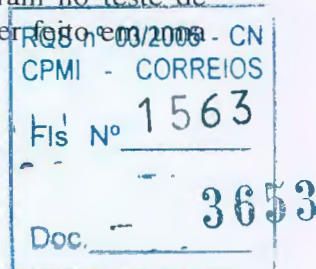
Certificação do EMC

Antes da integração do computador, certificar-se de que o gabinete do *host*, a fonte de alimentação e outros módulos tenham passado no teste de certificação do EMC.

Nas instruções sobre a instalação para gabinete do *host*, fonte de alimentação e outros módulos, preste atenção no seguinte:

- Certificações (ver "Ensure Host Computer and Accessory *Module* Certifications " na página 108.)
- Blindagem e filtragem de cabos externos de I/O.
- Exigências para montagem, conexão terra e soldagem.
- Ajustar de conectores, já que a combinação incorreta de conectores pode ser perigosa.

Se o gabinete do *host*, a fonte de alimentação e outros módulos não passaram no teste de certificação EMC apropriado antes da integração do computador, este deve ser feito em uma amostra representativa do computador que acabou de ser concluído.



Ensure Host Computer and Accessory Module Certifications

Make sure that the host computer, any added subassembly (such as a board or drive assembly including internal or external wiring), are certified for the region(s) where the end-product will be used. Marks on the product are proof of certification. Certification marks are as follows:

In Europe

The CE marking signifies compliance with all relevant European requirements. If the host computer does not bear the CE marking, obtain a supplier's Declaration of Conformity to the appropriate standards required by the European EMC Directive and Low Voltage Directive. Other directives, such as the Machinery and Telecommunications Directives, may also apply depending on the type of product. No regulatory assessment is necessary for low voltage DC wiring used internally or wiring used externally when provided with appropriate overcurrent protection. Appropriate protection is provided by a maximum 8-Amp current limiting circuit or a maximum 5-Amp fuse or positive temperature coefficient (PTC) resistor. This Intel server board has PTCs on all external ports that provide DC power externally.

In the United States

A certification mark by a Nationally Recognized Testing Laboratory (NRTL) such as UL, CSA, or ETL signifies compliance with safety requirements. External wiring must be UL Listed and suitable for the intended use. Internal wiring must be UL Listed or Recognized and rated for applicable voltages and temperatures. The FCC mark (Class A for commercial or industrial only or Class B for residential) signifies compliance with electromagnetic interference requirements.

In

Canada

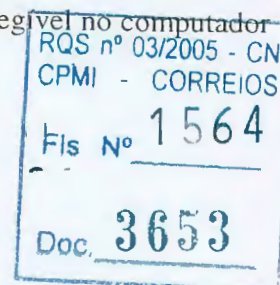
A nationally recognized certification mark such as CSA or cUL signifies compliance with safety requirements. No regulatory assessment is necessary for low-voltage DC wiring used internally or wiring used externally when provided with appropriate overcurrent protection. Appropriate protection is provided by a maximum 8-Amp current limiting circuit or a maximum approved 5-Amp fuse or positive temperature coefficient (PTC) resistor. This server board has PTCs on all external ports that provide DC power externally.

Prevenir Sobrecarga na Fonte de Alimentação

Não sobrecarregar a saída da fonte de alimentação. Para evitar uma sobrecarga na fonte de alimentação, certificar-se de que a carga total de corrente calculada para todos os módulos do computador seja menor que a potência nominal máxima da corrente de saída da fonte de alimentação. Se essas medidas não forem adotadas, a fonte de alimentação pode superaquecer, incendiar-se ou danificar o isolamento que separa os perigosos circuitos de linha de corrente alternada dos circuitos de baixa voltagem acessíveis ao usuário, ocasionando um risco de choque. Se a carga utilizada por um módulo não puder ser determinada pelas marcações e instruções fornecidas com o módulo, entre em contato com o departamento de suporte técnico do fornecedor.

Colocar Etiqueta da Bateria no Computador

Não há espaço suficiente na placa básica para fornecer instruções sobre troca e descarte da bateria. O aviso abaixo deve ser colocado permanentemente e de forma legível no computador *host*, em um local próximo da bateria.



AVISO

Há perigo de explosão se a bateria for colocada incorretamente.

Troque a bateria apenas pelo mesmo tipo ou pelo tipo recomendado pelo fabricante. Para descartar baterias utilizadas, seguir as instruções do fabricante.



Utilizar Apenas para Aplicações Previstas

Este produto foi avaliado para utilização em computadores ITE a serem instalados em escritórios, escolas, CPDs e locais similares. A adequação deste produto para categorias diferentes das aplicações ITE (assim como médicas, industriais, de sistemas de alarme e de equipamentos de testes) pode exigir novas avaliações.

Precauções de Instalação

Ao instalar e testar a placa básica, ler cuidadosamente todos os avisos e advertências nas instruções de instalação.

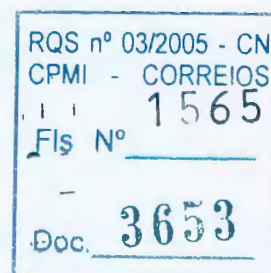
Para evitar acidentes, deve-se ter cuidado com:

- Os pinos pontiagudos dos conectores
- Os pinos pontiagudos dos circuitos impressos
- Extremidades irregulares e bordas pontiagudas no gabinete
- Componentes quentes (como processadores, reguladores de voltagem e dissipadores de calor)
- Danos aos fios que podem provocar um curto-circuito

Ler com atenção todos os avisos e advertências que recomendam a contratação de pessoal tecnicamente capacitado para a instalação de computadores e acessórios.

