rp24xx Hardware Manual

Notice

1 What's New, and Using This Information

Using rp24xx Server Information

This site contains hardware support information pertaining to Hewlett-Packard rp24xx Servers. In the frame on the left side of your screen, you will see a general navigation network in a Table of Contents format. Click on the plus (or "add") sign (+) next to any topic to view the sub-topics within.

The topics were developed to support hardware-related tasks that you may need to perform in order to prepare for delivery, unpacking, installation, operation, or adding components to your rp24xx server.

There are several ways to navigate this site. The left frame will usually contain the main navigation network. The initial view in this frame is similar to a Table of Contents. However, if you wish to view a listing by topic, click on the "Index" button near the top of the screen.

Some of the topics will link to information at another site. If you are reading this information from a CD-ROM, you will need internet access to complete those links.

If you prefer to navigate this site in a more "linear" way, find the task you wish to perform, then click on that link. At the bottom of the content frame, you will see the navigation instructions to the next "logical" piece of information along with the previous "logical" piece of information.

What's New?

Visit this page to find out what new rp24xx server information has been released since the last web site and CD-ROM publish. The additions and modifications listed here are effective as of August 2002.

New Sections:

"What's New?" is the latest addition to the rp24xx server web site. This section will tell you about the latest changes to the previously-released information and provide a direct link to that information.

Modified Sections:

*   Identified changes to all sections as applicable to HP e3000.

NOTE   All references to rp24xx are equally applicable to the HP e3000.

2 System Hardware Overview and Reference Information

System Overview

Hardware Overview

For an overview of the Enterprise Server Family hardware -

http://www.hp.com/products1/servers/family_overview.html
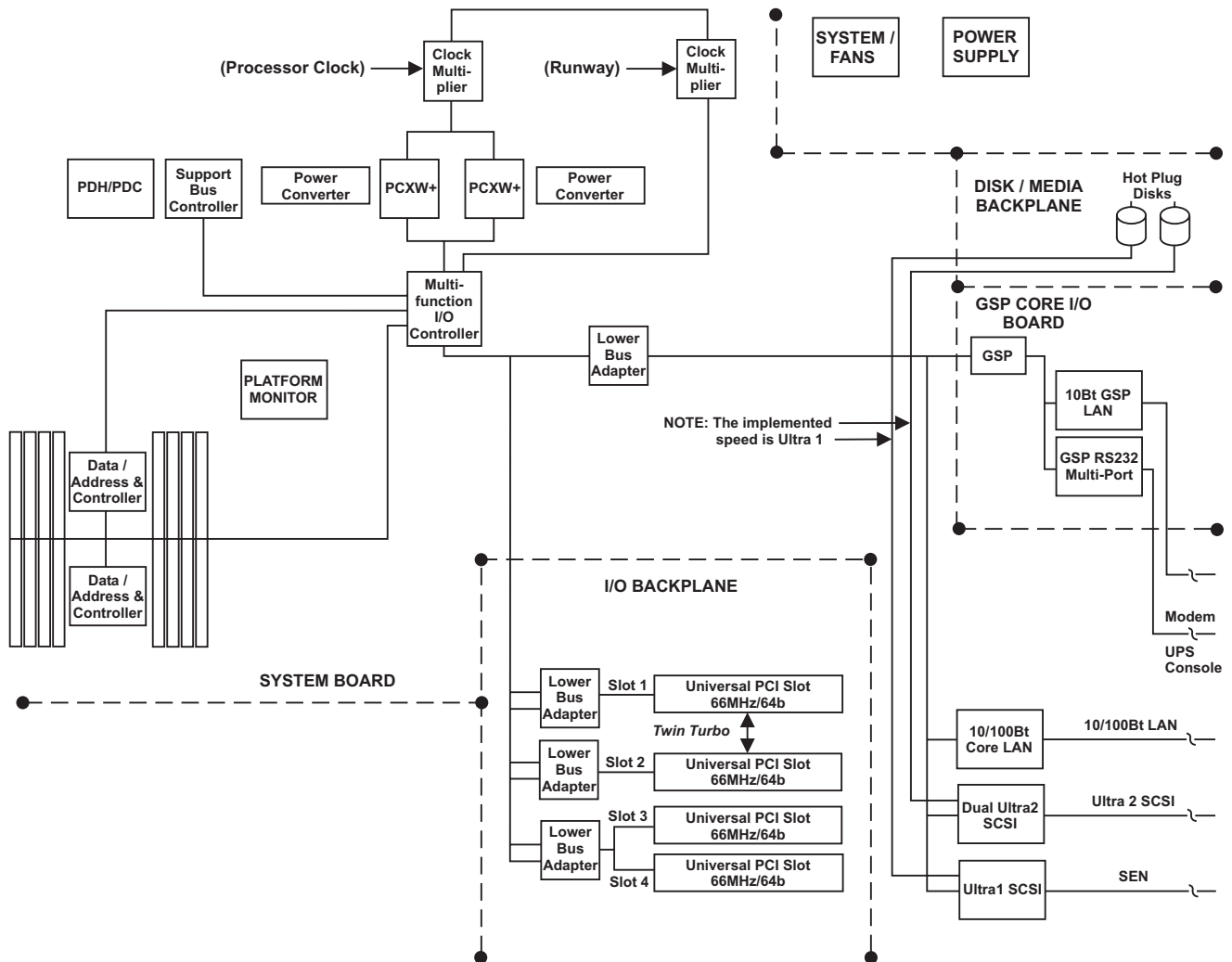
For an overview of the HP-9000 rp24xx Server hardware -
http://www.unixsolutions.hp.com/products/servers/aclass/index.htm

Software Requirements

rp24xx servers are designed to operate with HP-UX version 11.ACE or later.

rp24xx Block Diagram

(Processor Clock) → Clock Multi-plier

(Runway) → Clock Multi-plier

SYSTEM / FANS

POWER SUPPLY

PDH/PDC

Support Bus Controller

Power Converter

PCXW+

PCXW+

Power Converter

Multi-function I/O Controller

DISK / MEDIA BACKPLANE

Hot Plug Disks

PLATFORM MONITOR

Lower Bus Adapter

GSP CORE I/O BOARD

GSP

Data / Address & Controller

NOTE: The implemented speed is Ultra 1

10Bt GSP LAN

GSP RS232 Multi-Port

Data / Address & Controller

Modem

UPS Console

SYSTEM BOARD

I/O BACKPLANE

Lower Bus Adapter — Slot 1 — Universal PCI Slot 66MHz/64b

Twin Turbo

Lower Bus Adapter — Slot 2 — Universal PCI Slot 66MHz/64b

Lower Bus Adapter — Slot 3 — Universal PCI Slot 66MHz/64b

Slot 4 — Universal PCI Slot 66MHz/64b

10/100Bt Core LAN — 10/100Bt LAN

Dual Ultra2 SCSI — Ultra 2 SCSI

Ultra1 SCSI — SEN

ccrr016

hp Server rp24xx Safety and Regulatory Information

Overview

Regulatory Compliance statements are required by some countries for international importation of rp24xx 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 rp24xx Enterprise Server product, please go to the http://docs.hp.com web site (in the Systems Hardware selection).

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 two Lithium batteries located on the:

- System Board
- Guardian Service Processor board

These batteries are not to be removed or replaced by the user. If either 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.

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.**

WARNING	**Use of any slide mount product requires the installation of a cabinet anti-tip device.** **The anti-tip device for the following cabinet products is a pair of anti-tip feet: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A, and J1502A.** **Install both front and rear anti-tip feet on the cabinet before installing any slide mount product.** **The anti-tip device for the following cabinets is the installation of ballast in the bottom of the cabinet: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A, and C2787A.** **To determine ballast requirements, refer to the ballast worksheets in documentation accompanying the cabinet or http://www.hp.com/enclosures/c_rocs.htm** **Failure to follow these precautions can result in damage to equipment or injury to personnel**

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.**

WARNING	Bevor Sie auf Gleitschienen ruhende Produkte einbauen, müssen Sie für die Kippsicherheit der Einbaugehäuse sorgen.
	Bei den folgenden Gehäuseprodukten verwenden Sie dazu in Paaren gelieferte kippsichere Füße: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A und J1502A.
	Installieren Sie sowohl die vorderen als auch die hinteren kippsicheren Füße, bevor Sie auf Gleitschienen ruhende Produkte einbauen.
	Bei folgenden Einbaugehäusen wird die Kippsicherheit erzielt, indem der Schrank unten mit Ballast beschwert wird: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A und C2787A.
	Den erforderlichen Ballast können Sie den entsprechenden Arbeitsblättern in der Dokumentation zum Einbaugehäuse entnehmen. Außerdem finden Sie diese Informationen unter www.docs.hp.com
	Eine Mißachtung dieser Sicherheitsvorkehrungen kann zu Verletzungen des Personals oder Schäden an den Geräten führen.

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.

WARNING	L'utilisation d'un élément coulissant exige l'installation préalable d'un dispositif antibasculement. Pour les armoires A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A et J1502A, ce dispositif consiste en une paire de pieds antibasculement. Fixez les pieds antibasculement à l'avant et à l'arrière de l'armoire avant d'installer un élément coulissant dans cette dernière. Pour les armoires A1896A, A1897A, A1883A, A1884A, C2785A, C2786A et C2787A, le dispositif antibasculement consiste en un contrepoids que vous devez installer au bas de l'armoire. Pour connaître le type de contrepoids à utiliser, consultez les feuilles de travail sur les contrepoids dans la documentation qui accompagne l'armoire ou visitez le site www.docs.hp.com Vous devez prendre ces précautions afin d'éviter des risques de dommage au matériel ou de blessure.

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 disparejas 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.**

WARNING	**El uso de cualquier producto de montaje deslizable requiere la instalación de un dispositivo de protección del armario.**
	El dispositivo de protección para los siguientes armarios es un par de punteras de protección: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A y J1502A.
	Instale las punteras de protección delanteras y traseras en el armario antes de instalar ningún producto de montaje deslizable.
	El dispositivo de protección para los siguientes armarios es un lastre que se instala en la parte inferior del armario: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A y C2787A.
	Para determinar los requisitos de lastre, consulte las hojas de datos del lastre en la documentación suministrada con el armario o bien visite www.docs.hp.com
	El incumplimiento de estas medidas de precaución puede tener como resultado daños al equipo o lesiones personales.

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 superficies 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.**

WARNING	**O uso de qualquer produto de montagem deslizante requer a instalação de um dispositivo anti-tombamento para armários.** **Um par de pés anti-tombamento é o dispositivo anti-tombamento para os seguintes armários: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A, e J1502A.** **Instalar ambos os pés anti-tombamento na frente e atrás do armário antes da instalação de qualquer produto de montagem deslizante.** **A instalação de um lastro no fundo do armário é o dispositivo anti-tombamento para os seguintes armários: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A, e C2787A.** **Para determinar os requisitos de lastro, referir-se a planilha de lastro na documentação que acompanha o armário ou em www.docs.hp.com** **A não observância destas precauções pode resultar em danos ao equipamento ou lesões as pessoas.**

Precauzioni di siccurezza 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, disagevoli 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.**

WARNING	**L'uso di qualsiasi elemento scorrevole richiede l'installazione di un dispositivo antiribaltamento.** **Il dispositivo di questo tipo adatto per i seguenti armadi è costituito da una coppia di piedini antiribaltamento: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A e J1502A.** **Installare gli appositi piedini antiribaltamento anteriori e posteriori sull'armadio prima di procedere all'installazione di qualsiasi elemento scorrevole.** **Il dispositivo antiribaltamento adatto per i seguenti armadi è costituito dall'installazione di un contrappeso sul fondo dell'armadio: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A e C2787A.** **Per determinare i requisiti del contrappeso, fare riferimento alle schede tecniche relative comprese nella documentazione fornita con l'armadio o accedere al sito Web www.docs.hp.com** **La mancata applicazione di queste norme precauzionali potrebbe causare danni all'apparecchiatura o incidenti al personale.**

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 pallen 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.**

WARNING	**Kabinettet måste tippskyddas för att en inskjutningsbar produkt ska kunna användas.** **För följande kabinettprodukter ska två tippskyddsfötter användas: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A och J1502A.** **Installera både den främre och den bakre tippskyddsfoten på kabinettet innan du installerar en inskjutningsbar produkt.** **Följande kabinett tippskyddas genom att ballast placeras i kabinettets botten: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A och C2787A.** **I kabinettets dokumentation finns specifikationer för ballast. Du kan också gå till www.docs.hp.com** **Om dessa föreskrifter inte följs föreligger risk för personskada eller skada på utrustningen.**

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.**

WARNING	**Als u verwisselbare opslagmedia wilt plaatsen, moet u de kast stabiliseren.** **Voor de volgende producten maakt u gebruik van stabilisatiesteunen: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A en J1502A.** **U moet de stabilisatiesteunen zowel aan de voorkant als aan de achterkant van de kast aanbrengen voordat u verwisselbare opslagmedia plaatst.** **De volgende kasten moet u stabiliseren door onderin de kast ballast te plaatsen: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A en C2787A.** **Raadpleeg de informatie over ballast in de documentatie die u bij de kast heeft ontvangen of bezoek www.docs.hp.com om te bepalen hoeveel ballast is vereist.** **Als u deze aanwijzingen niet opvolgt, kan dit leiden tot schade aan de apparatuur of lichamelijk letsel.**

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 forsendelsespallen. 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.

WARNING	Ved enhver brug af udtræksdele skal der monteres anti-tip indretninger for skabet. For følgende skabstyper anvendes der som anti-tip indretning et par anti-tip fødder: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A og J1502A. Anti-tip fødderne skal monteres både på for- og bagsiden, før der isættes udtræksdele. For følgende skabe anvendes der som anti-tip indretning en ballast i bunden af skabet: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A og C2787A. For beslutningen om, hvorvidt der er brug for ballast, henvises til ballasttegningerne i papirerne, der følger med skabet, samt tit www.docs.hp.com Hvis ovenstående anvisninger ikke følges, kan det medføre materiel skade eller kvæstelse.

Sikkerhetsforanstaltninger for skapene

WARNING	Skapene er tunge, selv når de er tomme. Vær forsiktig når du flytter skap, uansett om de er tomme eller inneholder utstyr. Ikke rull skap på ru eller ujevne 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.

WARNING	Bruk av produkter som kan gli inn og ut, krever at det installeres en anti-tippe-enhet for skap.
	Anti-tippe-enheten for følgende skapprodukter er et par anti-tippe-føtter: A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A og J1502A.
	Installer både fremre og bakre anti-tippe-fot på skapet før du installerer produkter som kan gli inn og ut.
	Anti-tippe-enheten for følgende skap er installering av ballast nederst i skapet: A1896A, A1897A, A1883A, A1884A, C2785A, C2786A og C2787A.
	Når du skal bestemme kravene til ballast, kan du se i ballastbeskrivelsen i dokumentasjonen som fulgte med skapet, eller gå til www.docs.hp.com Hvis disse forholdsreglene ikke blir fulgt, kan det føre til skade på utstyr eller personer.

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.

WARNING	Liukuviksi asennettavien tuotteiden käyttö vaatii laitekaapin kaatumisen estävän laitteen asentamista. Kaatumisen estävä laite laitekaapeille A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A ja J1502A on pari kaatumisen estäviä jalkoja. Asenna sekä etu- että takajalka laitekaappiin ennen liukuviksi asennettavien tuotteiden asentamista. Kaatumisen estävänä laitteena laitekaapeille A1896A, A1897A, A1883A, A1884A, C2785A, C2786A ja C2787A toimii painolastin asentaminen laitekaapin pohjalle. Sopivan painolastin määrittämiseksi tutustu tuotteen mukana tulleisiin ohjeisiin (ballast worksheets) tai käy www-sivuilla osoitteessa http://www.docs.hp.com Näiden ohjeiden noudattamatta jättäminen voi johtaa laitteiston vaurioitumiseen tai ihmisten loukkaantumiseen.

Меры предосторожности при работе со стойками

ОСТОРОЖНО	Стойка очень тяжелая, даже если в ней не установлено оборудование, по-этому 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.

ОСТОРОЖНО	Перед использованием какого-либо оборудования, установленного на полозьях, необходимо установить устройство, предохраняющее стойку от опрокидывания. Для стоек A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A и J1502A таким устройством являются две выдвижные опоры, предохраняющие от опрокидывания. Прежде чем устанавливать на полозьях какое-либо оборудование, установите спереди и сзади стойки опоры, предохраняющие от опрокидывания. Для стоек A1896A, A1897A, A1883A, A1884A, C2785A, C2786A и C2787A в качестве устройства, предохраняющего от опрокидывания, используется балласт, который устанавливается внизу стойки. Требования к балласту см. в документации, прилагаемой к стойке, или на Web-узле по адресу: www.docs.hp.com Несоблюдение этих мер предосторожности может привести к травмам персонала и повреждению оборудования.

キャビネットの転倒防止

注意 キャビネットは空の状態でも相当の重量があります。キャビネットに装置が搭載されていて
もいなくても、移動には充分注意してください。表面に凹凸があったり水平でない場所では、
キャビネットを回転したり１０度以上傾斜させることは避けてください。パレットからキャ
ビネットを降ろしたり移動するときは最低２人以上で行ってください。

注意 装置が輸送パレットの上にある間は、スライド型製品はキャビネットの外に引き出さないで
ください。スライド型製品をキャビネットから引き出しておく場合は、事前にキャビネット
をパレットから降ろし、傾き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 設置後は、前後の傾き防止部品は安定を維持するため、取り付けたままの状態にしておいて
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。

警告 スライド型製品をキャビネットに組み込む場合には、あらかじめ傾き防止部品を取り付けて
ください。

次のキャビネットに使用する傾き防止部品は、１組のアジャスタです。
A4900A、A4901A、A4902A、A5134A、A5135A、A5136A、J1500A、J1501A、J1502A

キャビネットの前と後にアジャスタを取り付けてから、スライド型製品を組み込んでください。

次のキャビネットに使用する傾き防止部品は、キャビネットの底に取り付けるバラスト(重り)
です。
A1896A、A1897A、A1883A、A1884A、C2785A、C2786A、C2787A

必要なバラストを調べるには、キャビネット付属の説明書にあるバラスト・ワークシートを
参照するか、 **www.docs.hp.com** をご覧ください。

キャビネットに傾き防止部品を取りつけないで、スライド型製品を組み込むと、装置を損傷
したりけがをする恐れがあります。

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 내리거나, 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 내리고 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.

경고   슬라이드형 제품을 캐비닛에 넣을 경우, 수평을 유지하기 위한 장치를 사용하십시오. 다음 캐비닛 제품에 사용하는 수평 유지 장치는 두개의 고정용 다리로 되어 있습니다. A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A, J1502A

캐비닛 앞뒤 양쪽에 고정용 다리를 끼운 다음 슬라이드형 제품을 설치하십시오.

다음 캐비닛 제품에 사용하는 수평 유지 장치는 캐비닛 바닥에 까는 밸러스트입니다. A1896A, A1897A, A1883A, A1884A, C2785A, C2786A, C2787A

필요한 밸러스트를 보려면, 관련 캐비닛에 있는 설명서에서 밸러스트 리스트를 참조하거나, **www.docs.hp.com** 를 살펴보십시오.

수평 유지 장치를 설치하지 않은 채로 작업을 할 경우 장비가 손상되거나, 운반자가 상처를 입을 수 있습니다.

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。

注意	任何滑动安装产品均需要安装机柜防倾倒设备，下列机柜产品的防倾倒设备是一对防倾倒支脚：A4900A、A4901A、A4902A、A5134A、A5135A、A5236A、J1500A、J1501A 和 J1502A。 安装滑动安装产品之前应在机柜上安装前后防倾倒支脚。 下列机柜的防倾倒设备是在机柜底部安装的压载物：A1896A、A1897A、A1883A、A1884A、C2786A 和 C2787A。 要确定是否需要压载物，请参考随机柜一起提供文档中的压载物数据表格，或访问下面网址：www.docs.hp.com 如果不能遵守这些措施将导致设备的损坏或人员的伤亡。

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。

注意　要使用任何滑軌安裝產品前，須要先在機箱上安裝防傾倒裝置。
下列機箱產品的防傾倒裝置是一對防傾倒的機箱腳座：
A4900A, A4901A, A4902A, A5134A, A5135A, A5136A, J1500A, J1501A,
及 J1502A
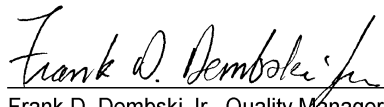
在安裝任何滑軌安裝產品前，請先安裝機箱前後的防傾倒腳座。

下列機箱產品的防傾倒裝置是安裝在機箱底部的壓艙物：
A1896A, A1897A, A1883A, A1884A, C2785A, C2786A, 及 C2787A

要決定須要多少壓艙物，請參考機箱隨附的文件中的壓艙物工作表，
或參閱 www.docs.hp.com

不遵循這些安全措施可能會造成設備損毀或人員傷害。

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: HP Server rp24xx (where x is any number 0-9)

Regulatory Model: RSVL-0107-A-xx (where -xx is an optional suffix and x is any letter or blank)

Product Options: All

conforms to the following Product Specifications:

Safety: IEC 60950:1991+A1+A2 +A3 +A4 /

EN 60950: 1992+A1+A2 +A3 +A4 +A11
IEC 60825-1:1993 +A1 / EN 60825-1:1994+A11, Class 1
GB 4943-1995

EMC: CISPR 22:1997 / EN 55022:1998 Class A [1]

CISPR 24:1997 / EN 55024:1998

IEC 61000-3-2:1995 / EN 61000-3-2:1995 +A14

IEC 61000-3-3:1994 / EN 61000-3-3:1995

GB 9254-1988

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.

2) DC versions of the product were tested in a typical configuration with a Hewlett-Packard 6813A AC/DC power source.

Roseville, 11/28/01   Frank D. Dembski Jr., Quality Manager

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)

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.

Korean RFI Statement

사용자 안내문 (A급 기기)

이 기기는 업무용으로 전자파 적합 등록을 받은 기기이오니,
판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못
구입하셨을 때에는 구입한 곳에서 비업무용으로 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：K

エネルギー消費効率：0.29

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。

省エネ法による区分：G

エネルギー消費効率：0.41

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。

Acoustics (Germany)

Acoustic noise level per ISO 9296 (25° C):

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LpAm  <60dB (operators position)
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Geräuschemission (Deuschland)

Geräuschemission nach ISO 9296 (25° C):

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LpAm  <60dB (Arbeitsplatz)
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Australian C-Tick Label
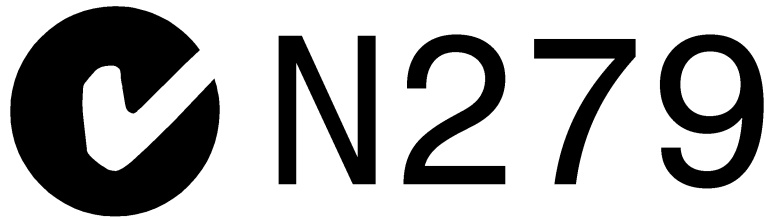
Laser Safety

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.

ESD Safety Standards

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 following table lists charge levels based on personnel activities and humidity levels.

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 — computer room environments

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) and antistatic mats when handling circuit boards.
- Store spare electronic modules in antistatic containers.

Static protection measures — office environments

Office areas generally do not offer the same degree of environmental control possible in a computer room. However, some of the same precautions should be followed:

- Maintain recommended humidity level and airflow rates in the office.

- Use conductive tables and chairs.

- Use a grounded wrist strap (or other grounding method) and antistatic mats when handling circuit boards.

- Store spare electronic modules in antistatic containers.

Acoustic Safety Standards

The acoustic specifications for the rp24xx server are as follows:

Sound power level	6.4 Bels LWA
Sound pressure level at operator position	58.2 dB LPA

Reducing Acoustic Noise Levels

Ambient noise level in a computer room or office environment 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—Foam rubber models reduce noise levels the best.

Local Computer Installation 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.

Altitude Operation Standards

Maximum Altitude	
Operational	3000 meters above sea level
Non-operational	4572 meters above sea level

Effects of Altitude

Altitude effects the cooling of computer systems. Less air density means less cooling. Differences in air temperature, input to exhaust, can increase significantly at higher altitudes.

Temperature and Humidity Operation Standards

The following table lists the computer room temperature and humidity specifications for rp24xx servers.

Temperature and Humidity Specifications				
Parameter	Maximum Non-Operating Range	Recommended Operating Range	Maximum Operating Range	Rate Of Change (per hour)
Temperature[a]	-40º C to +65º C (-40º F to 149º F)	20º to 25º C (70º to 77º F)	5º C to 39º C (41º F to 102º F)	10º C (50º F) R[b] 20º C (68º F)N[c] 20º F (-7º C)R[b] 30º F (-1º C)N[c]
Operating Humidity	5% to 90%, non-condensing at 25º C (77º F)	40% - 50%, non-condensing at 25º C (77º F)	15% - 80%, non-condensing at 25º C (77º F)	30% RH/hour

a. At altitudes up to 3,000 meters.
b. Repetitive.
c. Non-repetitive.

NOTE	Operating ranges refer to the ambient air temperature and humidity measured at the cabinet cooling air intake vents.

Electrical Interference Safety Standards

The following are some of the sources of electrical interference that may affect rp24xx 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 by 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.

Other Safety/Operation Standards

The following are some of the other environmental influences that may affect L 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), anyone can cause "sparking" upon contact with the equipment. Carpeting and/or low humidity is a major source of static electricity, especially in dry and cold climates. Static electricity can often be significantly reduced by using a humidifier.

NOTE	Hewlett-Packard recommends a heat evaporating-type humidifier and strongly advises 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. If spray is used, apply it while the system is turned off. Sprays are very temporary and must be reapplied frequently.

CAUTION	Anti-static spray is not recommended because it gets into the system intake filter and coats the circuitry.

3 System Site Preparation

Cooling Requirements

The temperature and humidity specifications shown below are the maximums and standards at which server cooling parameters have been established.

Temperature and Humidity Specifications				
Parameter	**Maximum Non-Operating Range**	**Recommended Operating Range**	**Maximum Operating Range**	**Rate Of Change (per hour)**
Temperature[a]	-40º C to +65º C (-40º F to 149º F)	20º to 25º C (70º to 77º F)	5º C to 35º C (41º F to 95º F)	10º C (50º F) R[b] 20º C (68º F) N[c] 20º F (-7º C) R[b] 30º F (-1º C) N[c]
Operating Humidity	5% to 90%, non-condensing at 25º C (77º F)	40% - 50%, non-condensing at 25º C (77º F)	15% - 80%, non-condensing at 25º C (77º F)	30% RH/hour

a. At altitudes up to 3,000 meters.
b. Repetitive
c. Non-repetitive

Input Power Requirements

rp24xx server input power requirements are listed as follows:

Stand Alone Server Power Requirements

- Nominal Rated Voltage: 100 or 240 VAC

- Input Voltage:

    80 to 135 VAC

    176 to 269 VAC

- Input Frequency: 47 to 66 Hz

- Input Current: 1.0 amps at maximum load with input voltage of 88 VAC and 47 Hz

If an Uninterruptible Power Supply (UPS) is to be used, ensure that it is properly connected to the server. Power cord plugs for stand-alone servers are available to meet unique power configurations used all over the world.

Cabinet Mounted Server Power Requirements

Cabinet-mounted servers have the same power requirements as stand-alone servers. However, the power cords for cabinets are dependent on the type of Power Distribution Unit (PDU).

PDU power cords with one end stripped are also available for attaching country-specific power plugs. Refer to cabinet documentation for further cabinet-specific electrical power information.

Racked Server Site Requirements

rp24xx servers can be configured to operate as a stand-alone server, in a free-standing stack of a maximum of six servers high, or racked in a cabinet. This section provides site requirements for racked server installation.

HP Cabinet Dimensions

Servers can be installed in any of the following HP cabinets:

Cabinet Product Number	Description	EIA	Max. Servers	External Dimensions (width x depth x height)	
				Centimeters	Inches
A4900A	Factory Integrated 1.25m x 19" Cabinet	25	12	59.7 x 100.3 x 125.7	23.5 x 39.5 x 49.5
A4901A	Factory Integrated 1.6m x 19" Cabinet	33	16	59.7 x 100.3 x 161.3	23.5 x 39.5 x 63.5
A4902A	Factory Integrated 2.0m x 19" Cabinet	41	20	59.7 x 100.3 x 196.9	23.5 x 39.5 x 77.5
J1502A	Field Integrated 1.25m x 19" Cabinet	25	12	59.7 x 100.3 x 125.7	23.5 x 39.5 x 49.5
J1501A	Field Integrated 1.6m x 19" Cabinet	33	16	59.7 x 100.3 x 161.3	23.5 x 39.5 x 63.5
J1500A	Field Integrated 2.0m x 19" Cabinet	41	20	59.7 x 100.3 x 196.9	23.5 x 39.5 x 77.5
C2785A	Field Integrated 1.1m x 19" Cabinet	21	10	61 x 91.4 x 111.8	24 x 36 x 44
C2786A	Field Integrated 1.6m x 19" Cabinet	32	16	61 x 91.4 x 162.6	24 x 36 x 64

Cabinet Product Number	Description	EIA	Max. Servers	External Dimensions (width x depth x height)	
				Centimeters	Inches
C2787A	Field Integrated 2.0m x 19" Cabinet	41	20	61 x 91.4 x 203.2	24 x 36 x 80

Cabinet Minimum Service Access Requirements

Access Location		
*Rear	61 cm	(24 in.)
Sides	30 cm	(12 in.)(When extended)
Front	101 cm	(40 in.)

*Minimum distance required to fully open rear access door.

Non-HP Cabinet Installation Requirements

rp24xx servers can be installed in cabinets other than those manufactured by HP. Refer to the installation instructions of the cabinet in which you wish to install the server.

WARNING **Do not install a server in any cabinet without anchoring it to the cabinet with four screws (two on each side) that attach to the front posts of the cabinet. Screws are used as a safeguard against accidental ejection in case a cabinet tips forward. rp24xx servers installed in all HP cabinets are secured with captive screws.**

HP will NOT support servers that are not secured to the cabinet with screws.

Failure to heed this warning could result in serious personal injury or damage to the server.

Stacked Server Site Requirements

rp24xx servers can be configured to operate as a stand-alone server, in a free-standing stack of a maximum of six servers high, or racked in a cabinet. This section provides site requirements for stacked server installation.

NOTE	HP will not support stacking of any other A-Class server.

CAUTION	In order to remain within weight limitations and to prevent tipping, do not stack servers more than six high. Each server weighs approximately 23 kg (50 lbs). DO NOT lift more than one server at a time. Always use the strap when stacking servers, regardless of the number. Hewlett-Packard will not support or warrant servers that are damaged as a result of being improperly strapped or stacked more than six servers high.

Server Dimensions

The physical characteristics of the rp24xx server are listed as follows:

Dimension		
Height	9.52 cm	(3.75 in.)
Width	48.26 cm	(19 in.)
Depth	63.5 cm	(25 in.)
Weight	22.68 kg	(50 lbs)

WARNING	**DO NOT attempt to lift the server by the front bezel. The plastic bezel is attached by pressing it onto four ball-tipped posts located on the front of the server cover and pulls off with very little pressure.** **The bezel WILL NOT support the 23 kg (50 lb.) weight of the server.** **Failure to observe this precaution will cause damage to the server and may cause personal injury.**

CAUTION	DO NOT stack heavy objects, such as monitors, on top of the server. The weight may cause the top to cave in and damage internal components.

Stacked Server Minimum Service Access Requirements

Access Location

Rear	15 cm	(6 in.)
Sides	7.5 cm	(3 in.)
Front	7.5 cm	(3 in.)

WARNING **Ensure that the surface on which the stacked servers are sitting will support the combined weight of all servers in the stack plus the weight of all other associated equipment.**
Failure to heed this warning may result in serious injury and/or equipment damage.

Stand-Alone Server Site Requirements

rp24xx servers can be configured to operate as a stand-alone server, in a free-standing stack of a maximum of six servers high, or racked in a cabinet. This section provides requirements for stand-alone server installation.

Server Dimensions

The physical characteristics of the rp24xx server are listed as follows:

Dimension		
Height	9.52 cm	(3.75 in.)
Width	48.26 cm	(19 in.)
Depth	63.5 cm	(25 in.)
Weight	22.68 kg	(50 lbs)

Stand-Alone Server Minimum Service Access Requirements

Access Location		
Rear	30 cm	(12 in.)
Left Side	15 cm	(6 in.)
Right Side	30 cm	(12 in.)
Front	30 cm	(12 in.)

Temperature and Humidity Operation Standards

The following table lists the computer room temperature and humidity specifications for rp24xx servers.

Temperature and Humidity Specifications				
Parameter	Maximum Non-Operating Range	Recommended Operating Range	Maximum Operating Range	Rate Of Change (per hour)
Temperature[a]	-40° C to +65° C (-40° F to 149° F)	20° to 25° C (70° to 77° F)	5° C to 35° C (plus or minus 2° C) (41° F to 95° F (plus or minus 3° F))	10° C (50° F) R[b] 20° C (68° F)N[c] 20° F (-7° C)R[b] 30° F (-1° C)N[c]
Operating Humidity	5% to 90%, non-condensing at 25° C (77° F)	40% - 50%, non-condensing at 25° C (77° F)	15% - 80%, non-condensing at 25° C (77° F)	30% RH/hour

a. At altitudes up to 3,000 meters.
b. Repetitive.
c. Non-repetitive.

NOTE   Operating ranges refer to the ambient air temperature and humidity measured at the cabinet cooling air intake vents.

4 Server Unpack and Install Instructions

Unpack the Server

Overview

Unpacking the server consists of opening and unloading the carton. Inside the carton you will find, in addition to the server, an accessory kit and a packet containing installation instructions and regulatory information.

NOTE   The following instructions do not apply to servers that are received pre-installed in a cabinet. These procedures pertain to individual servers only.

Open and Unload the Carton

Step 1. Place the sealed carton on a work surface with the correct side up as indicated by the, "This Side Up" symbol (shown below).

WARNING   **Use sharp instruments carefully when unpacking electronics equipment.**

Failure to follow this precaution may result in personal injury or damage to components.

Step 2. Carefully open the carton, remove the contents, and set them on the work surface. Each carton will contain:

❏ The server.

❏ A plastic pedestal base for holding the server in a side-mounted position

❏ An accessory kit.

❏ A packet containing installation instructions and regulatory information.

NOTE   Report any missing items to your local Hewlett-Packard office immediately. If there is obvious freight damage, contact your shipper immediately.

We recommend that you retain all packing materials in case any of the items received require return to Hewlett-Packard.

Unpack the Server

WARNING   **The rp24xx server weights 22.68 kg (50 lbs). Take necessary precautions to prevent muscle strain when lifting or carrying the server.**

Carefully lift the server out of the carton, unwrap it, set it on the work surface.

WARNING	**Do not lift or carry the server by the bezel. The bezel is made of plastic and is attached to the server chassis by two bezel retainers and four ball-posts. It will only support the weight of the server chassis in an emergency.** **Failure to heed this warning may result in personal injury and/or permanent damage to the server.**

Attaching the Pedestal Base

The pedestal base and two accompanying screws included with each stand alone server provides the option of standing the server on its side in order to conserve table space, or standing the server on the floor. To install the pedestal base, follow the instructions listed below:

Step 1. As you are facing the front of the server, carefully stand it on its side with the right side up.

Step 2. Place the pedestal, smooth side down, on the server side and align it lengthwise so that it is parallel with the server.

Step 3. Center the pedestal front to rear and align the two recessed oblong holes with the corresponding two holes on the server's side.

Step 4. Insert the two accompanying screws through the bottom of the pedestal and fasten securely to the server.

Step 5. Stand the server on the pedestal.

The following graphic illustrates the pedestal and server.

NOTE	The bezel and cover can remain on the server when attaching the pedestal base.
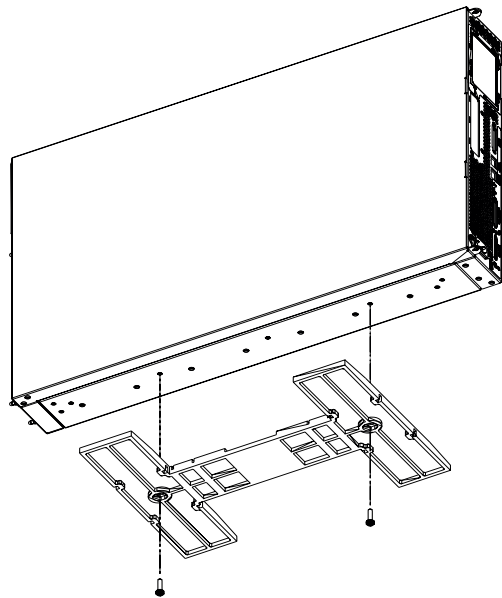
ccrr019

Open the Accessory Kit

Open the Accessory Kit and verify that the contents agree with the packing list.

NOTE   Plastic bezel end caps are included in each kit. Do not discard them. They will be needed if the server is installed in a cabinet.

                        A gray nylon strap is also included. Do not discard it. It will be needed to secure multiple servers (up to six) that are stacked.

Open the Installation Instructions and Regulatory Information Packet

The Installation Instructions/Regulatory Information Packet contains the following information:

- Installation Instruction Sheet, which includes:

  Basic cable connection information necessary to power on and boot the server to the Firmware Main Menu screen.

  The Universal Resource Locator (URL) for the rp24xx server page on the World Wide Web (www.docs.hp.com).

- Compact Disk (CD). Contains the same information available at www.docs.hp.com in the event that access to the Web is unavailable or inconvenient.

- Regulatory Information. Contains consumer safety and regulatory statements for the United States and for those countries that require publishing and dissemination of their own consumer safety and regulatory data.

Third Party Software

NOTE   This information is not applicable to e3000 systems.

This server includes licenses for three third-party software products. Please refer to the materials contained in the shipping box for general product information and for instructions on how to download or obtain CDs with this software. The three software products are as follows:

Resonate Central Dispatch

A complimentary three-server license is included. Central Dispatch is an industry-leading enterprise traffic management software solution, ensuring up-time and performance for high traffic, mission-critical e-business applications.

This software package can be found in your accessory box. If you cannot locate the software, or if you require an upgrade to extend the three-server license, please E-mail us at, "mailto:hpsales@Resonate.com". If you need assistance installing Central Dispatch, mail our support team at, "mailto:hpsupport@resonate.com".