AVISO

Não abrir a fonte de alimentação. Há riscos de choques elétricos e queimaduras devido a altas voltagens e superaquecimento rápido. Utilizar pessoal altamente qualificado para consertar as fontes de alimentação elétrica.





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7 Histórico do Sistema e Planilhas

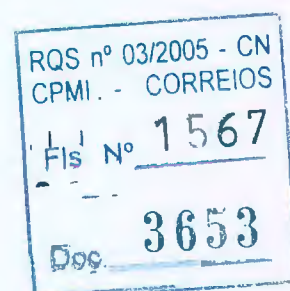


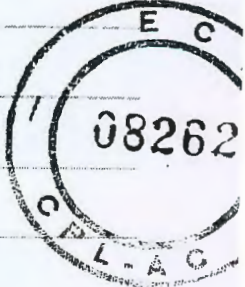
Histórico do Sistema

Utilizar a folha de histórico do sistema em branco fornecido aqui para registrar informações sobre o sistema. Algumas dessas informações serão necessárias na execução do SSU.

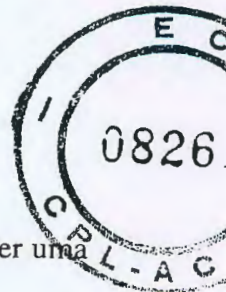
Item	Nome do Fabricante e Número do Modelo	Número de Série	Data de Instalação
Sistema			
Placa básica			
Velocidade e cache do processador primário			
Velocidade e cache do processador secundário			
Monitor			
Teclado			
Mouse			
Unidade de disquete A			
Unidade de disquete B			
Unidade de fita			
Unidade de CD-ROM			
Unidade de disco rígido 1			
Unidade de disco rígido 2			

continua



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Utilização de Corrente

Como uma limitação global à utilização de corrente na fonte de alimentação, não exceder uma saída de alimentação combinada de 167 watts para as saídas de voltagem +5 e +3,3.

Os *slots* ISA da placa básica possuem uma potência nominal máxima de 4,5 ampères por *slot*. A especificação ISA recomenda suporte a uma média de 2,0 ampères por *slot*. A utilização média da corrente não deve exceder 3,0 ampères por *slot*; ou seja, 15 watts.

Os *slots* PCI da placa básica possuem uma potência nominal máxima de 5 ampères por *slot*. A alimentação máxima permitida para cada *slot* é de 20 watts em +5 volts. A utilização média da corrente por *slot* não deve exceder 3,0 ampères por *slot*; ou seja, 15 watts.

A eficiência de refrigeração varia de acordo com o *slot*. Portanto, assegurar-se de que uma refrigeração adequada esteja disponível no *slot* de destino (especialmente em um *slot* de expansão com mais de 2,0 ampères).

Calculando a Potência

A potência total combinada para a configuração do sistema deve ser inferior à saída da fonte de alimentação. Utilizar as duas planilhas desta seção para calcular a alimentação utilizada pelas placa básica. Para obter os requisitos de corrente e voltagem de placas de expansão e periféricos, consultar a documentação do distribuidor.

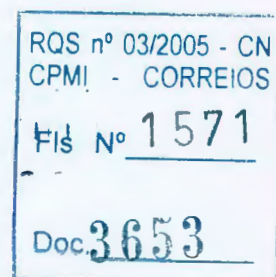
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Planilha, Potência Combinada Total Utilizada pelo Sistema

1. Com base na planilha anterior, inserir a corrente total de cada coluna.
2. Multiplicar a voltagem pela corrente total para obter a potência total de cada nível de voltagem.
3. Adicionar a potência total de cada nível de voltagem para atingir o total da utilização de energia combinada na fonte de alimentação.

Tabela 17. Planilha de Utilização de Potência 2

Nível de Tensão e Corrente total (V X A = W)	Potência total por nível de tensão
(+3,3 V) X (____ A)	____ W
(+5 V) X (____ A)	____ W
(-5 V) X (____ A)	____ W
(+12 V) X (____ A)	____ W
(-12 V) X (____ A)	____ W
Total da potência combinada	____ W





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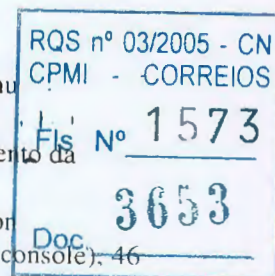
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EMP. Consultar Emergency Management Port Console (Console da Porta de Gerenciamento de Emergência)

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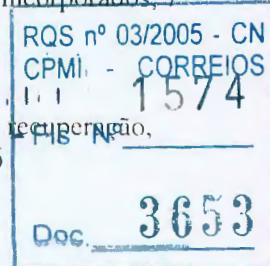
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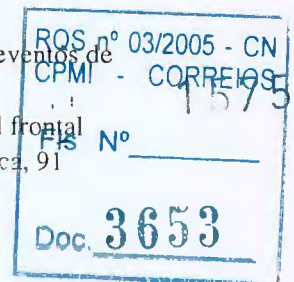
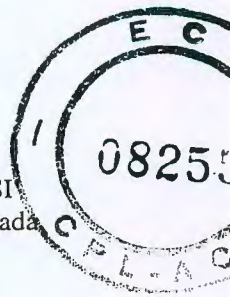
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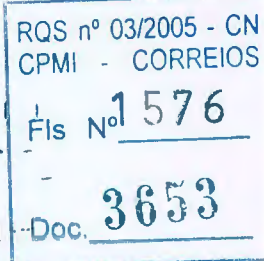
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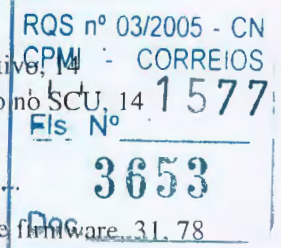
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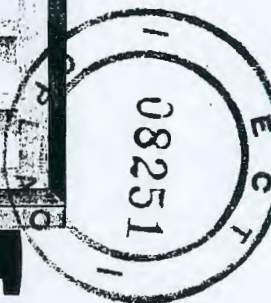
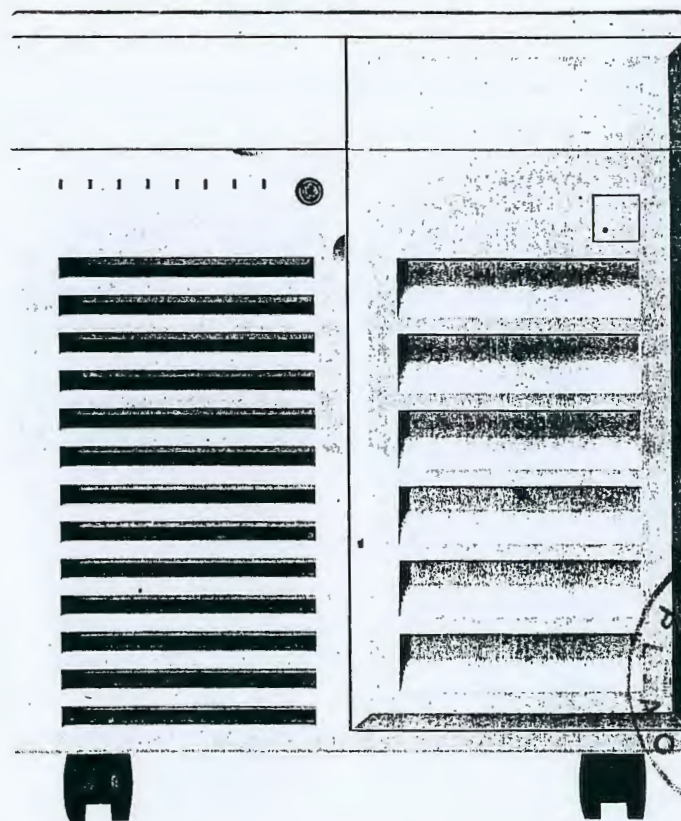
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NET SERVER CASE A9841/A9851/A9881/A9891



THE BEST CHOICE FOR YOUR SERVER SYSTEM

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0303-00124

USER'S MANUAL

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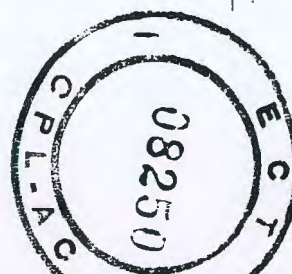
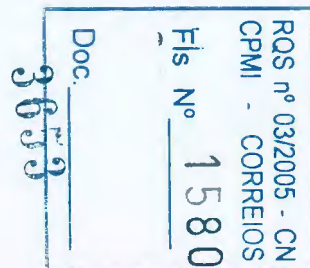
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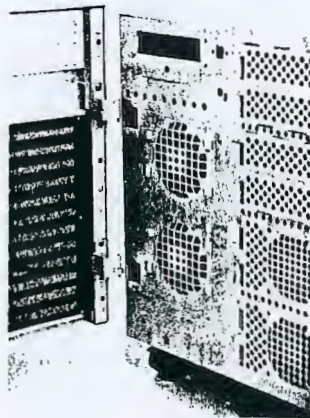
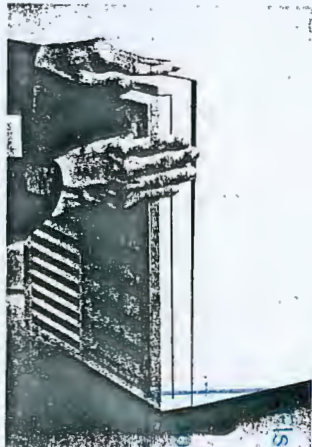
1-1 Standard Parts

A. Disassembly of Plastic Front Panel

1. Turn the 3 way key lock 90° to unlock the left hand door, 180° to unlock the right hand door.
2. Open the right hand door and use a pen or screw driver to turn the hinge upward, so the main door is unlocked.



3. Pull the upper and bottom right corner of the main door to open it.
4. Lift up the main door to remove it.

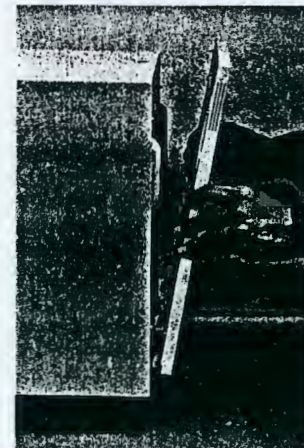


B. Disassembly of Plastic Rear Panel

1. Turn the key 90° to unlock the panel.
2. Pull the upper two corners of the panel to open it.



3. Lift up the panel to remove it.



C. Disassembly of the Right and Left Side Doors

1. Loosen two screws.



2. Hold the handle and pull it backward.



3. Pull the bottom of cover 10° and lift it up to remove it.

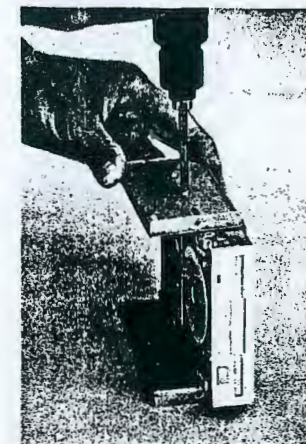


D. Installation of 3 1/2" FDD

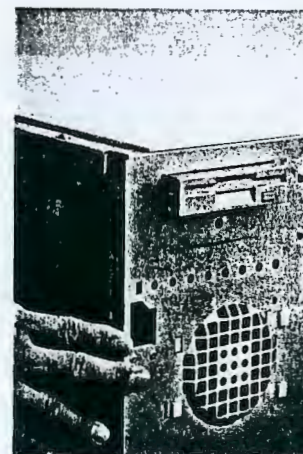
1. Loosen two screws to remove the FDD frame.