You may also register for complimentary Web support for Central Dispatch. Please visit Resonate's website at "http://www.resonate.com/hp"

Infoseek Ultraseek Server

Ultraseek Server is a version of Infoseek's award-winning search technology packaged for use on your intranet or public web servers. It allows users to type question (or just keywords) and instantly find documents relating to the topic on your network.

Further product information can be found in your shipping box. If you cannot locate the product information or if you need additional installation assistance, please consult the web site at http://www.ultraseek.com/hp.

Nokia Wireless Application Protocol (WAP) Server

Nokia WAP server is the industry leading WAP server software. It provides seamless functionality with most HTTP servers, retrieving native WML and WML Script content, or converting HTML content to WML.

Further product information can be found in your shipping box. If you cannot locate the product information or if you need additional installation assistance, please consult our web site at "http://www.hp.com/go/mobile-aclassoffer".

Server External Connections

External devices are interfaced with the server by means of specific connectors located on the rear bulkhead. Exterior connections to the server include ports for:

- Small Computer System Interface (SCSI) devices
- System Console
- Local Area Network (LAN) Console
- LANs
- Power Cord.

The graphic shown below illustrates locations of the external connections to the server.
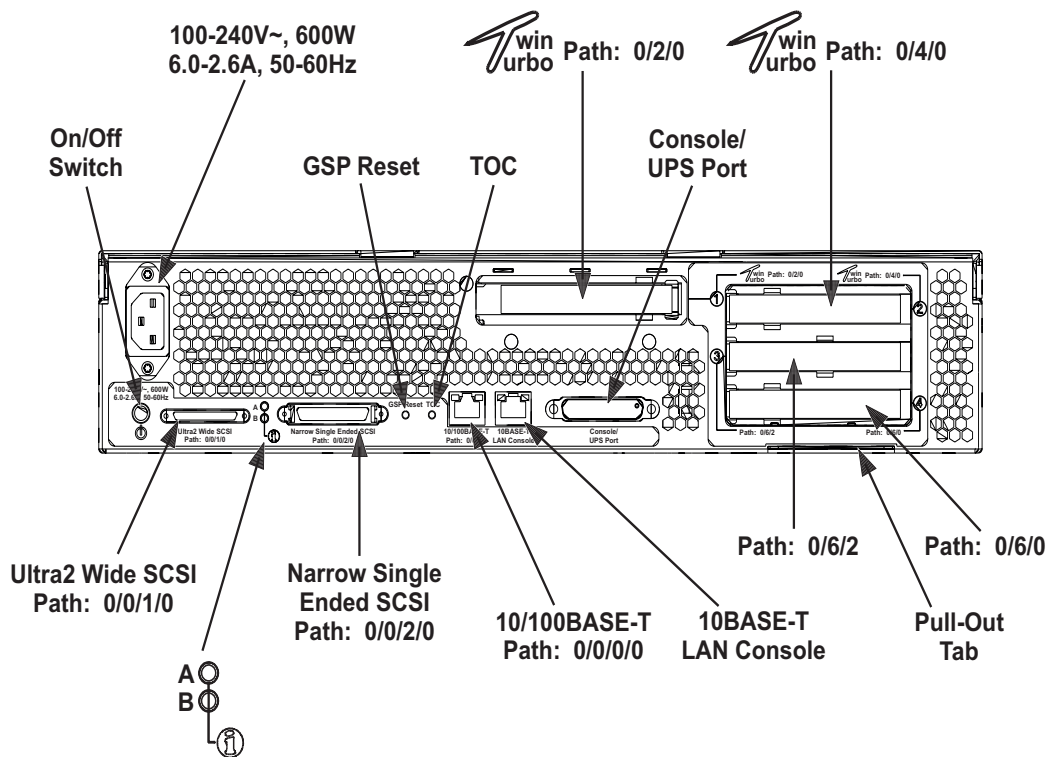
ccrr008

Connect External Small Computer System Interface (SCSI) Devices

Connect external SCSI devices to the Single Ended SCSI bus (labeled: *Narrow Single-Ended SCSI Path: 0/0/2/0)* on the system card or to the Ultra 2 SCSI bus (labeled: *Ultra 2 SCSI Path: 0/0/1/0*).

Ensure that all devices on the SCSI bus have a unique address and the last device is terminated. Refer to the documentation accompanying each device to learn how to set addresses and where to place terminators.

Connect a System Console

- **Using the ASCII Terminal as a System Console**. If an ASCII terminal is to be used as a console/UPS port, make sure that the keyboard is connected and a power cable is available.

- **Using a SecureWeb Console PCI card as a System Console**. If the Secure Web Console PCI card is to be used as a system console, connect an RJ45 LAN cable to the Secure Web Console PCI card installed in an I/O card slot on the back of the server.

NOTE	The Web Console has a default Internet Protocol (IP) address of 192.0.0.192. Make sure that no other device, including other rp24xx servers, has this address before connecting the server to your LAN.

- **Using the LAN Console as a System Console.** If a LAN Console is to be used as a system console, connect it to the system with an RJ45 LAN cable to the RJ45 connector labeled, *10BASE-T LAN Console* connection on the back of the server.

Connect the Core Local Area Network (LAN)

Connect the 10/100BASE-T Core LAN on the system board to the LAN with an RJ45 LAN cable. Connect the RJ45 LAN cable to the server by attaching it to the RJ45 connector labeled, *10/100 Base-T Path: 0/0/0/0*.

Connect Power Cords

Connect the power cord that is provided with the system to the server. For stand-alone servers, the power cord will be localized to each country's power application. If an HP Uninterruptible Power Supply (UPS) is the power source, use the power cord provided with the UPS.

Connect power cords to all external devices at this time with the either the localized power cord, cabinet Power Distribution Unit (PDU) power cord, or the UPS power cord.

For cabinet-mounted servers, the server power cord connects to the PDU in the cabinet.

Installing a Stand-alone Server in a Cabinet

Installing a Stand-alone Server in an HP Cabinet

The following information pertains to rp24xx server installation in cabinets manufactured by Hewlett-Packard only.

Cabinet Identification

The following HP cabinets can hold multiple HP-9000 A-Class, rp24xx servers:

Cabinet Product No.	Assembled by:	Size (Height x Width)	Max. Servers
A4900A	Factory	1.25m x 19"	12
A4901A	Factory	1.6m x 19"	16
A4902A	Factory	2.0m x 19"	20
A5134A (HPe3000)	Factory	1.25m x 19"	12
A5135A (HPe3000)	Factory	1.6m x 19"	16
A5136A (HPe3000)	Factory	2.0m x 19"	20
J1502A	Field	1.25m x 19"	12
J1501A	Field	1.6m x 19"	16
J1500A	Field	2.0m x 19"	20
C2785A	Field	1.1m x 19"	10
C2786A	Field	1.6m x 19"	16
C2787A	Field	2.0m x 19"	20

Cabinet Loading Requirements

Servers require two EIA of cabinet space (each two EIA of space is equivalent to the height of a server). Ensure that the cabinet has this amount of space available.

Fill empty cabinets from the top down. If you are mounting one or more servers into an empty cabinet, start at the inside top of the cabinet and count down four of the holes in the columns at each corner to determine the position of the rails for the first server. When the first rails are installed, continue to use the four hole requirement as your guide for installing additional rp24xx servers.

Installing the Server

The following procedure describes how to install a stand-alone server into an approved cabinet on a slide-rail assembly.

Step 1. Ensure that the anti-tip stabilizers or cabinet ballast are properly installed on the cabinet and secured.

WARNING	If anti-tip stabilizers or ballast are not installed or are improperly installed on the cabinet, it can tip. Failure to follow this precaution can cause personal injury or death and can damage equipment.

Step 2. Remove the stand alone server from it's packing materials, if not already unpacked.

Step 3. Refer to the *A-400/A-500 Server Slide Rail Installation* instructions, for both server and cabinet rail installation instructions.

Installing Bezel End Caps

Each server is shipped with two metal brackets and two plastic end caps that are designed to be attached to a stand alone server if it is to be mounted in a cabinet. Locate these items and have them available for installation. The following diagram shows the location of bezel end caps and brackets on a racked server.
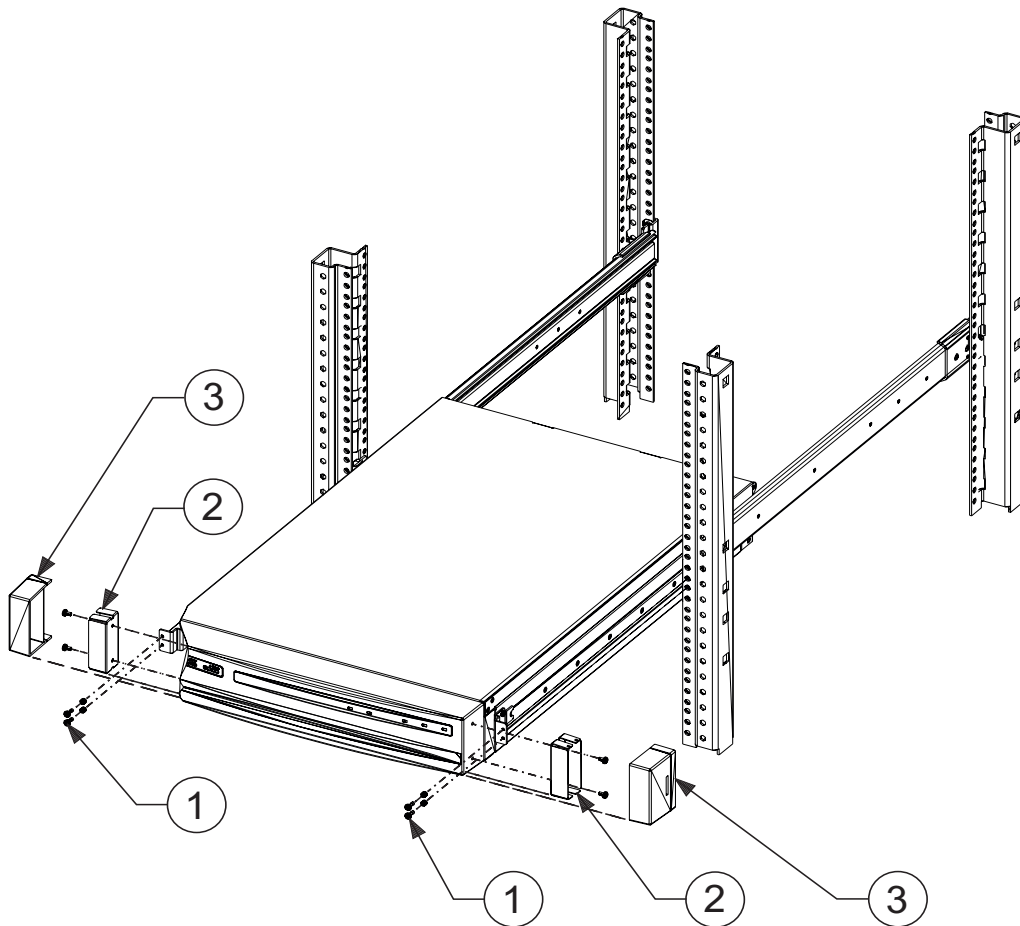
ccrr001

Callout #	Item
1	Server-to-cabinet attachment screws

Callout #	Item
2	Metal brackets
3	Plastic end caps

Once the rail kit has been installed and the server is positioned in the cabinet, follow the procedure listed below to attach the brackets and end caps:

Step 1. Extend the server between four and six inches out of the cabinet to allow room to work.

Step 2. Attach the metal brackets to each end of the bezel with two plastic retainers, as shown in the following graphic.
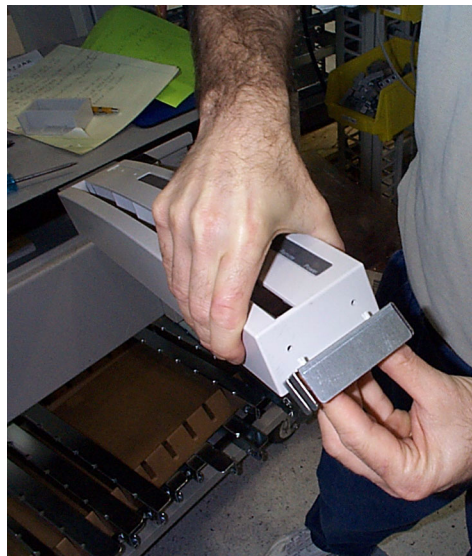
Step 3. Fit the plastic end caps over the metal brackets as shown below.
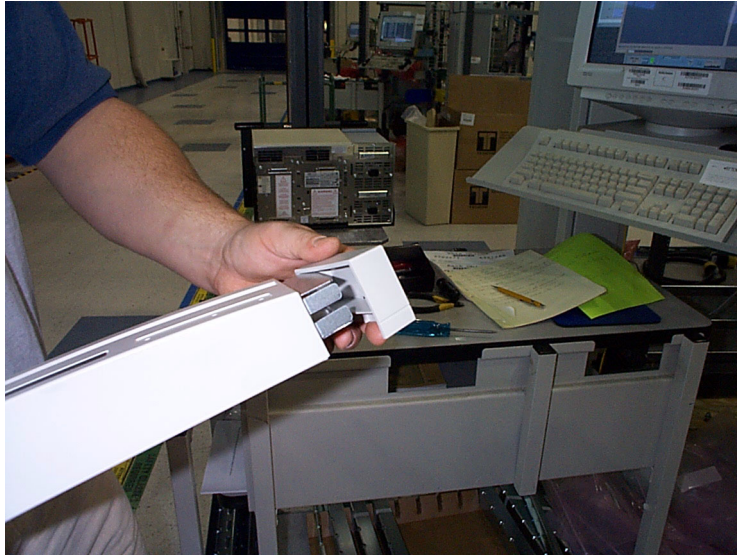
Step 4. Push the server back into the cabinet until it is flush against the vertical columns. Replace the screws that fasten the server to the rack.

Step 5. Attach the bezel to the front of the server. The cabinet-mounted server will now look like the picture shown below.

Installation In Third-Party Racks

Overview

HP has qualified the rack systems of several vendors as suitable for rp24xx server installation.

To qualify each rack configuration, specific rack vendors and rack products have been identified. Each vendor has several rack product lines. rp24xx servers are supported only in HP cabinets or in qualified vendor racks, as shown below:
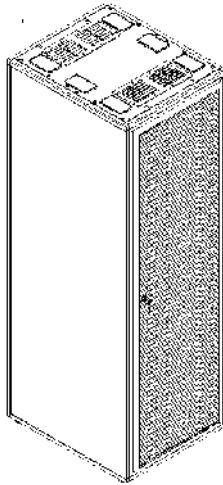
Examples of cabinets are Chatsworth (CPI) Megaframe, Wrightline Paramount, Rittal Vario, Vero IMRAK, SMC, Zero Express Rack and Bud Industries S2000. For further information, refer to the table titled, *Third Party Rack Ordering Guide for Vendor Products*, at the end of this section.

Third Party Rack Checklist for rp24xx Server Installations

This document is a guide to insure safe and reliable installation and operation of rp24xx servers in third party EIA-style racks and applies to installations at the end-customer site only.

Footprint

The rp24xx server is 25 inches deep. Additional space for cable management is required in the rear. HP recommends 40 inches in front and 24 inches 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 safety   The rp24xx server slides out of the rack about 24 inches for service. When extended this far, there can be a major tip hazard for the rack.   If the rack has anti-tip feet front and rear, attach them prior to installing the server. If anti-tip feet are not available, ensure that the rack is solidly bolted to the floor both front and rear. Ensure that the thick sheet metal of the rack base provides for a bolt-down bracket.

Rack slides   When servicing the HP rp24xx server, it is critical to use properly attached rack slides, which will allow the detents to stop the sliding motion of the unit. Always work on the server when it is fully extended and locked in place to avoid injury to maintenance personnel.

Warranty Checklist

The following factors must be considered to insure that HP's warranty is valid in third party rack configurations.

Air flow	rp24xx servers require front-to-back airflow. Therefore, a solid front or rear door will not work. The doors must be removed or changed to a 63% open perforation pattern over an area 17 inches wide, top to bottom, minus a 2 inch border. Also insure that the hot air exhaust from other equipment is not being presented to the intake (front) of the rp24xx server.
Service Access	To insure that the rp24xx server can be serviced properly, the installation must allow for a free sliding distance of 40 inches out the front of the rack. This will also allow HP to use the standard service contract for any rp24xx server in the field regardless of the racking situation. Alternate service contracts are addressed later in this document.
Cable strain relief	The cable management solution for the rp24xx server is in two parts:

1. There is a wire-form cable management system that attaches to the rear of the server that provides a strain relief attachment point.

2. The cable bundle from each server must be Velcro tie-wrapped and fed into a 40 inch service loop. The service loop allows the server to slide forward completely out of the rack for access. For warranty purposes, a proper method of strain relief must be used, especially for any SCSI-type 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- If the customer has a power cable and two LAN cables attached to the rp24xx server, cabling options include an alternate strain relief system, to allow the rear door (if perforated) to be used for security.

- FIBER OPTICS CABLING – Fiber optics cable allows a 1.5 inch bend radius and has a very low profile connector. Fiber optics cable bundles are relatively small and can be held to the inside of the wire-form strain relief.

- MAXIMUM SCSI CABLING – If ultra-flex SCSI cables are used, the bend radius allowable is 1.5 inches with a low profile connector. the customer must use the provided wire form strain relief parts. HP strongly recommends using a server rack that provides the extra space required to house excess cabling.

rp24xx server PDU Support

PDUs for rp24xx servers must be ordered as separate products when configuring a Third Party Rack order.

The PDUs are:

Table 0-2

E7674A 19"	16A	100-240V
E7681A 19"	30A	100-240V
E7682A 19"	60A	100-240V

Supportability Matrix

The following table shows supportability requirements.

Table 0-3

Major Features	rp24xx server w/ Full HA

Table 0-3   (Continued)

Anti-Tip	MUST
Proper slides	MUST
Airflow	MUST
Service Access	MUST
Cable Strain Relief	MUST
Front Access	40 inches
Rear Access	24 inches

Third Party Rack Ordering Guide for Vendor Products

Table 0-4

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[a]	14032 Series Perforated Metal Door	712441-001 Floor Clamp Kit	www.chatsworth.com

Table 0-4   (Continued)

Rack	Mounting Hardware	Doors	Qualified Tip Stability Device	Contact
Wrightline Paramount Frame 40" Deep JF842440	JRK44190 Rail Kit and JHP0N001 rp24xx server 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	rp24xx server Adaptor	Ventilated Front and Rear	Floor anchoring	Sales & Customer Support 1-800-SMC-PLUS (1-800-762-7587)

a. Requires purchase of two.

NOTE   For additional or other third party rack vendor product information, contact the HP Enclosures Technical Marketing Manager at (408) 873-6692.

Server Slide Rail Installation

The following information contains instructions for installing rp24xx servers in a cabinet.

CAUTION   Both anti-tip feet must be properly affixed before installing equipment in a cabinet on a slide assembly.

Tools needed: Torx Drivers, T15 and T20.