2. Mount 3 1/2" FDD onto the FDD frame.

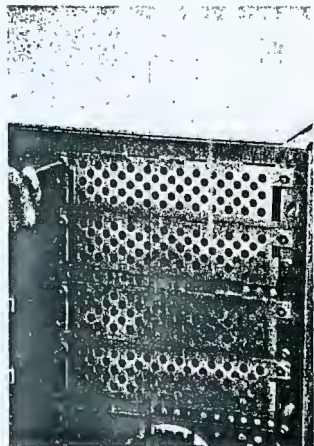


3. Slide the FDD frame into the chassis and tighten it with two screws.



E. Installation of 5 1/4" FDD/HDD

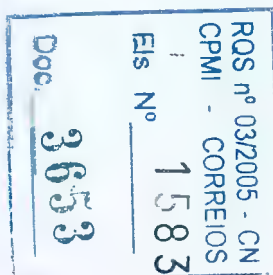
1. Loosen two screws to remove the metal shielding.



2. Attach 5 1/4" FDD/HDD with two rails.



3. Slide 5 1/4" FDD/HDD into the chassis until it clicks.

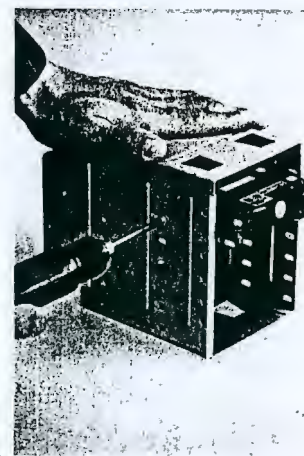


F. Installation of 3 1/2" HDD

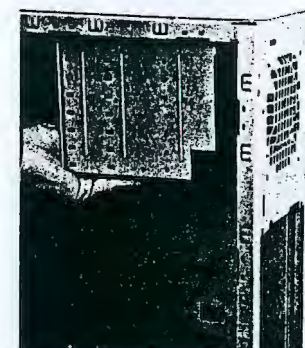
1. Loosen two screws.



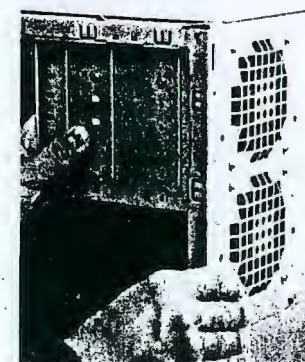
3. Mount 3 1/2" HDD onto the Cage.



2. Slide the drive cage toward the inner side of chassis to remove it.



4. Slide the drive cage into the chassis and tighten it with two screws.



G. Installation of Motherboard

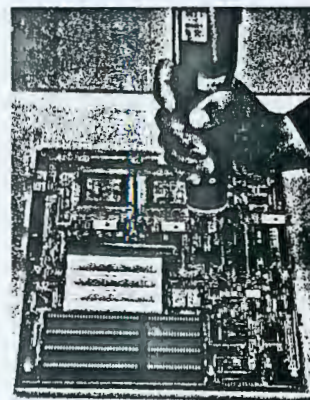
1. Loosen two screws to slide the M/B base toward the front chassis and remove it.



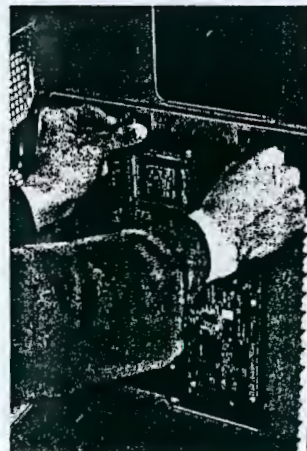
2. Insert the PCB standoff into the mounting position and push it downward until it clicks.



3. Mount the motherboard onto the M/B base.



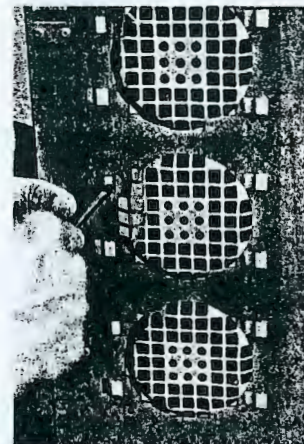
4. Slide the M/B base toward the slot bracket and tighten it with two screws.



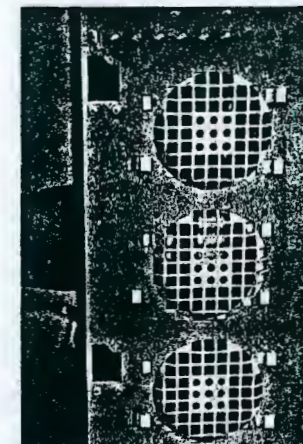
● You can also keep the M/B base in the original place and just lay down the chassis to install the motherboard onto the M/B base.

H. Disassembly of Fan Holder and Fan in the Front of Chassis

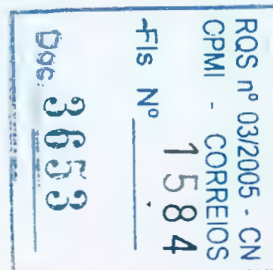
1. Push one hook with a screw driver to release the fan holder.