Slide Rail installation kit contents are as follows:

2   Slides, inner

2   Slides, outer

2   Slides mount, front

2   Slides mount, rear

2   Plastic bezel end caps

1   Cable Management device

1   see-through plastic bag containing:
     2 bracket end caps
     2 rack mounting ears

1   see-through plastic bag containing:
     2 front RBI adapters
     2 rear RBI adapters
     2 cres fr flanges
     4 M4 x 0.7 screws
     10 10/32 x 0.5" screws
     10 Sheet metal nuts
     (Note: Contains non-E-series HP cabinet
     hardware, also)

1   see-through plastic bag containing:
     4 plastic snap rivets
     4 sheet metal nuts
     8 M5 screws
     16 M4 screws

The following illustration shows rail parts only. Plastic parts bags, plastic end caps, and the cable management device is not shown:
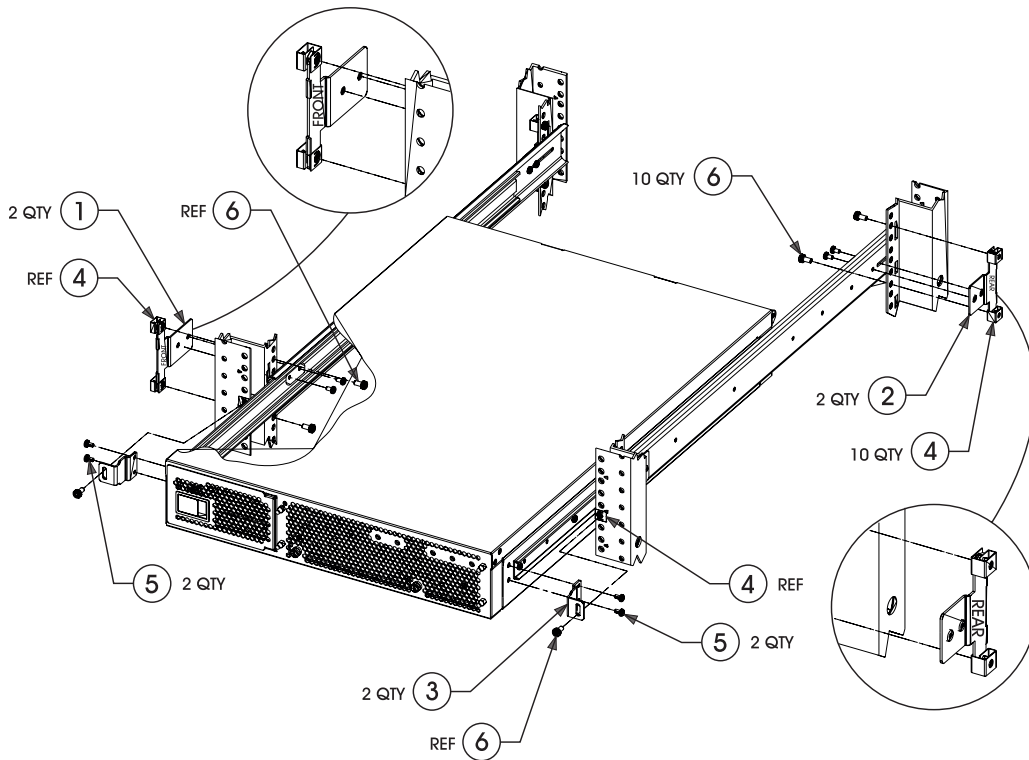
6	10	SCREW, 10-32 x 0.5 INCH	2680-0278
5	4	SCREW, M4 x 0.7mm	0515-2478
4	10	SHEET METAL NUT	0590-0804
3	2	FLANGE	A5570-00044
2	2	ADAPTER, REAR	A5570-00043
1	2	ADAPTER, FRONT	A5570-00042
ITEM	QTY	PART/MATERIAL-DESCRIPTION	PART NUMBER

RACK KIT ASSEMBLY

NOTE   This illustration shows non-E-series HP cabinet columns

The following procedures list the steps required to install a stand-alone server in a cabinet.

Step   1. Attach rear slide mounts to the outer rails using M4 x 0.7mm screws. Do not fully tighten screws. Allow the rear slide mount to move along slot in the outer rail.
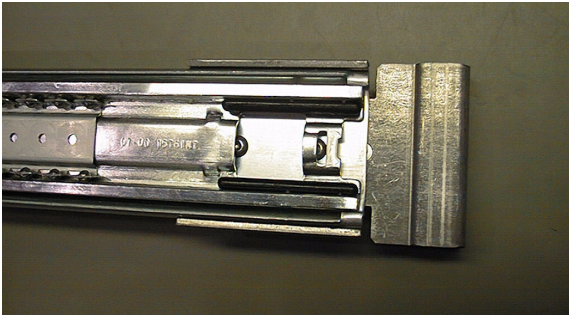
Step 2. Place the outer rails with mounting brackets in the rack. Engage support hooks in the rack columns. The front mounts and rear mounts are different, as shown below:
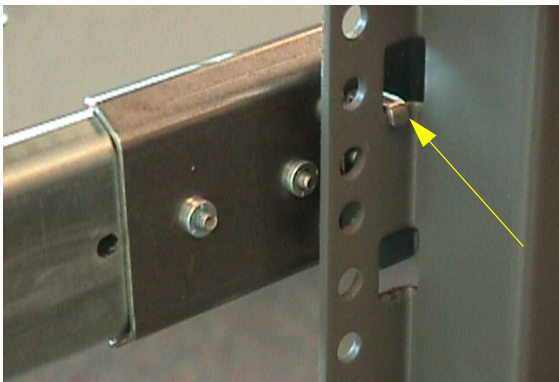
Support Hook attached to rack column.

Front Slide Mount Placement
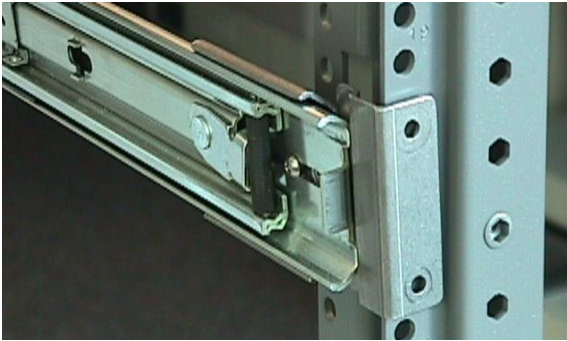
Rear Slide Mount Placement

Step 3. Install sheet metal nuts on rear columns. Locate the slide mount laterally against rack column. Install and tighten the M5 x 0.8mm machine screws.

Step 4. Install and tighten the M5 x 0.8mm machine screws on the front slide mounts.
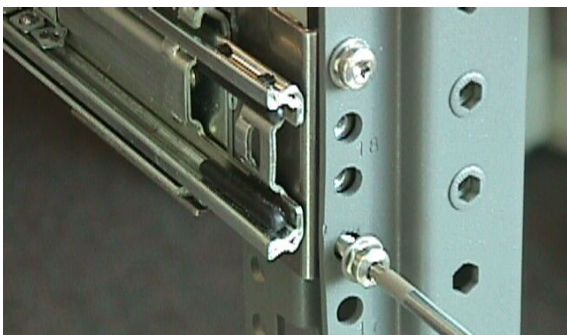
Step 5. Tighten the M4 x 0.7mm screws that attach the slide rails to the rear mounts.
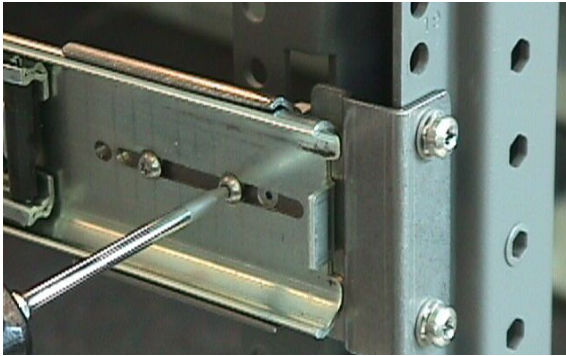
Step 6. Locate and install the inner slides on the sides of the server, using M4 x 0.7mm machine screws. The inner rails contain a flat spring latch. The free end of the latch goes toward the front of the server, the riveted end goes toward the rear of the server chassis.

Step 7. Double-check all mounting screws to ensure that they are tight.

Step 8. Completely extend both outer slides to the front of the rack. Outer slides should latch in the extended position.

Step 9. Align the inner rails on the server between the extended outer rails on the rack.

WARNING **The rp24xx server weights 22.68 kg (50 lbs). Use two people or a lift during installation. Take necessary precautions to prevent muscle strain when lifting or carrying the server.**

> **Do not lift or carry the server by the bezel. The bezel is made of plastic and is attached to the server chassis by two bezel retainers and four ball-posts. It will only support the weight of the server chassis in an emergency. Failure to heed this warning may result in personal injury and/or permanent damage to the server**

NOTE   The rail sets on both sides of the chassis must be properly aligned and engaged before attempting to slide the server into the cabinet.

The inner rail (attached to the server) must have *both* top and bottom edges *inside* the outer (cabinet) rails

---
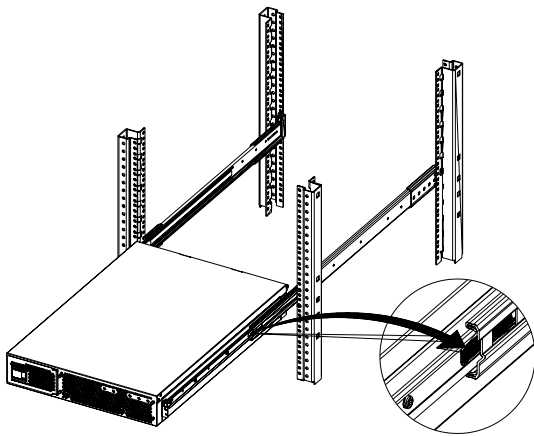
ccrr014

Step 10. Carefully guide the inner slide rails on the server chassis into the outer rails, engaging the ball bearing carriers.

CAUTION   Do NOT force the slides together. To do so may damage the ball bearing carriers. The inner slides will latch after travelling a few inches.

Step 11. Press the slide latches on the inner slides and carefully slide the server completely into the rack.

Step 12. Verify operation of the slides and check alignment of the server in the rack.

Step 13. Secure the server to the rack columns with M4 x 0.7mm screws and M4 clip nuts.

Step 14. **Optional:** Install shipping retainers at the rear of the unit if the server is to be shipped while installed in a rack. Install retainers with M5 x 0.8mm screws and M5 clip nuts.

Shipping Retainers
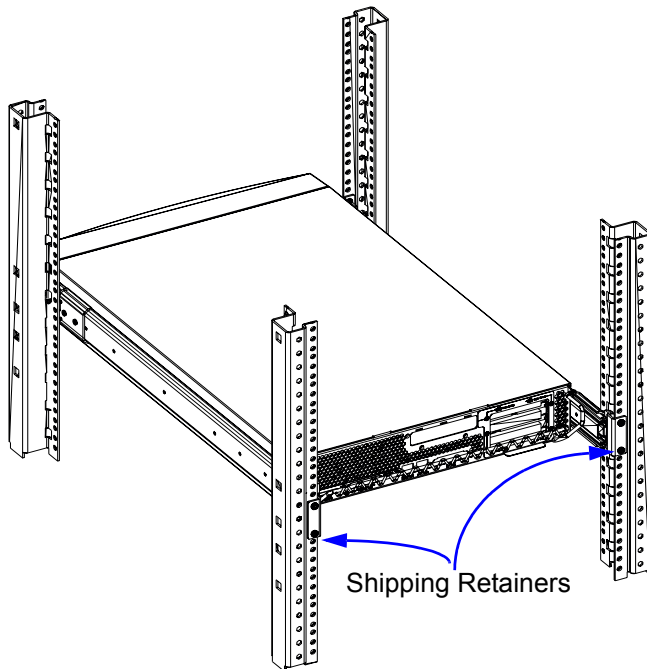
ccrr013

Cabinet Installation

Installation of a factory-loaded cabinet consists of the following steps:

Step 1. Move the cabinet to the installation site.

Step 2. Lower the leveling feet. (This will prevent excessive wear on the casters, level the cabinet, and provide stability.)

WARNING	**Extend or install the cabinet stabilizers, located at the bottom of the front of the cabinet, as an additional safeguard against the cabinet toppling forward during installation.** **Failure to observe this precaution could result in personal injury or death and equipment damage.**

Step 3. Connect the console and system peripherals to the server(s).

NOTE	Attaching cables while the rails are extended fully forward will ensure that sufficient slack is available for later maintenance.

Step 4. Connect the cabinet power cord to the appropriate wall outlet.

Step 5. Be sure all peripherals outside the cabinet are connected to wall outlets.

The cabinet/server system assembly is now ready for the power up process.

Cabinet Mounted Server Unpack

Overview

rp24xx servers can be procured in two modes: stand-alone or pre-installed in a cabinet at the Hewlett-Packard factory. Stand-alone servers can be installed in an existing HP-supported cabinet by purchasing Rail Kit A5810A.

Installing a Factory-integrated Cabinet

Unpacking the Cabinet

NOTE	It is the customer's responsibility to inspect the shipping package for damage.
	It is the Hewlett-Packard Customer Engineer's responsibility to remove the cabinet assembly from the shipping pallet.

WARNING	**A fully configured 2.0 meter cabinet can weigh over 500 kg (1100 lbs). Be careful not to tip the cabinet while unpacking.**
	Failure to heed this warning can result in serious injury or death and equipment damage.

To unpack the cabinet, perform the following steps:

WARNING	**Wear protective glasses while cutting the plastic bands around the shipping container. These bands are under tension.**
	Failure to heed this warning can result in serious eye injury if the severed bands snap back and hit you in the face.

Step 1. Cut the plastic polystrap bands around the shipping container.

Step 2. Follow the procedure listed below to prepare the cabinet for removal from the pallet:

    a. Lift the cardboard top cap off of the shipping box (callout 1).

    b. Remove the packing material underneath the cap (callout 2).

    c. Remove the clamshell box and place out of the way.

    d. Remove the screws that secure the ramps in place and lift the ramps out (callout 3).
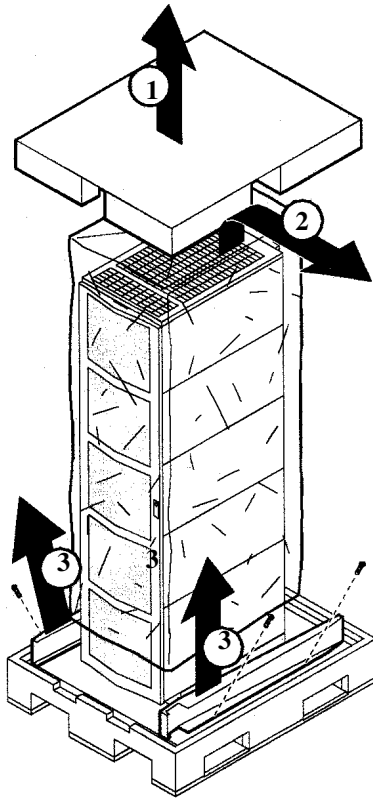
Step 3. Remove the brackets securing the cabinet to the pallet (callout 4).
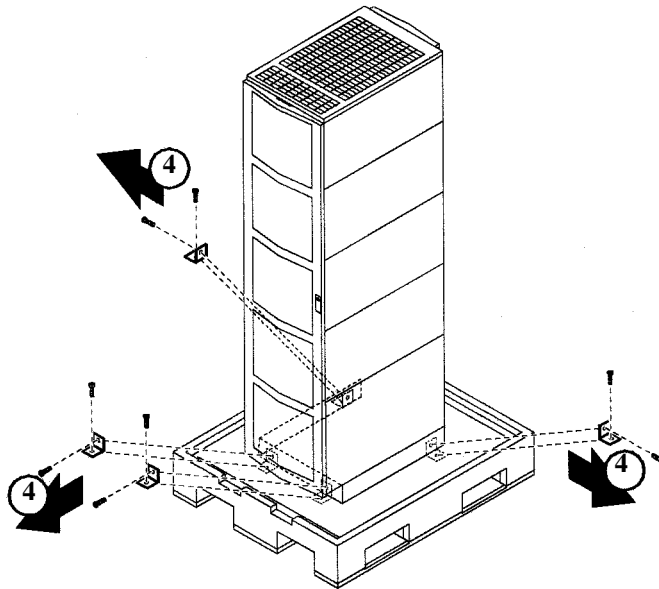
Step 4. Insert the ramps in the notches provided on the pallet (callout 5). Remove the side panels from the cabinet and set them aside (callout 6).
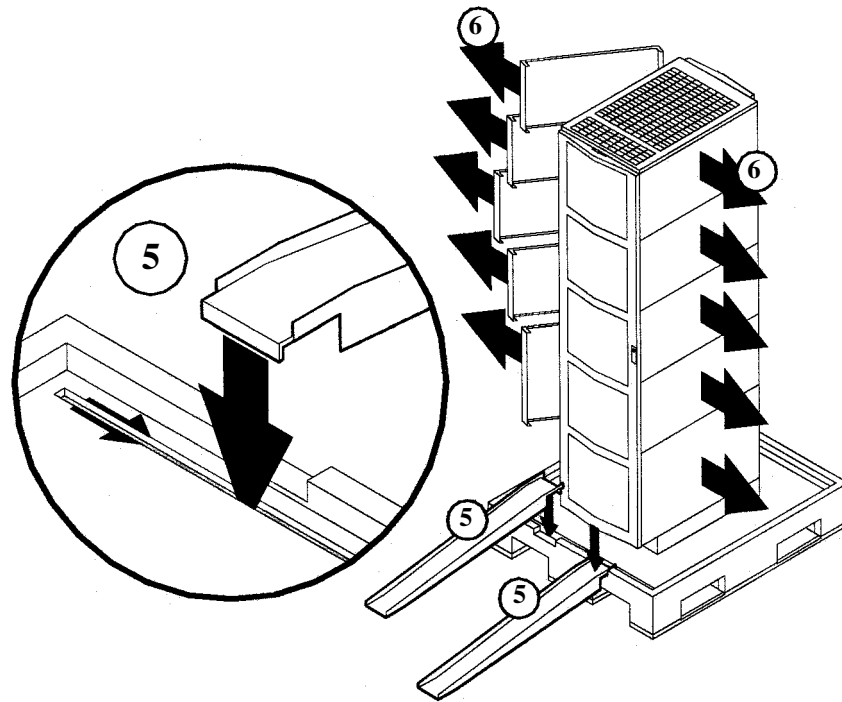
WARNING: A fully configured 2.0 meter cabinet can weigh over 500 kg (1100 lbs). Always use at least two people to roll the cabinet off of the pallet. Be careful not to tip the cabinet while unloading.

Failure to heed this warning can result in serious injury or death and equipment damage.