2. Slide the fan holder toward the outside of chassis and remove it.



3. Push two soft hooks around the edge to release the fan.



I. Disassembly of Plastic Top Cover

1. Use a wrench to release the screw nut of key lock.



2. Remove the key lock.



3. Slide the top cover toward the back side.

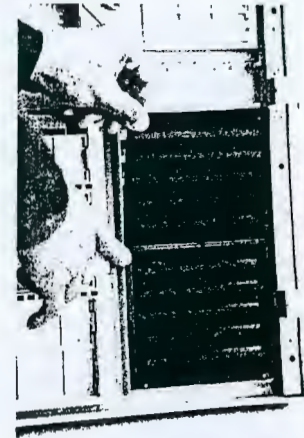


4. Remove the top cover.



J. Clean the Fan Filter

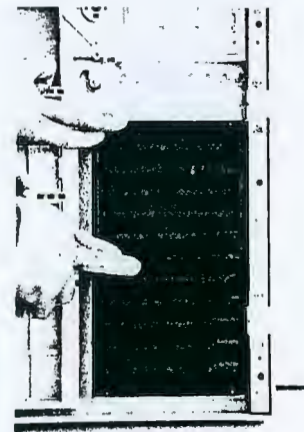
1. Remove the fan filter from the back of plastic front panel.



2. Clean the fan filter.



3. Attach the fan filter on the front panel.

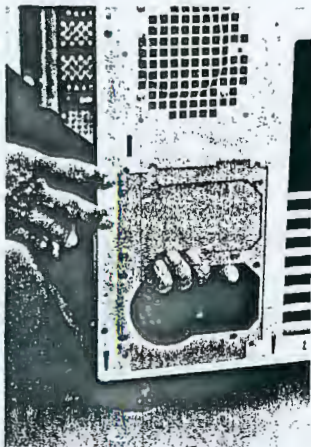


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1-2 Optional Parts

A. Installation of the Power Supply Back Plate

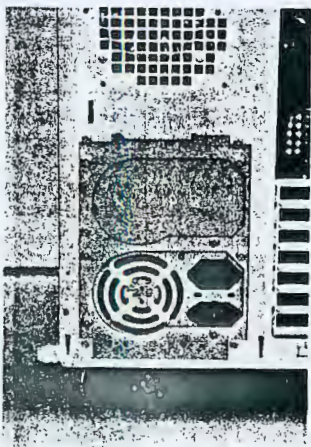
1. Attach the back plate from the inner side of chassis.



2. Tighten the plate with four screws.

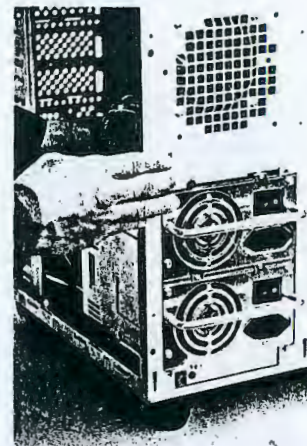


3. Available for one or two units PS/2 type power supply.

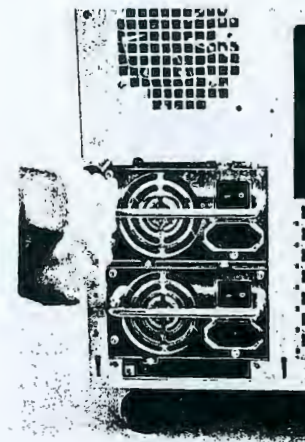


*Installation of Redundant Power Supply

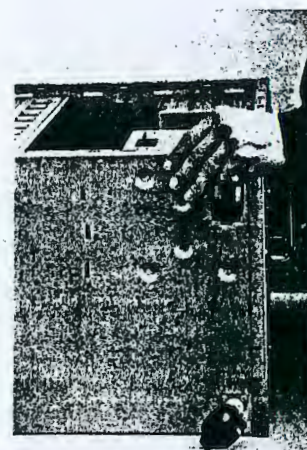
1. Place the power supply into the case.



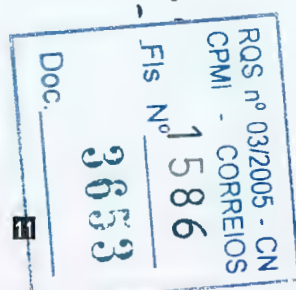
2. Tighten the back of power supply with four screws.



3. Lay down the chassis.

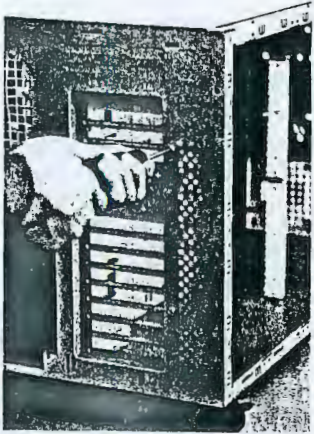


4. Tighten the bottom of power supply with two screws.

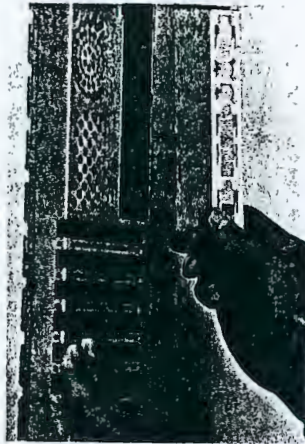


B. Change the Slot Bracket

1. Loosen two screws and pull the slot bracket outward to remove it.



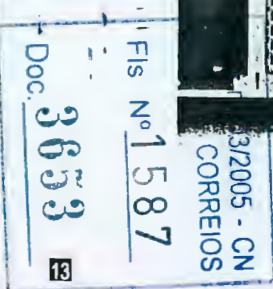
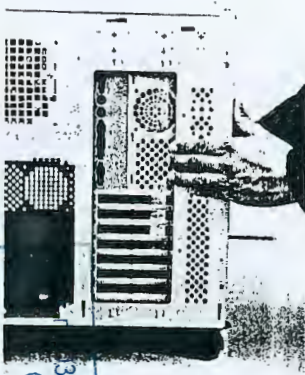
2. Select the I/O shield you need.



3. Insert the I/O shield into the slot and push it upward until it clicks.



4. Slide the slot bracket toward the M/B base and tighten it with two screws.

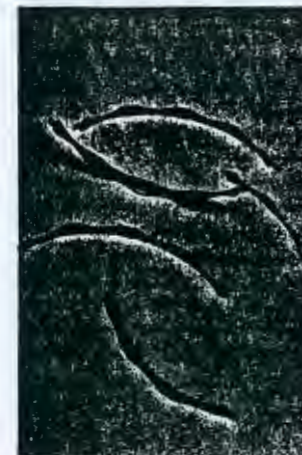


C. Assembly of EMI Clips

1. Take the EMI clips.



3. Take the slot conductive springs.



2. Clip the EMI clip on the edge of main chassis.



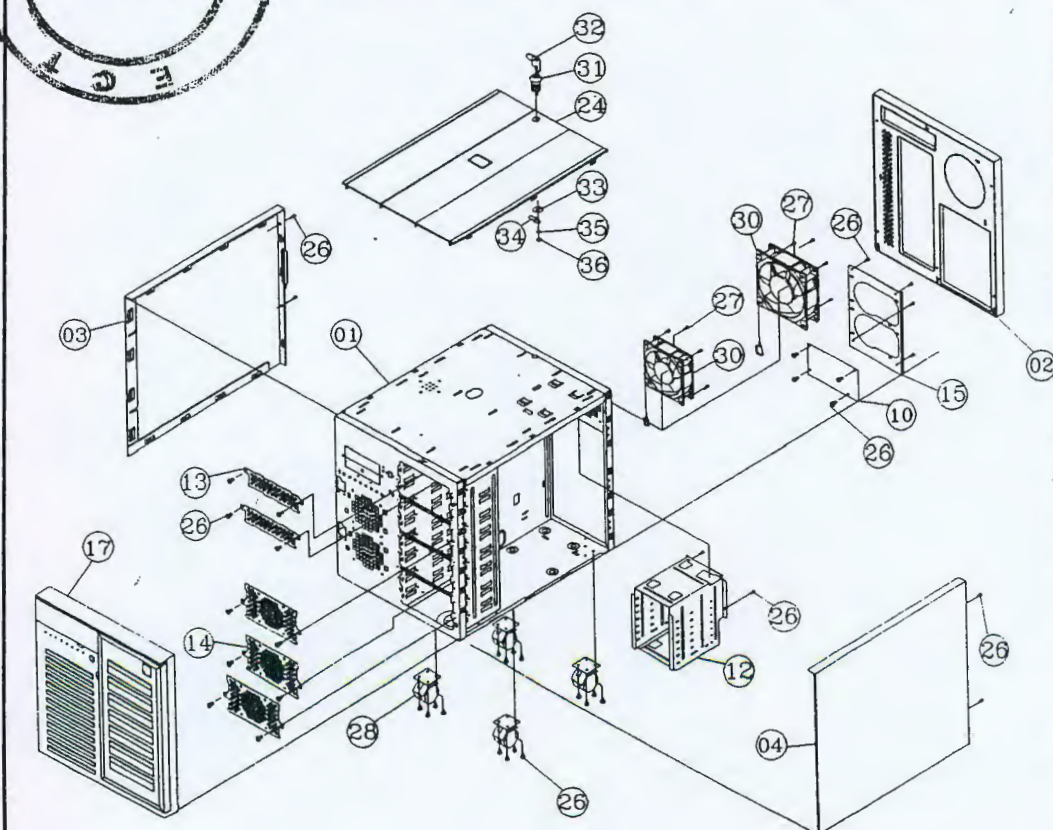
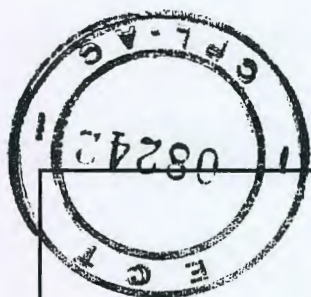
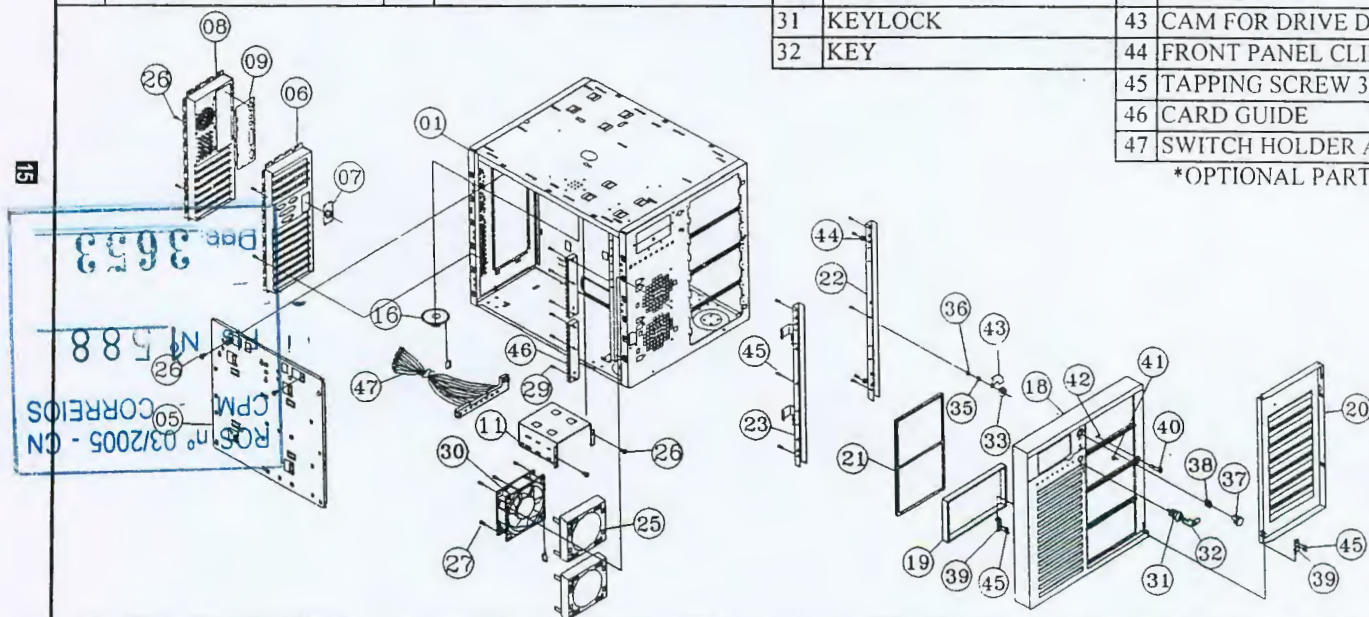
4. Clip the slot conductive spring on the slot bracket.