Step 5. Use at least two people to roll the cabinet off of the pallet and down the ramp (callout 7).
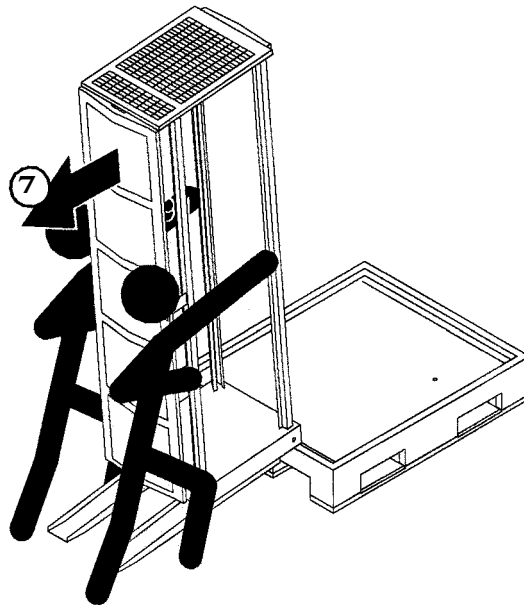
Cabinet Inspection

Once the cabinet is off the shipping pallet, but before moving it to the installation site, inspect the internal and external condition of the cabinet.

Cabinet Exterior Checklist

Check the cabinet exterior for signs of shipping damage:

❏ Look at the top and sides for dents, warpage, or scratches.

❏ Check the server front bezels for alignment, scratches and breakage.

❏ Check any filler panels on the front of the cabinet for proper fit.

❏ Check the rear door for dents, scratches, proper fit when closed, and operation.

Cabinet Interior Checklist

Open the rear door and inspect the inside of the cabinet:

❏ Inspect all cables and ensure that they are secure.

❏ Inspect all rails for signs of damage.

❏ Check all mounting screws for tightness.

❏ Check all components for signs of shifting during shipment or any signs of damage.

NOTE	If the shipment is either incomplete, damaged, or fails to meet specifications, notify the nearest Hewlett-Packard Sales and Support Office. If damage occurred in transit, notify the carrier as well. Hewlett-Packard will arrange for replacement or repair without waiting for settlement of claims against the carrier. If the shipment was damaged in transit, keep the shipping containers and packaging material for inspection. If extensive damage is found, it may be necessary to return the entire cabinet to HP.

PowerTrust Uninterruptible Power Supply (UPS) Option

Unpack the PowerTrust UPS and use the installation information in the *PowerTrust System Guide,* included with the UPS, to connect the UPS to the cabinet.

Repackaging the Cabinet for Shipment

Use the original packing material to repackage the cabinet for shipment. If the packing material is not available, contact your local Hewlett-Packard Sales and Support Office regarding shipment.

Before shipment, place a tag on the container (or equipment) to identify the owner and the service to be performed. Include the equipment model number and the full serial number, if applicable. The label showing the model number and the full serial number is located on the outside of the rear door.

Due to the weight of a fully loaded cabinet, it will require two people to push the cabinet up the ramp onto the pallet.

WARNING: Repackaging a loaded cabinet may be hazardous because a fully configured 2.0 meter cabinet can weigh up to 500 kg (1100 lbs). Always use two people when moving the cabinet and when positioning the cabinet on the pallet. Check the condition of the loading/unloading ramp before use. If the ramp appears damaged, DO NOT attempt to push a loaded cabinet up the ramp onto the pallet. Contact your local Hewlett-Packard Sales and Support Office regarding shipment. Failure to heed this warning can result in serious injury or death and equipment damage.

To repackage the cabinet, follow the repacking checklist and refer to the unpacking instructions for detail.

Repacking Checklist:

❏ Assemble the HP packing materials that came with the cabinet.

❏ Connect the loading ramp to the pallet.

❏ Raise the cabinet levelers before moving the cabinet.

❏ Retract or remove the stabilizers.

❏ Push the cabinet up the ramp onto the pallet. Be sure to position the cabinet so that the front goes up the ramp first.

❏ Secure the cabinet to the pallet with the shipping clamps, shipping block, and rear door support.

❏ Place the anti-static bag over the cabinet.

❏ Place bezel support packing on the front corners of the cabinet. Secure it with a wrap.

❏ Place the top cap packing material and loading/unloading ramp on top of the cabinet.

❏ Wrap the clam shell box around the cabinet.

❏ Put the box top on the box and secure the assembly to the pallet.

Be sure to follow the tagging and labeling instructions mentioned earlier. The cabinet is now ready for shipment.

Stacking Servers

Hewlett-Packard will support stacking up to six rp24xx servers if the following conditions are met and the correct procedure followed.

NOTE	HP will not support the stacking any other A-Class server.

CAUTION	In order to remain within weight limitations and to prevent tipping, do not stack servers more than six high. Each server weighs approximately 23 kg (50 lbs). DO NOT lift more than one server at a time. Always use the strap when stacking servers, regardless of the number. Hewlett-Packard will not support or warrant servers that are damaged as a result of being improperly strapped or stacked more than six servers high.

Follow the steps listed below:

Step 1. Remove the rubber "feet" from the packing material and place one rubber foot squarely on each of the four corners on the bottom of each server.

Step 2. Lay the enclosed binding strap out flat and straight.

WARNING	**DO NOT attempt to lift the server by the front bezel. The plastic bezel is attached by pressing it onto four ball-tipped posts located on the front of the server cover and pulls off with very little pressure.** **The bezel WILL NOT support the 23 kg (50 lb.) weight of the server.** **Failure to observe this precaution will cause damage to the server and may cause personal injury.**

Step 3. Place the first server over the strap and position the strap so that it can be firmly cinched down on the top server.

Step 4. Carefully set the remaining servers (up to five) on top of the first server so that the four feet of each of the remaining servers are squarely on the top of the server below.

WARNING	**Do not cinch the strap so tightly that the chassis buckles.** **Failure to heed this precaution may cause internal components to be damaged and/or the server cover may not seat correctly to seal the server from dirt and dust.**

Step 5. Center the strap midway between the front and rear of the stack and pull the ends up over the top server. Thread the flat end through the loop end and pull it snug. Press the Velcro® pieces together firmly and lay them flat on the top cover of the top server.

CAUTION	DO NOT stack heavy objects, such as monitors, on top of the server. The weight may cause the top to cave in and damage internal components.

Unstacking Servers

If internal access (for maintenance or component removal and replacement, etc.) is required to a stacked server (with the possible exception of the top server), the stack must be unstrapped and the servers unstacked to remove the cover of the unit for which internal access is required (target server).

NOTE	HP will not support the stacking of any other A-Class server.

CAUTION	In order to remain within weight limitations and to prevent tipping, do not stack servers more than six high. Each server weighs approximately 23 kg (50 lbs). DO NOT lift more than one server at a time. Always use the strap when stacking servers, regardless of the number. Hewlett-Packard will not support or warrant servers that are damaged as a result of being improperly strapped or stacked more than six servers high.

Follow the steps listed below:

Step 1. Pull the flat end of the strap out of the loop end and pull the Velcro® pieces apart.

WARNING	**DO NOT attempt to lift the server by the front bezel. The plastic bezel is attached by pressing it onto four ball-tipped posts located on the front of the server cover and pulls off with very little pressure.** **The bezel WILL NOT support the 23 kg (50 lb) weight of the server.** **Failure to observe this precaution will cause damage to the server and may cause personal injury.**

Step 2. Carefully remove the servers in the stack, one at a time, until the target server is reached.

TIP	At this point, a decision to remove the target server or leave it in place to work on it can be made. Removing the target server will allow you to restack the remaining servers and continue using them while the target server is being repaired.

5 Operating Instructions

Configuring the Guardian Service Processor (GSP)

The Guardian Service Processor (GSP) is resident in the system to allow the system administrator to monitor and perform administrative functions locally on the system console, or at a console in another area. This section provides configuration procedures that will:

- Configure the GSP Local Area Network (LAN) port

- Add or delete GSP users (maximum of 20)

- Change the default GSP configuration.

Configuring the GSP LAN Port

Perform LAN configuration from the system's local port (either console or the HP secure web console).

NOTE   The GSP LAN port is different from the System LAN. It will need a separate:

- 10BaseT LAN connection

- Subnet mask

- Gateway address

- Hostname (to be used when messages from the console are logged or printed)

To configure the GSP LAN port, perform the following steps:

Step   1. To select the GSP, enter: **ctrl** + **b**.

Step   2. At the GSP prompt, enter the following LAN Configuration (lc) command:

```
GSP> lc
```

The *lc* comrp24xxmand will start a series of prompts. Respond to each prompt with the appropriate information.

Adding Users

The GSP stores access information for a maximum of 20 users (one administrator and 19 operators). By design, the first user entered into 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:

Step   1. Type **ctrl** + **b** to access the GSP.

Step 2. At the GSP prompt, enter the Security options and access control (SO) command:

```
GSP> so
```

Step 3. The first prompt you will see with the *so* command is for the following GSP-wide parameters:

- Login Timeout: 1 minutes.

- Number of password Faults allowed: 3.

- Flow Control Timeout: 5 minutes.

The terminal will then display:

```
Do you want to modify the GSP wide parameters? (Y / [N]) __
```

Enter **Y** to modify GSP-wide parameters, or enter **N** to continue to add users.

If you enter Y, the parameters will be displayed in an edit mode to allow modification.

If you enter N, continue to the next step.

NOTE	The first user entered (user number 1) is identified as the GSP administrator.
	If you are adding users, you will need to step through all current user entries to reach the next available user prompt.

Step 4. The terminal will display:

```
Do you want to modify the user number 1 parameters? (Y/[N]/Q to quit) __
```

Enter **Y** to modify user number 1 parameters, enter **N** to leave user number 1 parameters unchanged or enter **Q** to quit and return to the GSP prompt.

If you enter Y, the parameters will be displayed in an edit mode to allow modification.

If you enter N, the terminal will display:

```
Do you want to modify the user number 2 parameters? (Y/[N]/Q to quit) __
```

Enter Y, N, or Q and proceed according to the instructions shown above in this step.

CAUTION	Be sure to read each prompt carefully and enter the correct response. A missed or incorrect entry could deny entry to that user.

The following list is an example of added users information:

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.
A Mode entry of single only allows entry for that user one time, after which, further logon attempts are denied and the user state is set to disabled.
A Mode entry of multiple allows unlimited logon access to the GSP for that user.

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:

Step 1.   Enter **ctrl** + **b** to access the GSP.

Step 2. At the GSP prompt, enter the Security options and access control (SO) command:

```
GSP> so
```

Step 3. The first prompt you will see with the *so* command is for the following GSP-wide parameters:

- Login Timeout: 1 minute.

- Number of password Faults allowed: 3.

- Flow Control Timeout: 5 minutes.

The terminal will then display:

```
Do you want to modify the GSP wide parameters? (Y / [N]) __
```

Enter N and continue to the next step.

NOTE   You may need to step through several user numbers until you reach the user to be removed.

Step 4. When you access the number of the user to be removed, modify the User's state to *Disabled* and change any other user information necessary.

Changing the Default GSP Configuration

This section describes the process of changing GSP default configuration to the default (factory preset) values. To reset the GSP to its default configuration, perform the following steps:

Step 1.   Enter **ctrl** + **b** to access the GSP.

Step 2. At the GSP prompt, enter the Default Configuration (dc) command:

```
GSP>co
```

Step 3. Follow the prompts to change all GSP configurations to the default values.

CAUTION   When the Security configuration is reset using the *GSP>dc* command, all users, including the GSP administrator, are removed *Remote* is disabled, and the network configurations are reset to the factory default values. The *Remote* functionality must be re-enabled through the main console using the Enable Remote (er) command. The IP address, hostname, subnetmask, and the gateway IP must be re-entered through the main console using the *LAN Configuration* (lc) command.

Initial Power-up

The following section describes the process of applying power to the server and booting the system to the operating system Login prompt.

1. Apply AC Power to the system console.

2. Apply power to the server by pressing the rear panel On/Off switch IN.

On/Off Switch
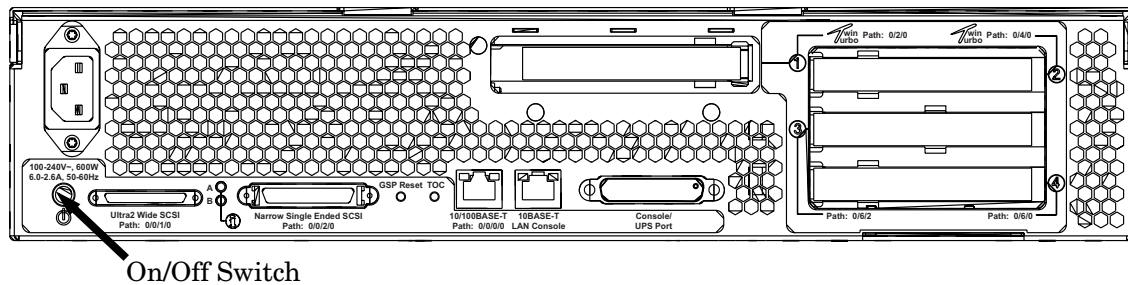
ccrr012

3. A series of self-test boot progress messages will scroll rapidly up the screen. Some messages may pause for up to one minute while the test completes.

4. The initial power-up selftest process will complete in one to five minutes and the Boot Console Handler (BCH) main menu will be displayed.

5. To start the boot process using the primary boot path, type *BO PRI*, at the BCH main menu prompt and press **ENTER**.

NOTE   Booting a system to a operating system login prompt from BCH main menu can take 20 minutes or longer depending on your software and hardware configuration.

---

6. Once the system reaches the operating system login prompt, a display similar to the following will be shown on the console screen:


```
HP-UX hprfes A.09.04 U 9000/897 (ttyp2)

login:
```

Boot To Operating System

The length of time required to boot the system depends on the number of processors and the amount of RAM memory installed. Average configurations can take 20 minutes or more.

The boot process is shown in the following illustration:

Typical Boot Process

```
                    ┌─────────────────┐
                    │  Power Switch   │
                    └─────────────────┘
                       ↙         ↓           System Messages
                                             denoting forward progress
                                             (Estimate 1-6 minutes)
        ┌──────────┐      ┌──────────────┐
        │ Autoboot │      │ Boot Console │
        └──────────┘      └──────────────┘
                   ↘          ↓              System Messages
                                             denoting forward progress
                                             (Estimate 10-20 minutes)
                  ┌─────────────────────┐
                  │ System Login Prompt │
                  └─────────────────────┘
```
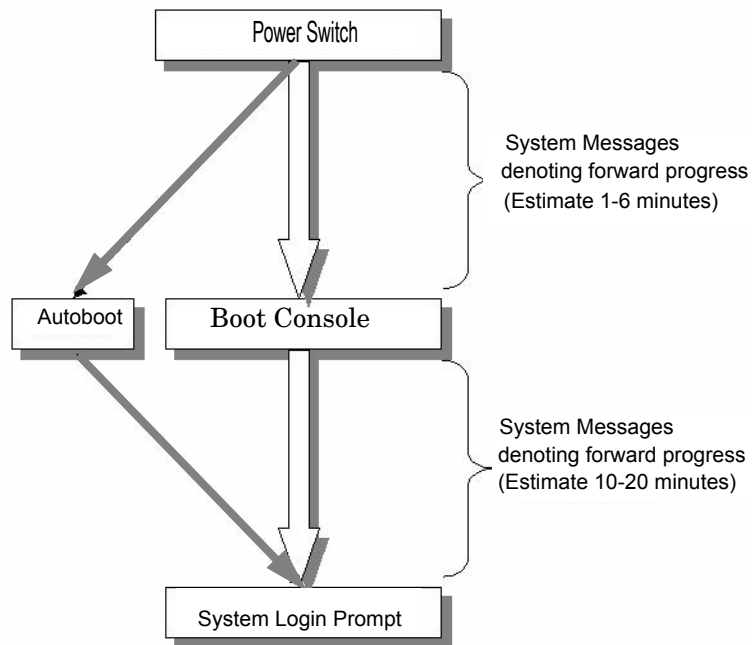
The duration of the full boot process can vary depending on:
- Number of CPUs installed
- Amount of Memory installed
- Operating System version installed
- State of the network

(Total time to boot will vary)

System Power Down

1. Stop all active applications that may be running and Log Off all users.

2. Perform a system backup of the entire Operating System and data base. If this is not feasible, perform a backup of the data base. (Backups should be performed at a scheduled interval as common practice for protecting any new data or changes to the existing data base.)

3. To shut down the OS, enter, "`/etc/shutdown -h`" at the prompt.

4. At the rear of the computer, press and release the on/off switch to power-down the server.

NOTE	Housekeeping voltage is still present after switching power off. Unplug the power cord to completely remove power.

---

5. Unplug the power cord from the server.
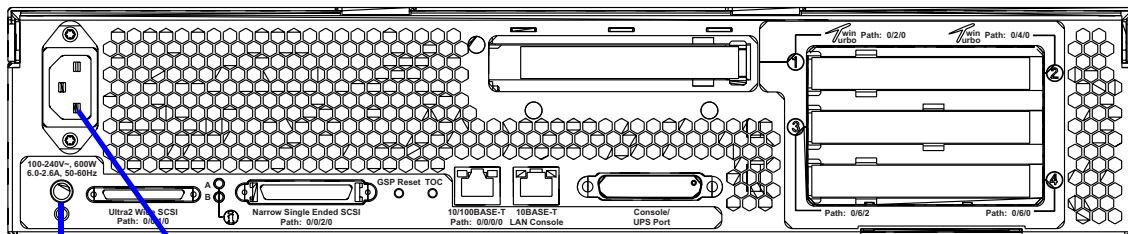
Power Cord Receptacle

On/Off Switch
ccrr012

6 Adding Components to the Server

Add Memory

Memory Configuration Rules

rp24xx servers have 8 slots (4 DIMM pairs) on the system board for memory DIMMs. These slots are numbered 1through 8. Four slots (5 - 8) are disabled on A400 servers. A500 servers can access all slots. The following rules govern the installation of memory DIMMs:

*   Memory must be installed in DIMM pairs.
*   The capacity of DIMMs within a pair must be the same.
*   Install DIMMs with the greatest capacity in the lowest slot numbers.
*   Install DIMMs in numerical order starting with slot 1 (1, 2, 3, etc.).

Add Peripheral Component Interconnect (PCI) Cards

rp24xx servers have a total of 4 PCI I/O slots. Slot 1 is short slot, located outside the I/O card cage, connected to the back of the I/O Backplane. Slots 2 through 4 are located inside the I/O card cage. Slots 1 and 2 are Twin Turbo slots; slots 3 and 4 are Turbo slots.
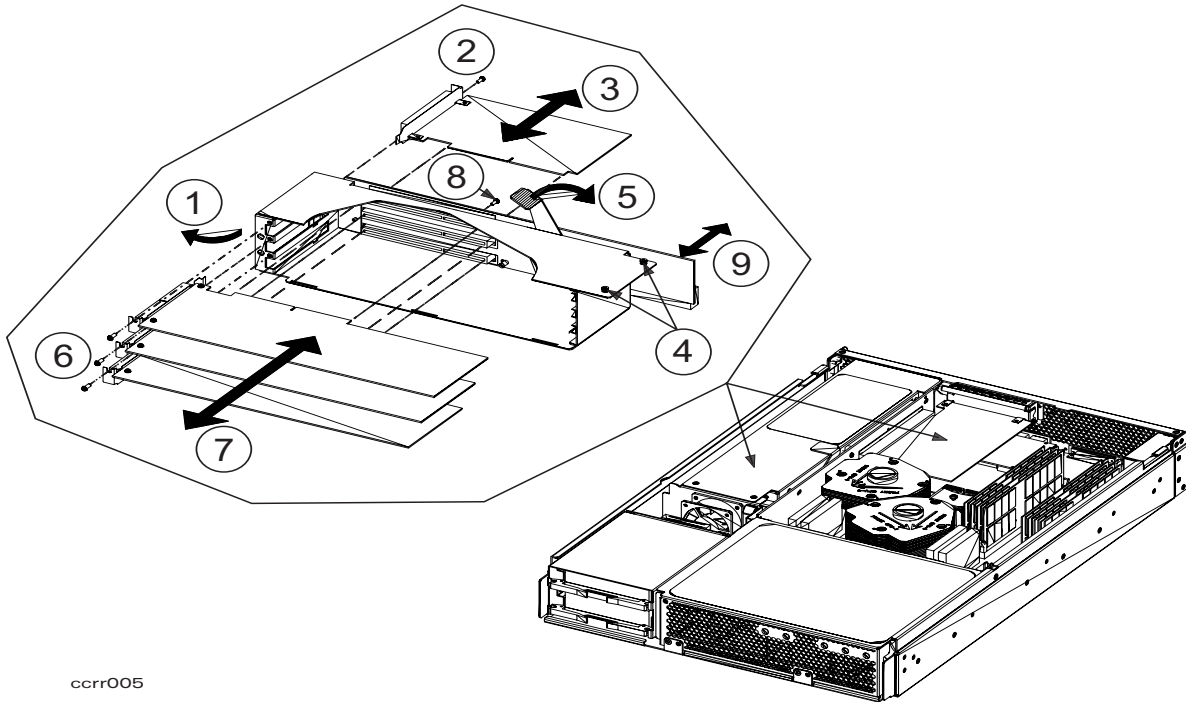
ccrr005

No.	Name	No.	Name
1	I/O Card Cage	6	I/O Card anchor screws
2	Outside I/O Card anchor screw	7	I/O Cards #2 through #4
3	Short I/O Card #1 (may be Secure Web Console)	8	I/O Backplane anchor screw
4	I/O Card Cage anchor quarter-turn fasteners	9	I/O Backplane
5	I/O Backplane disconnect lever		

- Slots 1 and 2 are Twin Turbo slots. Each Twin Turbo slot has a dedicated PCI bus and supports 32 and 64-bit PCI cards.

- Slots 3 and 4 are Turbo slots. They share a single PCI bus and support 32 and 64-bit PCI cards.

A400 servers have access to slots 1 and 2 only. A500 servers have access to all four slots. The following graphic shows the PCI slots on the rear of the server, right side.

ccrr008

New I/O Cards For rp24xx

The following table lists new I/O cards for the rp24xx.

NOTE	The first HP-UX release for the new cards is 11.00.

I/O Card No.	Description
A6828A	U160 Single Port SCSI
A6829A	U160 Dual Port SCSI
A6795A	2Gb, Single Port Fiber Channel LAN
A6825A	1000BaseT Next Generation LAN
A6847A	1000BaseSX Next Generation LAN
A6386A	Hyperfabric2 (HF2) Clustering

These cards can be used in addition to the legacy cards shown below.

The following HP-UX restrictions apply regarding the installation of PCI I/O cards that contain a PCI-to-PCI bridge:

- HP-UX boot is currently not supported for cards that contain a PCI-to-PCI bridge.

- HP-UX patches are required when more than one card containing a PCI-to-PCI bridge is installed in shared slots (slots #3 and #4).

PCI cards are installed in the factory as shown in the Load Order column below, beginning with slot 1. Use the following table as a guideline for installing PCI I/O cards in the field. A system shipped from the factory may have a different configuration than one built in the field.

NOTE: All cards are not supported by A4 operating systems.

Load Order	Product Number	PCI Card Description	Part #	Max.	Boot	Future Rel.	Notes
1	A4926A	Single Port 1000BaseSX Gigabit Ethernet LAN (H)	A4926-60001	4	No	x	
2	A5483A	ATM 622 (MMF connector (H)	A5483-60001	4	No	x	
3	A6092A	Hyperfabric (H)	A6092-60001	4	No	x	
4	A4929A	Single Port 1000baseT Ethernet LAN Adapter (Gigabit ethernet copper) (H)	A4929-60001	4	No		
5	A5838A	Dual port 100baseT/X/dual port Ultra 2 SCSI Combo Interface card (F)	A5838-60001	1	No		1
6	A5506B	Quad Port 10/100B-TX LAN (F)	A5506-60101	1	No	x	1
7	A5856A	RAID Card (F)	A5856-60001	1	No		1
8	A5513A	ATM 155 (MMF connector) (H)	A5513-60001	4	No	x	
9	A5515A	ATM 155 (UTPS connector) (H)	A5515-60001	4	No	x	
10	A4800A	Single port Fast/Wide/Diff. SCSI-2 (H)	A4800-62002	4	Yes		4
11	J3525A	Dual Port serial (X25/FR/SDLC) (H)	J3525-60001	4	No		
12	A5158A	Single port Fibre Channel 1062Mb/s (H)	A5158-60001	4	Yes		
13	A5783A	Token Ring (4/16/100 Mb/s) (H)	A5783-60001	4	No	x	
14	A5230A	10/100B-TX LAN (RJ45) (H)	B5509-66001	4	No		
15	J3592A	8 Port Terminal MUX (H)	J3592-60101	4	No	x	
16	A3738A	Single Port 10/100B-TX (AUI, BNC, RJ45) (H)	A3738-60001	4	No	x	
17	J3593A	64 Port Terminal MUX (H)	J3593-60001	2	No	x	

Load Order	Product Number	PCI Card Description	Part #	Max.	Boot	Future Rel.	Notes
18	A3739B	FDDI Dual Attach Station LAN Adapter (H)	A3739-60002	4	No		
19	A5150A	Dual Port Ultra2 SCSI (F)	A5150-60001	3	Yes	x	4
20	A5149A	Single port Ultra-2 SCSI Interface card (F)	A5149-60001	3	Yes		4
21	A5486A	Public Key Cryptography (PKC) PCI (F)	A5486-60001	3	No	x	
22	A5159A	Dual Port FWD SCSI-2 (F)	A5159-60001	3	Yes	x	4
23	J3526A	Quad Port Serial (X25/FR) (F)	5063-1322	3	No	x	
24	A5858A	Secure Web Console PCI Card (H) (Optional)	A5858-70001	1	No		2
25	A6150	PCI 2D Graphics and 2 part USB adapters (H)	A6150-60001/ A6150-60002	1	No		3
(F) = Full length I/O card -- (H) = Half length I/O card. NA = Not Applicable							

Notes:

1. Use in slot No. 2 ONLY. Cannot be used in slots 1, 3, or 4.

2. Provides web-based console capability on any PC with a browser. If needed, this card must be ordered with the A500 server. Cannot be ordered standalone. This card is not required if a system console terminal is used. Cannot have both A5858A and System Console (C1099A) on the same order.

3. Use A6150-6002 Graphics card in slot 1 only.

4. e3000 systems only.

Add Disks

rp24xx servers support two internal hard disk drives, drive A and drive B.

The following graphic depicts disk drive locations.

Drive A

Drive B
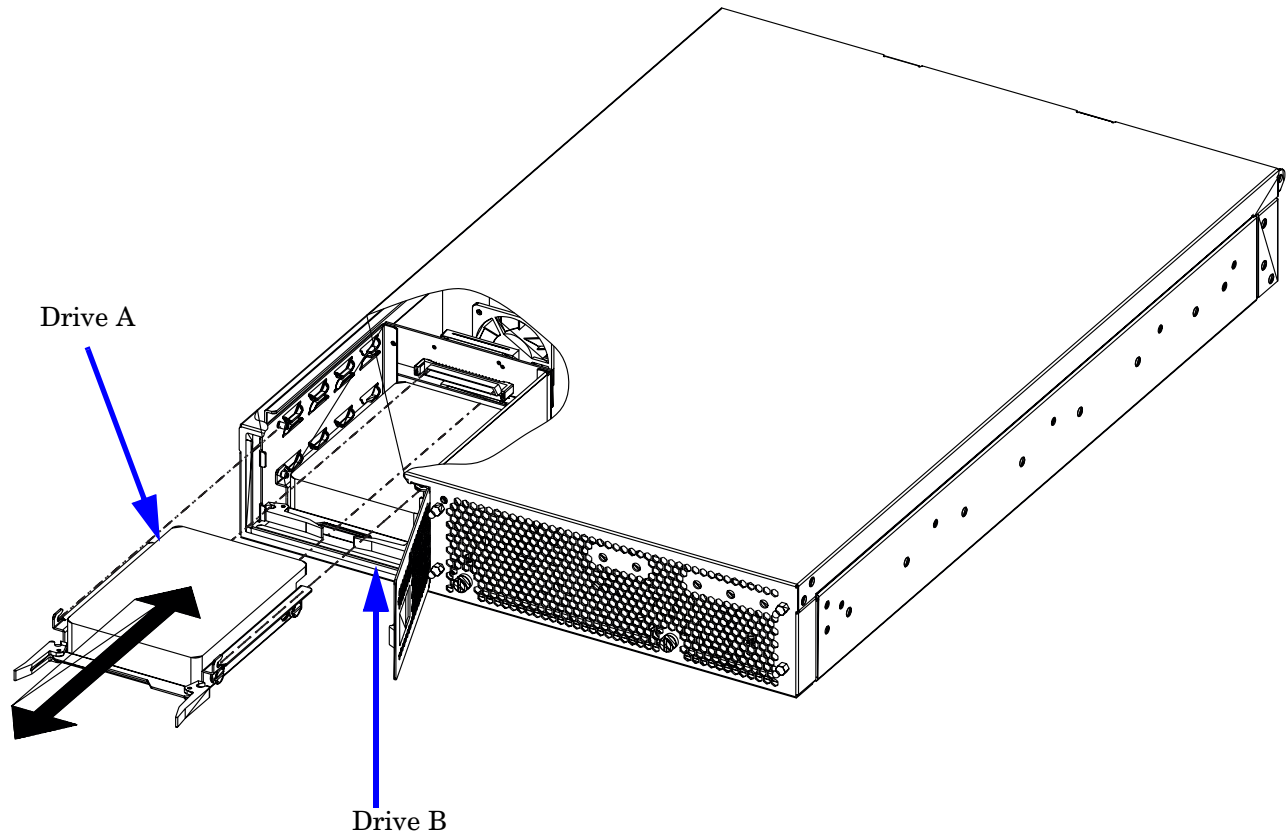
ccrr003

(MPE/iX does not support hotswap). It is not necessary to shutdown the HP-UX operating system or power off the server to install a new disk, but you may shutdown HP-UX and power off the server if you choose. The MPE/iX operating system needs to be shutdown prior to installing a new disk and then rebooted.

Adding CPUs and Socket Cleaning

Replacement or installation of a CPU requires that the CPU chip socket be clean and uncontaminated with dirt and dust particles. The CPU chip socket must be cleaned or replaced if you:

- Replace a system board (using the CPUs from the old system board to populate the new system board).
- Add a CPU to the server.
- Remove a CPU for troubleshooting (to be replaced in the same system board).
- Remove a failed CPU and replace it with a new CPU assembly.

Tools Required

To add or replace a CPU, or to clean a system board socket and the surrounding area, you will need the following items:

- CPU socket dust cover (HP p/n A3639-40024)
- Electronic Vacuum Cleaner- ESD safe, EMI/RFI line filter, acceptable models and options are:
    1. 110V Vacuum (HP p/n 1150-5070, comes with US power cord)
    2. 220/240V Vacuum (HP p/n 1150-5071, no power cord, must order item 3 or 4)
    3. European power cord (2 meter (6foot)) (HP p/n 5184-0874)
    4. U.K. power cord (2 meter (6foot)) (HP p/n 5184-0875)
    5. Vacuum filter (0.03 micron) (HP p/n 3150-0785)

A magnifying glass, (at least 3X power) to aid in the inspection of the removed CPU socket.

Cleaning Kit Components

The A3639-70001 CPU socket cleaning kit contains the following items.

- EMI O-ring (HP p/n 5183-3542)
- IPA pre-moistened, lint free wipes (HP p/n 5012-1138)
- thermostrate pad (HP p/n A3614-00014)
- CPU chip socket with dust cover (HP p/n 1253-0703)

The following graphic shows an exploded view of the CPU assembly, with the component names.
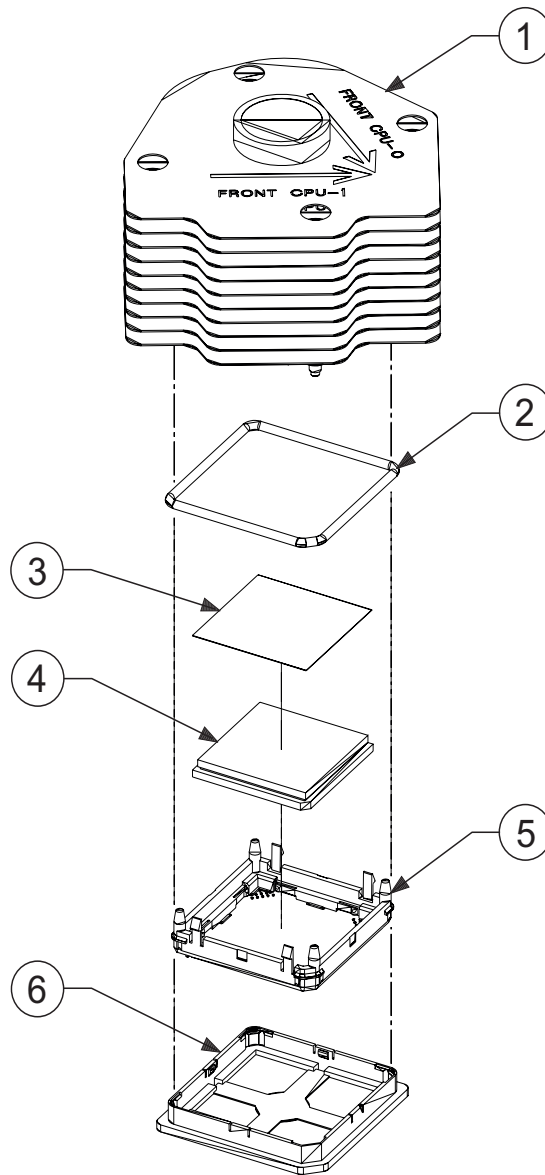
ccrr011

No.	Title
1	Heat Sink
2	EMI O-Ring
3	Thermostrate Pad
4	CPU Chip
5	CPU Chip Socket
6	CPU Chip Socket Dust Cover

CPU Cleaning for System Board Replacement

This section provides information for those situations where CPUs are removed and then replaced onto the same system board or onto a new system board.

1. Carefully vacuum the area surrounding the CPU to be removed and replaced.

2. Remove the CPU assembly.

3. Install the system board socket dust cover (A3639-40024) (item 6) into the empty system board socket.

4. Place the CPU assembly on its side in a clean, ESD safe area.

5. Remove the CPU assembly socket by pressing the four (two on each side) tabs holding the socket to the CPU heat sink base. The CPU chip may come off with the socket or stay attached to the heat sink. (Usually the CPU chip stays in the socket.)

6. Remove the thermostrate pad form the heat sink. It is not necessary to clean the waxy residue left behind on the heat sink and CPU chip.

7. Inspect the system board socket side of the CPU chip for any thermostrate residue. If residue is observed, clean that area with the IPA wipe.

CAUTION   Do no attempt to clean the new CPU chip socket buttons.

---

8. Place the CPU chip into the new socket. Match the cut corner of the chip with the angled corner of the socket, and be sure to have the buttons on the chip facing down. The chip should snap into the socket with light downward pressure.

9. Place the O-ring around the outside of the socket's four posts and roll it down against the corner stops.

10. Hold the heat sink assembly upside down (with the bottom up).

11. Place the new thermostrate on the copper base of the heat sink assembly, with the bevelled side down.

12. Lower the CPU chip and socket assembly onto the upside down heat sink. It only snaps in one way.

NOTE   Be sure to leave the dust cover on the CPU chip until you are ready to re-install the CPU into the system board.

---

13. Remove the system board socket dust cover installed in step 3 and inspect the old socket for missing or damaged buttons. A hand-held magnifying glass is helpful. Tilt the socket at an angle. Missing buttons will show up as an irregularity in the pattern of contacts. Refer to the photograph below for an example of a socket with a missing button. If missing buttons are observed, take special care in the next step.
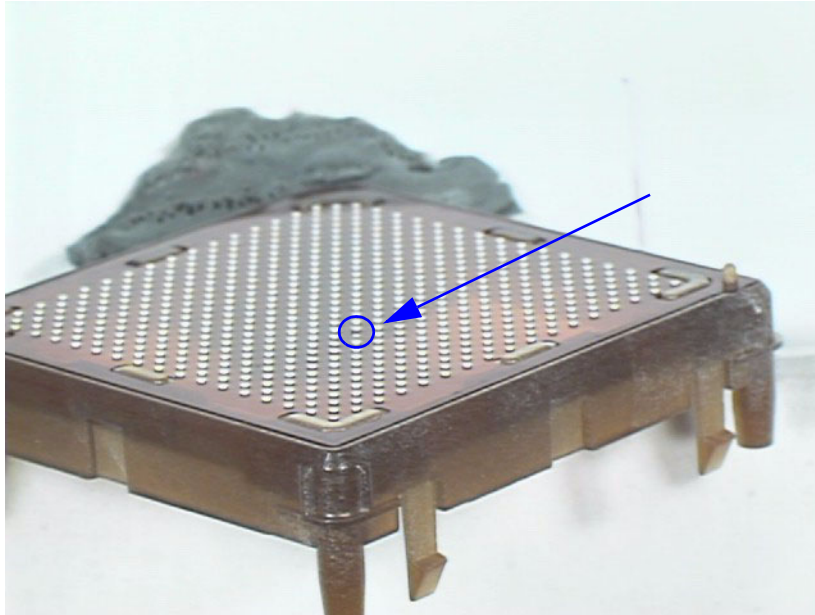
14. Inspect the CPU socket on the system board for broken buttons or other debris. Note that it is normal for a certain amount of residue to be left behind when removing the CPU assembly. If broken buttons are observed, remove them carefully with the IPA lint free wipe. Take care to contain the debris and completely remove them from the system board socket.

15. Vacuum the system board socket site, being careful not to introduce contaminates in the process.

16. Carefully clean the system board socket with the IPA lint free wipe.

17. Install the CPU assembly into the appropriate CPU socket on the system board.

Installing the CPU

Install CPUs according to the procedure listed below:

Step 1. Carefully align the CPU notches with the socket notches and set the CPU in place.

Step 2. Tighten the four captive T-15 mounting screws that hold the CPU in place.

NOTE Tighten the four CPU mounting screws a little at a time, in a cross pattern (1, 3, 2, 4), until they are all tight.