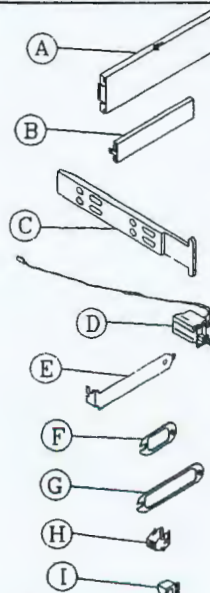
01	MAIN CHASSIS	11	3.5" FDD FRAME	21	FAN FILTER	33	NUT FOR KEYLOCK
02	PLASTIC REAR PANEL	12	3.5" HDD CAGE	22	PANEL SUPPORT BAR	34	CAM FOR REAR PANEL
03	LEFT SIDE DOOR	13	SMALL 5.25" METAL SHIELD	23	PANEL SWING BAR	35	WASHER
04	RIGHT SIDE DOOR	14	BIG 5.25" METAL SHIELD	24	PLASTIC TOP COVER	36	NUT FOR CAM
05	MOTHERBOARD BASE	15*	PS/2 PSU PLATE	25	FAN HOLDER	37	POWER SWITCH BUTTON
06*	AT SLOT BRACKET	16	SPEAKER	26	SCREW #6-32	38	SRPING
07*	AT KEYBOARD SHIELD	17	FRONT PANEL ASSEMBLY	27	TAPPING SCREW 5X16	39	DOOR HINGE
08*	ATX SLOT BRACKET	18	FRONT PANEL	28	WHEEL	40	LOCK PIN
09*	ATX I/O SHIELD	19	FDD DOOR	29	FLAT HEAD SCREW #6-32	41	E-TYPE CLIP
10*	PSU HOLE COVER	20	HDD DOOR	30*	FAN	42	SPRING PIN

31	KEYLOCK	43	CAM FOR DRIVE DOOR
32	KEY	44	FRONT PANEL CLIP
		45	TAPPING SCREW 3X8
		46	CARD GUIDE
		47	SWITCH HOLDER ASS'Y

*OPTIONAL PARTS



A	5.25" PLASTIC COVER
B	3.5" PLASTIC COVER
C	5.25" DRIVE RAIL
D	SOFT POWER SWITCH
E	SLOT COVER
F	9 PIN PORT COVER
G	25 PIN PORT COVER
H	METAL STANDOFF
I	BOARD EDGE SPACER



ACCESSORY KITS

1-4 Table

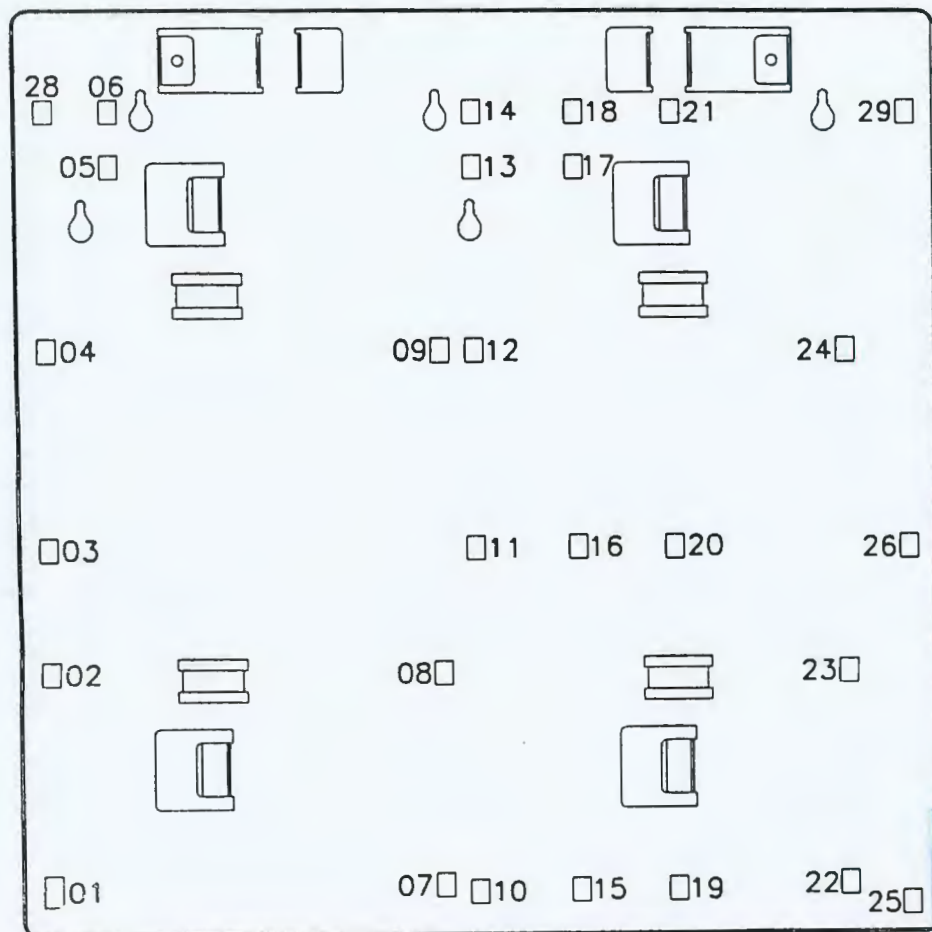
The mounting positions for ATX, Baby AT and Full AT M/B