The following picture shows both CPUs installed in a server.
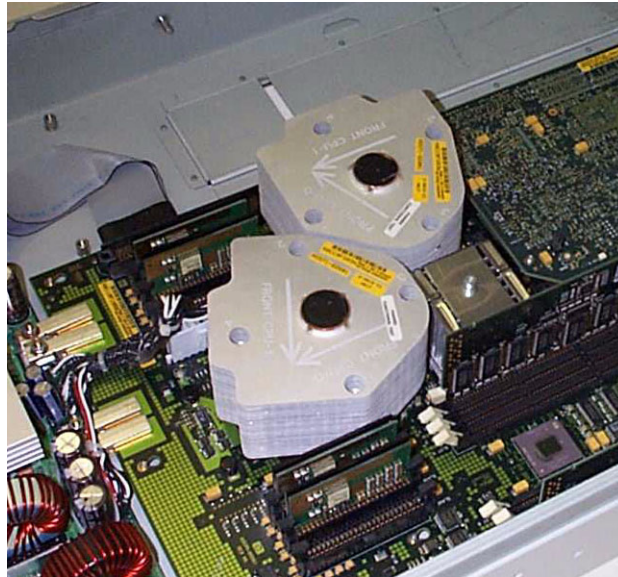
NOTE   The A400 system supports one CPU; the A500 supports two CPUs.

System Console Configuration

The following describes the steps required to configure the HP C1099A or 700/96 terminal for VT-100 mode for operation with an rp24xx server.

C1099A VT-100 Mode Configuration.

The following procedure outlines the steps to configure the C1099A terminal for VT-100 operation.

To access the Setup menu in HPTerm emulation:

1. Press the **F10** key to display the terminal local function labels, then Press **F8** (*config keys*).

   You are now in the *Quick* (**F1**) menu.

2. Select the VT100 emulation by using the space bar to navigate through the available options.

3. Press the **ESC** key to save selected setup parameters and to exit the *Setup* menu.

4. Press the **Y** key when the blinking prompt

   ```
   Save all? (Y/N)
   ```

   appears in the upper right corner of the menu to save the settings in non-volatile memory.

NOTE   If you enter **N** when the

```
Save all? (Y/N)
```

prompt appears, the changes will take effect, but will be lost if the terminal is reset or powered off.

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.

Be sure to save any configuration changes you make before proceeding to a new menu.

---

1. Press **[User System]** key.

2. Press **[config keys]** function key. **[f8]**

3. Press **[terminal config]** function key. **[f5]**

4. Move to *Terminal ID* and enter "vt100".

5. Move to *TermMode* and, using the **[Prev]** and **[Next]** keys, select "EM100".

6. Save the configuration. **[f1]**

7. Press the **[config keys]** function key. **[f8]**

8. Press the **[ansi config]** function key. **[f6]**

9. Move to *multipage* and, using the **[Prev]** and **[Next]** keys, select "yes".
   (Enables screen scrolling).

10. Move to *Backspace Def* and, using the **[Prev]** and **[Next]** keys, select "Backspace/Del".

11. Move to *EM100 ID* and, using the **[Prev]** and **[Next]** keys, select "EM100".

12. Save the configuration.**[f1]**

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.

NOTE	The rp24xx server must first be configured via an HP700 system console before accessing it from a PC or UNIX system.

1. Connect a cable between the notebook PC network adapter and the 10BaseT LAN Console port on the rear of the rp24xx server.

2. Launch the terminal emulator software and set emulation to VT100.

3. Connect to the rp24xx server Guardian Service Processor (GSP) by entering its IP address and press **<ENTER>** or **<RETURN>**.

Secure Web Console I/O Card Replacement

The Secure Web Console (SWC) is installed in the rp24xx system as a PCI Card. This option must be included in the initial order of the rp24xx server where it will be installed at the factory during the assembly process. While not available for installation after receipt of the server, it is customer-replaceable if the factory-installed card fails during operation.

Secure Web Console Features

- **Low-level Commands -** A remote operator can exercise powerful, low-level, HP-UX and MPE/ix commands and functions.

- **Remote Server Management -** Provides secure access to the RS-232 low-level console serial port, on supported servers, via the Internet/Intranet.

- **One Person, One Console, Several Servers -** Using a browser, an operator, from a single location, can manage multiple servers, *regardless of where they are located*.

- **Simultaneous Multiple Operator Access -** Up to four operators, *in different locations,* can share the same remote server console at the same time.

- **Security -** Built-in security includes password encryption, scrambled transmission of data, and secure Java download protection.

- **Mirrored Access -** Up to four operators can simultaneously share the remote console screen and keyboard.

- **Universal Browser-based -** Supports both Netscape© v.3.0+ and Microsoft© Internet Explorer v.3.0+ Web browsers.

- **Efficient Server Access -** Operator can *bookmark* servers for multiple server lookup.

- **Upgradable -** HP Secure Web Console firmware is upgradable over the network, making it easy to add new versions and functionality.

- **Internet Standards Compliant -** Supports HTTP, FTP, TFTP, and other key Internet standards.

Secure Web Console PCI Card Replacement

The PCI card version of the SWC is a standard half-card PCI form factor. It is connected to the server by an internal bus connection in lieu of an external RS-232 connection and to the LAN by a twisted-pair cable and an RJ-45 modular plug connection. Refer to the *PCI Card Replacement* instructions for replacement procedures.

Replacing a SWC card is straightforward. However, proper configuration of the SWC card IP address, plus the complexity of the network, can present problems unless you are properly prepared before hand. It is therefore highly recommended that you:

- *Read and ensure you understand the entire installation and configuration procedure* (Hardware and software) before starting.

- *Acquire all required network information* from the system administrator before starting the installation. (IP addresses, user and administrator names, passwords, etc.).
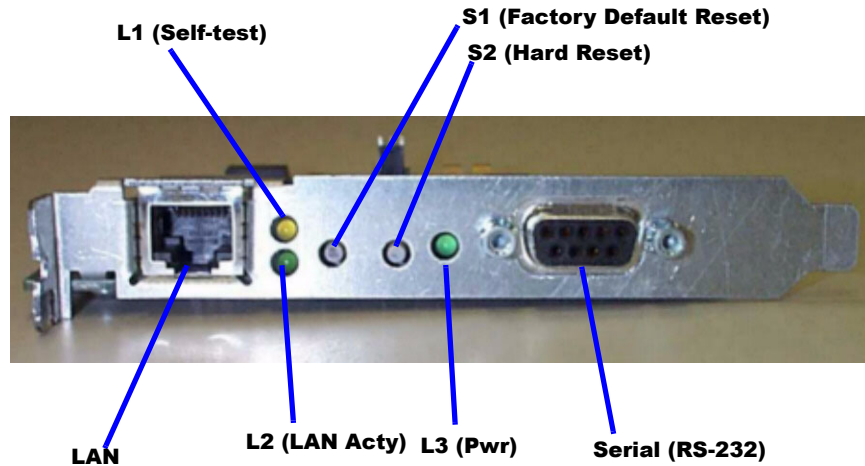
Secure Web Console PCI Card Introduction.

Since the SWC card is half-card size, it will normally be installed on the server rear bulkhead in I/O slot #1 as shown below:
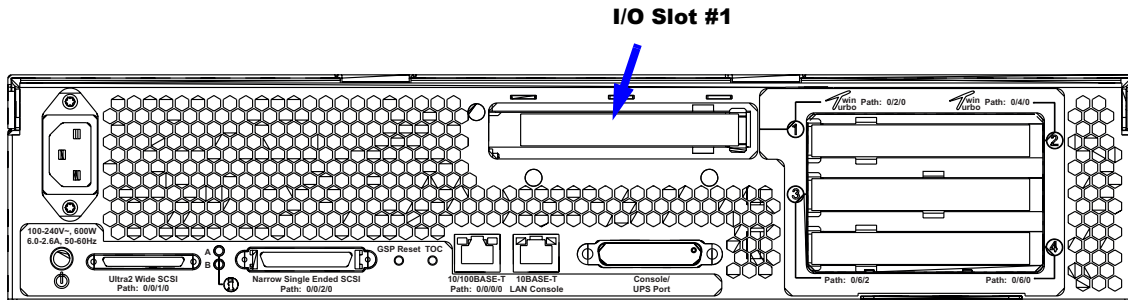
A picture of the SWC card I/O interface connector is included to show location and identity of LEDs, buttons, and ports:

Title	Description
LAN Port	Plug-in for Local Area Network (LAN) connector.
L1 (Self-test)	Lights when self-test is performed.
L2 LAN Activity	When lit, indicates activity between LAN and the SWC card.
L3 Power	When lit, indicates power to the SWC card.
S1 Factory Default Reset	Only effective when pressed simultaneously with S2.
S2 Hard Reset	Momentarily cuts power to the SWC.
Serial Port (RS-232)	Plug-in for RS-232 connector.

NOTE	If you press and hold the S2 (Hard Reset) switch, press the S1 (Factory Default Reset) switch, then release S2 while continuing to hold S1, the SWC card will reset to factory specifications.

Pre-Installation Considerations

The following paragraphs provide an outline of the pre-installation items you should address before starting SWC card replacement.

- Obtain an IP address to be assigned to the SWC card.

- Obtain the subnet mask to be assigned to the SWC card.

- Obtain the gateway address for the SWC card. If a gateway address is unavailable use the SWC card's IP address.

- Know the name of the system to be administered by the SWC card.

- Have internet access available to access the on-line installation and configuration procedures, and the troubleshooting tools.

- Ensure that your browser is on the Supported Browsers list

- Configure your Web Browser software options as follows:

  — *For Microsoft Internet Explorer©:*
    • Turn off the JIT Compiler — (Deselect the **[Java JIT Compiler Enabled]** preferences box).

  — • Disable Proxies (Until final IP address is assigned) or add the 192.0.0.192 to the proxies list.

  — *For Netscape Communicator©:*
    • Disable Proxies (Until final IP address is assigned) or add the 192.0.0.192 to the proxies list.

NOTE	How these configuration settings are made varies with browsers and versions. For specific instructions on how to set these options, check the documentation specific to your browser.

Installing Multiple Secure Web Consoles.

All network devices require unique IP addresses to operate correctly. All SWC cards ship from the factory with the same default IP address: 192.0.0.192.

If another device on the network is using the same address (e.g. 192.0.0.192) the results of the installation will be *unpredictable.*

Dynamic Host Configuration Protocol (DHCP) and the Secure Web Console.

Every computer on the internet or intranet has a unique TCP/IP number/address. Traditionally, TCP/IP numbers are assigned by hand. DHCP is a protocol that allows the assignment of IP addresses *on-the-fly,* for a single session use, from a pool of numbers that the DHCP server controls. Typically, you can use DHCP to preconfigure SWCS permanent network parameters. For more information, go to the SWC DHCP web page at: http://www.docs.hp.com/hpux/onlinedocs/hw/swc/install/00096I/index.htm

NOTE	Only DHCP on HP-UX is supported.

Initial Cable Connections

To make the cable connections, proceed as follows:

Step 1. Connect the SWC card to the Intranet/internet (LAN).

LAN Connection

Step 2. Observe the LEDs on the SWC card rear bulkhead connector.

L1 Self-Test

L2 LAN Activity   **L3 Power**
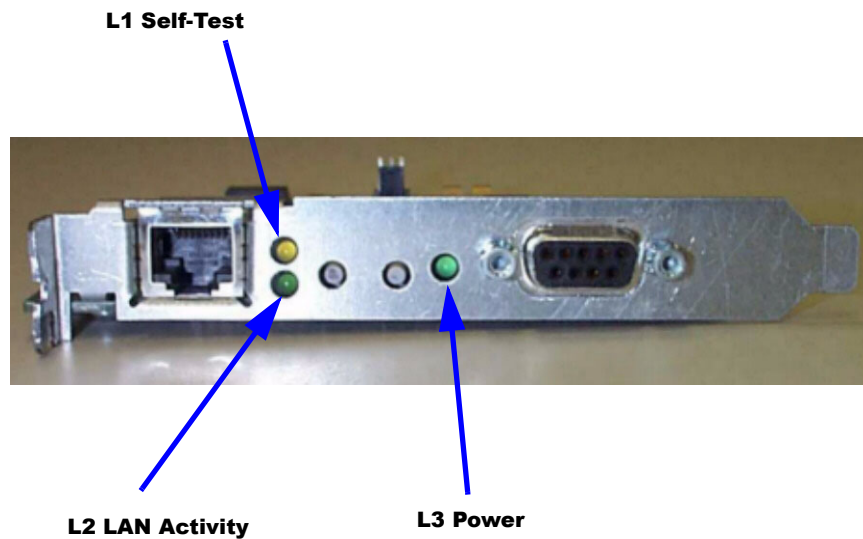
LED Indications

Solid Amber	Self-Test in progress
Amber Off	Self-Test completed
Amber Stays On	Self-Test Failed
Flashing Green (LAN)	Network Activity
Solid Green (Power)	Power on

CAUTION	For system security, initial configuration must be completed *before* making the serial connection between the SWC card and the server's console port.
	Failure to follow this precaution can result in root level access being available to any level of SWC user.

Step 3. Connect the server's console to the SWC card via the RS 232 Serial port.

RS 232 Serial Port

Step 4. Perform Initial Configuration of the SWC card.

    a. Ensure that no other devices (printers, etc.) are connected *on the same local subnet* by disconnecting the LAN cable from the SWC and using the *Ping* command as follows:

       C:\ `ping 192.0.0.192`

    It will time out.

    b. At a command line prompt, enter the following:

       C:\\`route add 192.0.0.192` *xx.xx.xx.xx.xx*

    Where *xx.xx.xx.xx.xx* is the IP address of your PC or Unix workstation.

    c. Reconnect the LAN cable to the SWC card and use a PC or Unix Workstation and a web browser. Verify that you can access the SWC at its default IP address using the *Ping* command as follows:

       C:\\`ping 192.0.0.192`

    It will indicate connection with the SWC card at IP 192.0.0.192

Step 5. Create the first SWC administrator account.

NOTE	The SWC requires creation of the first administrator account before proceeding further.