Full AT : 01,02,03,04,09,10,11,24,25,26,28,29

Baby AT : 01,02,03,04,08,09,10,11,23,24,25,26

ATX : 01,02,03,06,10,11,14,19,20,21

Mini ATX : 01,02,03,05,10,11,13,15,16,17



1-5 Part No

Thank you for the purchase of the server case. This case has some changeable parts for your choice. For certain configuration, we use the different model no. as below.

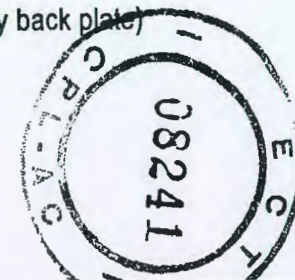
Model no	Module in each case		
	Plastic Front Panel	Slot bracket	Power supply back plate
A9881-207	A	AT	PS/2
A9891-207	A	ATX	PS/2
A9881R207	A	AT	Redundant
A9891R207	A	ATX	Redundant
A9841-207	B	AT	PS/2
A9851-207	B	ATX	PS/2
A9841R207	B	AT	Redundant
A9851R207	B	ATX	Redundant
A9881-107	C	AT	PS/2
A9891-107	C	ATX	PS/2
A9881R107	C	AT	Redundant
A9891R107	C	ATX	Redundant
A9881-707	D	AT	PS/2
A9891-707	D	ATX	PS/2
A9881R707	D	AT	Redundant
A9891R707	D	ATX	Redundant

- We offer different type of ATX I/O shield. Please check it with your vendor.

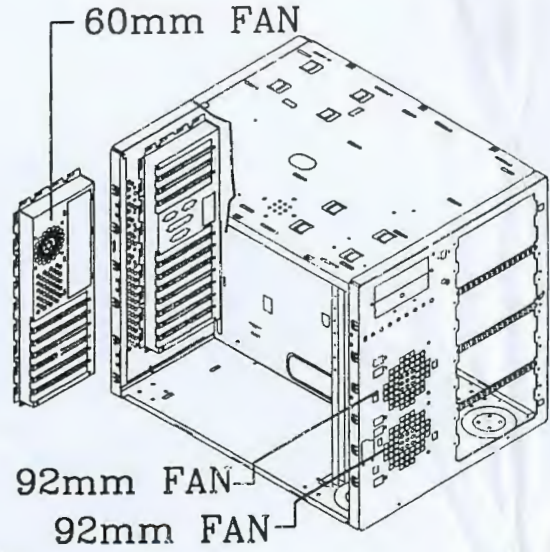
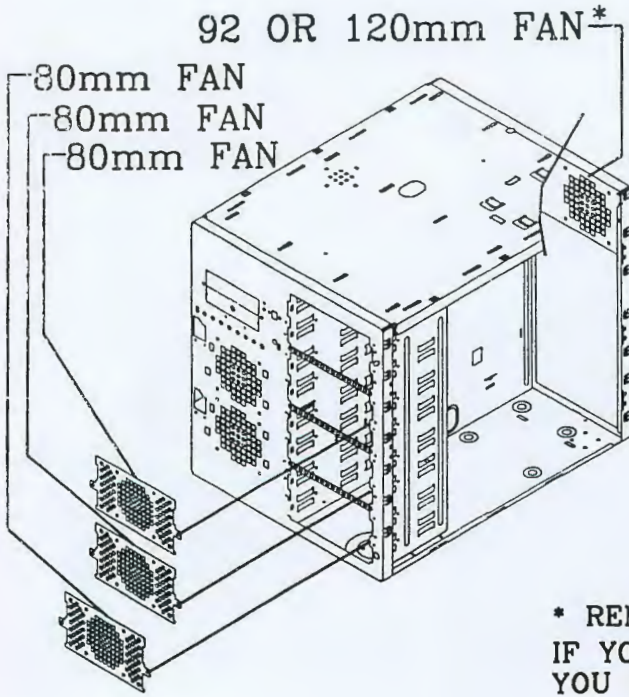
Each box you received should consist of the followings :

- (1) Complete case x 1
(including one kind of slot bracket, and power supply back plate)
- (2) Accessory kits pack x 1
- (3) Key x 1
- (4) User's manual x 1

Pre: 3653
Fis No 1589
RCS n° 03/2005 - CN
CPMI - CORREIOS



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* REMARKS:
IF YOU INSTALL A 120mm FAN,
YOU CAN'T INSTALL THE 3.5" HDD BRACKET.