a. Using a web browser, access the SWC at the default IP address (192.0.0.192).
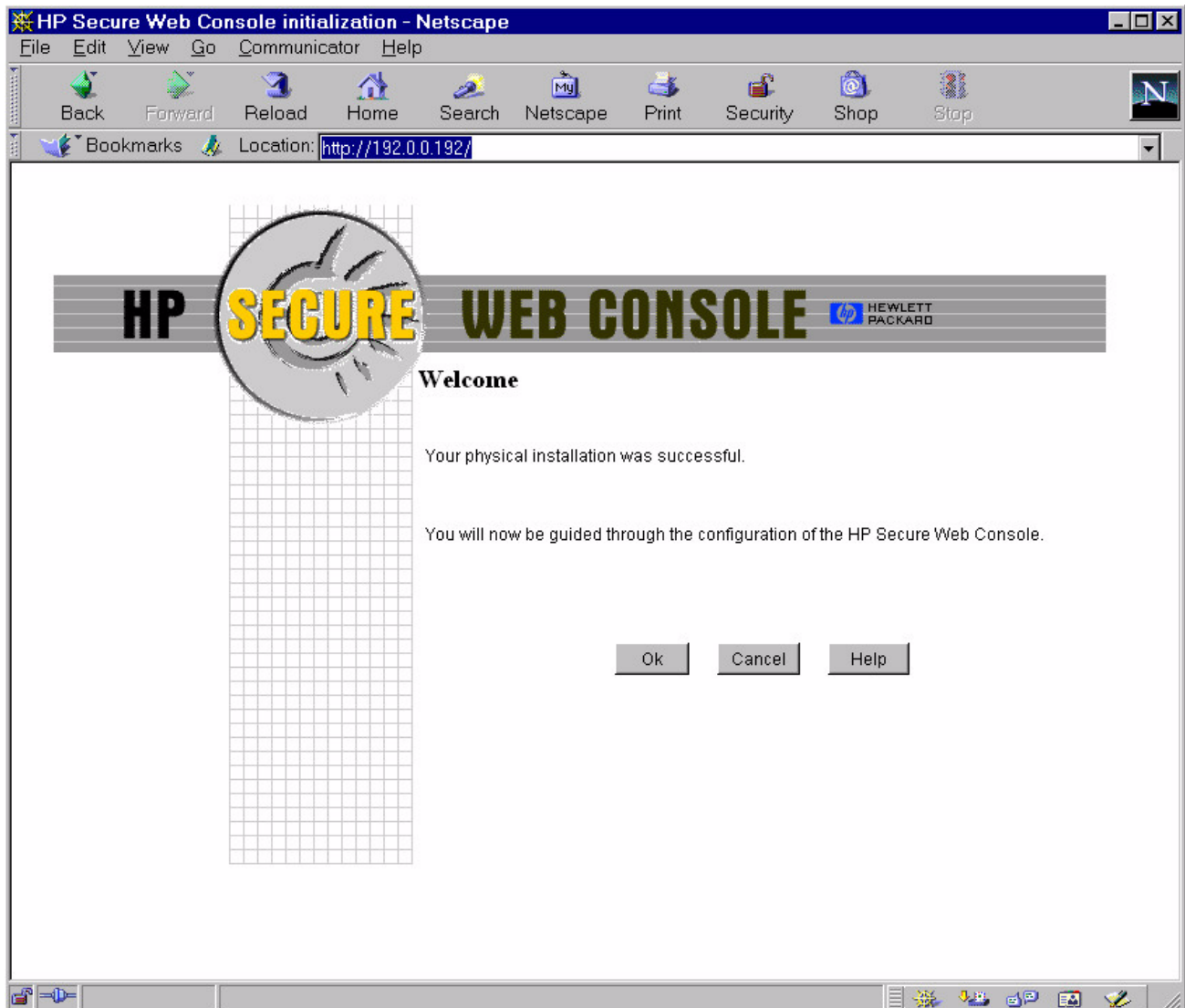
b. To create the first SWC administrator account, fill in the prompts shown in the following illustration:
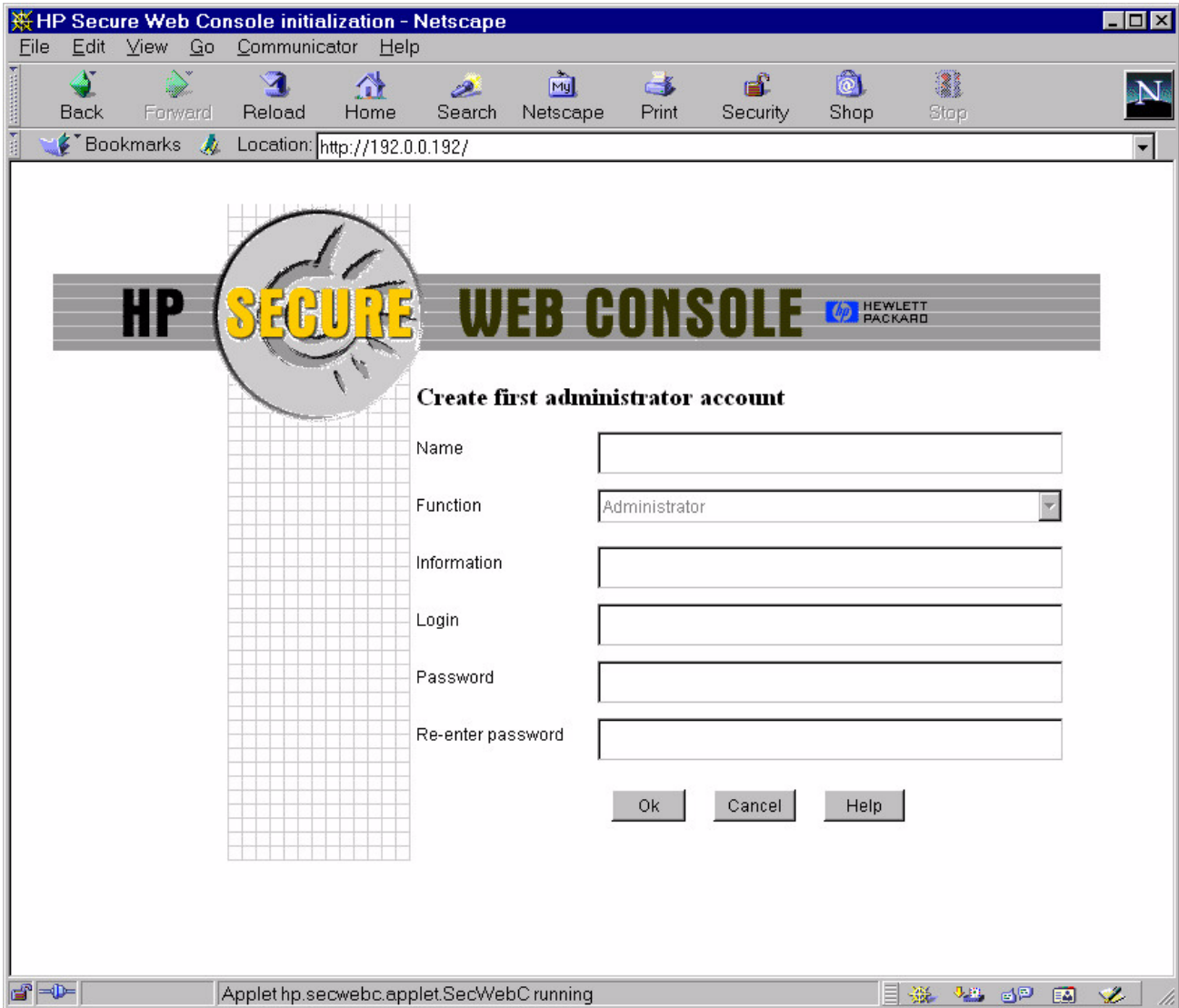
c. To configure the network parameters for the SWC, fill in the prompts shown in the following illustration:
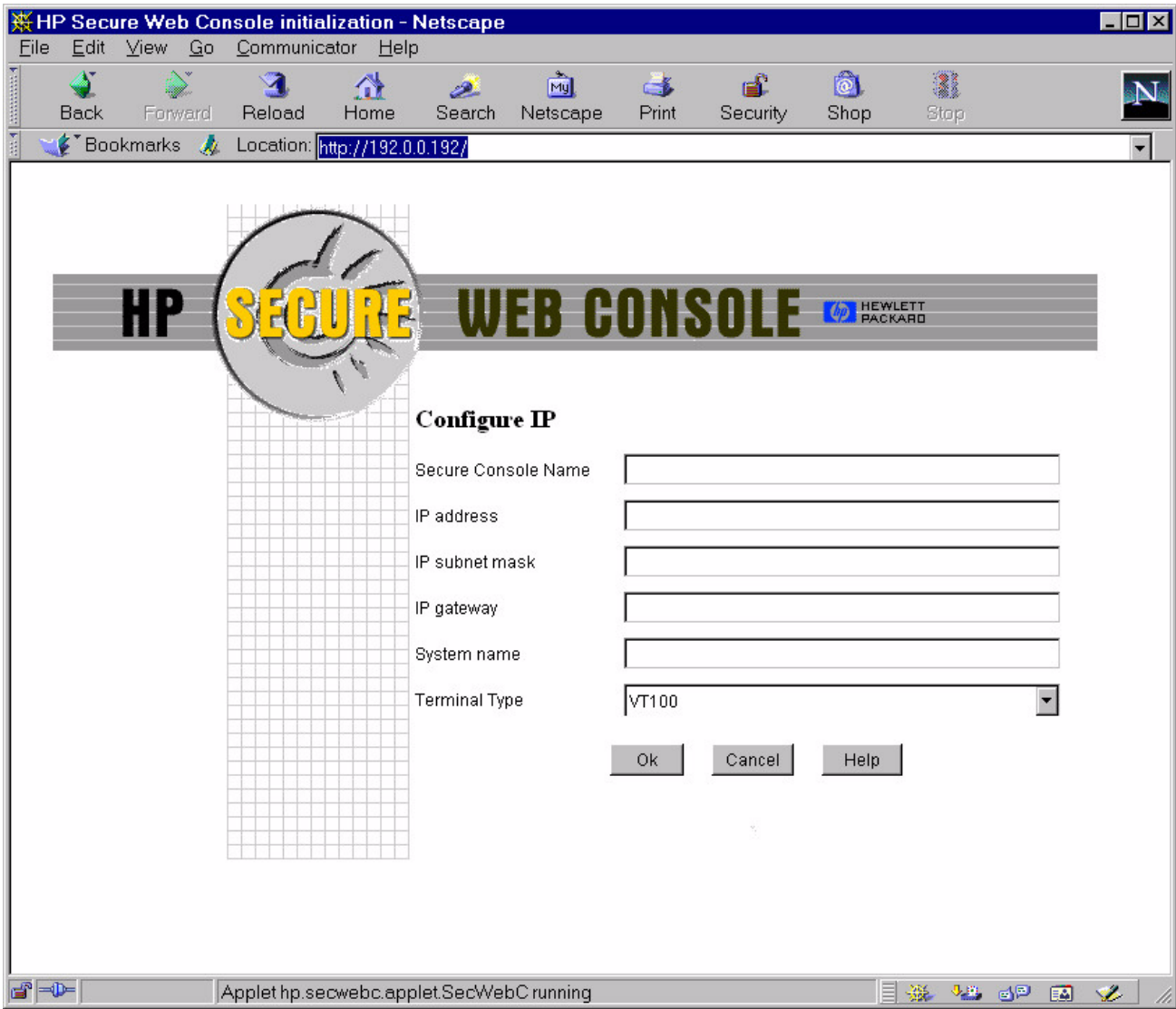
d. When all necessary data is entered, click on [OK] to reboot the SWC.

Step 6. Using a web browser, connect to the SWC card, using:

- the newly assigned IP address, and

- the newly created administrator log-in and password.

NOTE   It may take as much as 45 seconds to gain initial access to the SWC card.

Step 7. Connect the serial cable between the SWC card and the server's console port.

NOTE	The adapter cable (p/n A5858-63001) connects between the SWC and the console cable (p/n A5191-63001).

Step 8. SWC card configuration is complete.

Step 9. Use [Zoom In] or [Zoom Out] to adjust the size of the display window.

Step 10. Refer to [Help] or [Tour] to review SWC card features and functions.

Secure Web Console System Information

For technical documentation about the Secure Web Console, refer to the following URL:

http://www.docs.hp.com

8 Troubleshooting the Server

Chassis Code to Customer Replaceable Unit (CRU) Decode

This is a guide to identify failing CRU's from the Error Chassis Logs. The guide includes the following information:

- "Accessing Error Chassis Logs"
- "Key Identification Fields for Error Chassis Logs"
- "Cross-Referencing Chassis Log Errors to A400/500 CRU's."

Accessing Error Chassis Logs

Execute the following steps to access the Error Chassis Logs.

1. At the system console prompt, type **CTRL B** (this will bring up the gsp login screen)

2. Type in the Service Processor Login and Password (this will give you a GSP prompt)

3. At the prompt,

   GSP>, type **SL** (this will take you to the support logs)

4. At the prompt,

   Which buffer are you interested in:
   Incoming, Error, Current boot, Last boot? (I/A/E/C/L), type **E** (for error logs)

5. At the prompt,

   Do you want to set up filter options on this buffer? (Y/[N]), type **N**

6. At this point, the most recent Error Log Entry (Log Entry #0) will be displayed. A carriage return after this will display the next log entry. Type Q to stop displaying the log entries.

7. At the prompt,

   GSP>, type **CO** to return to the console

Key CRU Identification Fields for Error Chassis Logs

The following fields (bold in the sample error log entry) are useful for FRU identification.

Alert Level:	How the problem has affected the system operation.
Source:	What major part of the system the alert is referring to (i.e., platform, memory, processor, etc.).
Source Detail:	What sub-part of the system the alert is referring to (i.e., cabinet fan, DIMM, high voltage DC power, etc.).
Source ID:	Specific CRU referred to in Source and Source Detail (i.e., fan #1).
Problem Detail:	Specific problem information (i.e, power off, functional failure, etc.).
Timestamp:	When the problem occurred.

Cross-Referencing Chassis Log Errors to A400/A500 CRU's

Use the following table to identify the failing CRU from the Chassis Log information.

1. Read the Chassis Log entry.

2. Match the **SOURCE**, **SOURCE DETAIL**, **SOURCE ID**, and **PROBLEM DETAIL** values found in the Chassis Log entry with the appropriate values in the table.

3. Read the table from left to right.

Table 7-1

Chassis Log Field Values and Descriptions from Log Entry					
Source	**Source Detail**	**Source ID**	**Problem Detail**	**CRU**	**Action to Take**
1 - Processor	Not Applicable (N/A)	N/A	N/A	Processor	Not a CRU, Contact HP support.
2 - Processor Cache	Not Applicable (N/A)	N/A	N/A	Processor	Not a CRU, Contact HP support.
3 - PDH	Not Applicable (N/A)	N/A	N/A	System Board	Not a CRU, Contact HP support.
4 - Power	1 - AC Mains	N/A	9 - Power Off	AC Power	Check that the AC is being supplied to power supply.
4 - Power	3 - Low Voltage DC Power Converter	N/A	N/A	CPU Support Module	Replace the Processor Support Module (DC - DC Conveter)
4 - Power	4 - High Voltage DC Power	Power Supply #	N/A	Power Supply	Not a CRU, Contact HP support.
6 - Platform	3 - Cabinet Fan	N/A	N/A	Fan	Replace the Fan assembly.
6 - Platform	6 - Service Processor	N/A	N/A	GSP PCA	The Service Processor is on the GSP I/O board. Replace the GSP
6 - Platform	7 - Power Monitor	N/A	N/A	System Board	Not a CRU, Contact HP support.
7 - Memory	1 - Controller	N/A	N/A	System Board	Not a CRU, Contact HP support.
7 - Memory	4 - SIMM or DIMM	N/A	N/A	Memory DIMM	Isolate to failing DIMM using BCH (IN, ME) and ODE memory diagnostic.

Table 7-1 (Continued)

Chassis Log Field Values and Descriptions from Log Entry					
Source	**Source Detail**	**Source ID**	**Problem Detail**	**CRU**	**Action to Take**
8 - I/O	6 - Disk	N/A	Various Values	Disk Subsystem	Use BCH commands and ODE diagnostics to check disk subsystem.

9 Server Component Removal and Replacement Procedures

Customer Replaceable Unit (CRU) Physical Location

This section contains views of the rp24xx server. The locator numbers in the diagrams correspond to the numbers in the CRU Part Number section.
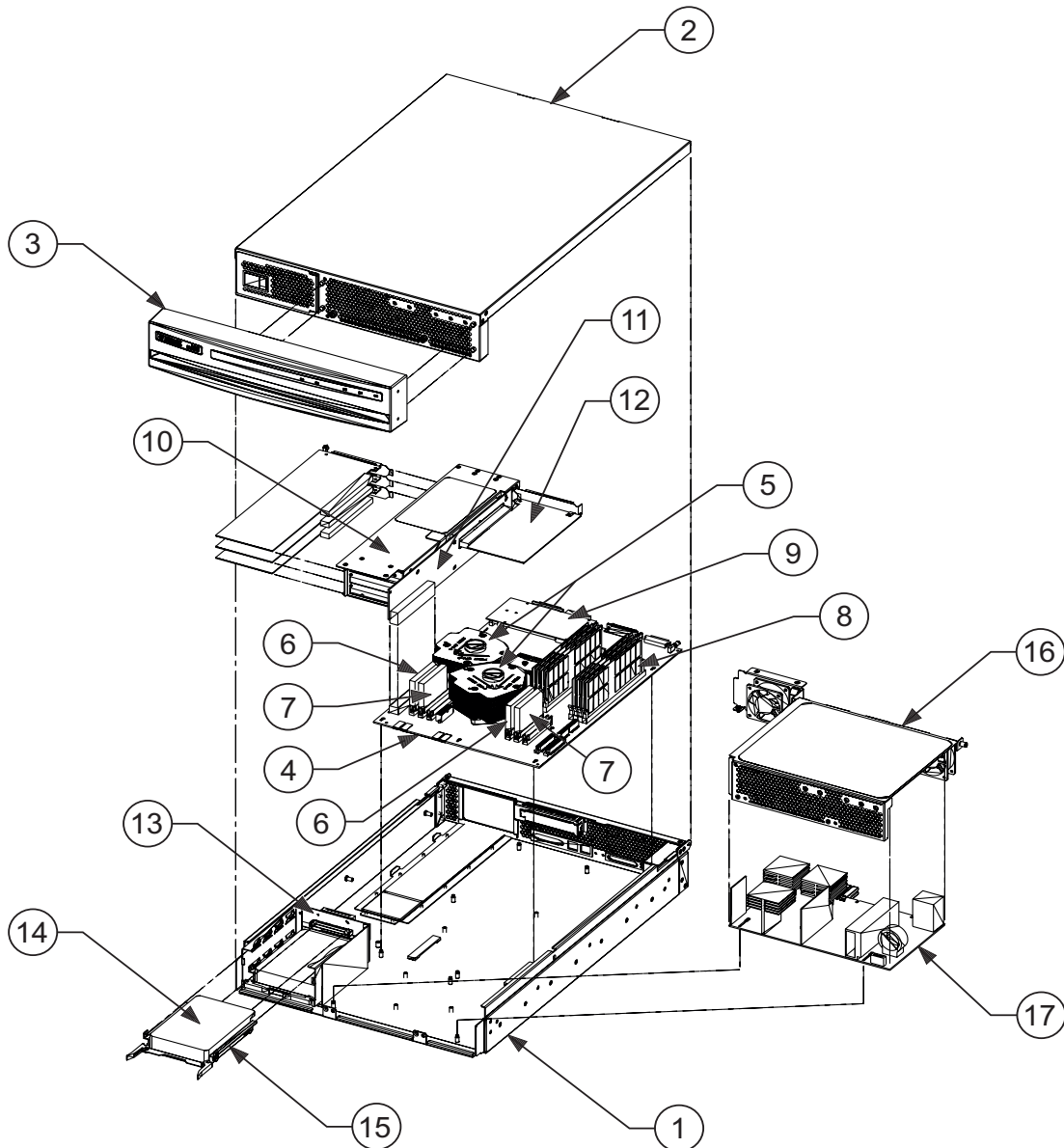
ccrr009

| NOTE | Components numbered 1, 4, 5, 13, 16. and 17 are not customer replaceable and do not appear in the Customer Replaceable Unit (CRU) Part Numbers section. They are included in this illustration for continuity, only. |

Customer Replaceable Unit (CRU) Part Numbers

The following tables list all Customer Replaceable Units (CRUs) for the rp24xx server. CRUs may be removed or replaced by either the customer or by qualified HP field engineering personnel. Table 1 lists both new and exchange part numbers. Table 2 lists only the new part numbers for non-exchange CRUs.

Exchange CRUs

Product #	New Part #	Exch. Part #	Description	Loc. #
A6114A	A6114-60001	A6114-69006	2048 MB Memory DIMM	8
A5841A	A5841-60001	A5841-69001	1024 MB Memory DIMM	
A5840A	A5840-60001	A5840-69001	512 MB Memory DIMM	
A5572A	A5572-60002	A5572-69002	128 MB Memory DIMM	
A5505A	A5505-60001	A5505-69001	9 GB Disk Drive	14
A5531A	A5531-60001	A5531-69001	18 GB Disk Drive	
A6089A	A6089-67001	A6145-69001	36 GB Disk Drive	
A5570A	A5570-60002	A5570-69002	Guardian Service Processor	9

Non Exchange CRUs

| Part #	Description	Loc #
A5570-60003	PCI I/O Backplane	11
A5570-60005	Secure Web Console PCA	12
A5570-00002	Disk Carrier	15
0950-3821	DC-DC Converter - Master	6
0950-3822	DC-DC Converter - Slave	7
A5570-62003	I/O Card Cage Chassis	10
A5570-62006	Plastic Front Bezel	3
A5570-67007	Chassis Top Cover	2
A5570-84001	rp2450 Name Plate	N/A
A5191-63001	Console-Remote-GSP Cable	N/A

Front Bezel Removal

The rp24xx server does not have to be turned off to remove the bezel.

WARNING	Do not attempt to lift or carry the server by the bezel. The bezel is made of plastic and is attached to the server chassis by two bezel retainers and four ball-posts. It will only support the weight of the server chassis in an emergency. Failure to heed this warning may result in personal injury and/or permanent damage to the server.

Removing the bezel provides access to the following:

- HotPlug Disk Drive access door.

- Two knurled thumbscrews that secure the server cover.

To remove the bezel, grasp the bezel at the sides and pull straight out until it is free of the bezel retainers and ball-posts on the server.

CAUTION	Pull the bezel straight out. Do not twist or wiggle from side-to-side any more than necessary to keep from damaging the bezel sockets.

The following illustration shows a server and bezel with the bezel retainers and ball posts in an exploded view.
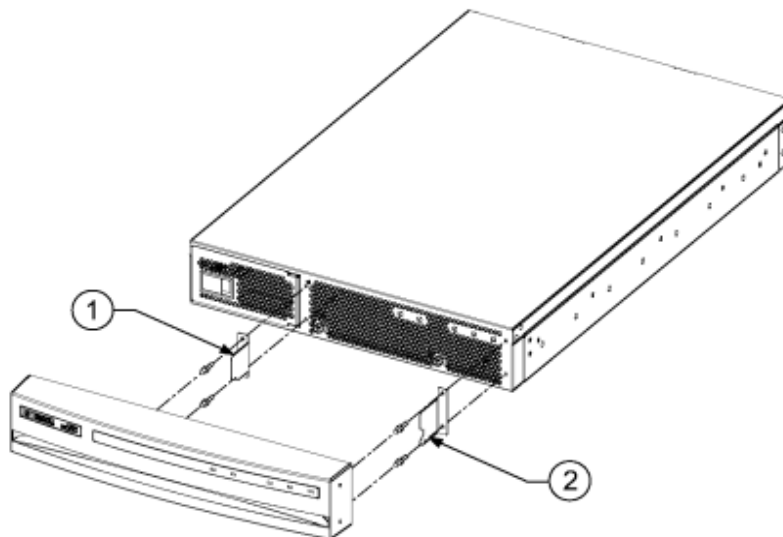
ccrf024

The following picture shows one server with the front bezel attached and one server without.

Front Bezel Replacement

The rp24xx server does not have to be turned off to replace the bezel.

WARNING	**Do not lift or carry the server by the bezel. The bezel is made of plastic and is attached to the server chassis by two bezel retainers and four ball-posts. It will only support the weight of the server chassis in an emergency.**
	Failure to heed this warning may result in personal injury and/or permanent damage to the server.

To replace the bezel, grasp the bezel at the sides and align the bezel sockets with the bezel retainers and ball-posts on the server and push straight in. The bezel will lock into place.

CAUTION	During replacement, do not twist or wiggle the bezel from side-to-side any more than necessary to keep from damaging the bezel socket.

The following illustration shows a server and bezel with the bezel retainers and ball posts in an exploded view.
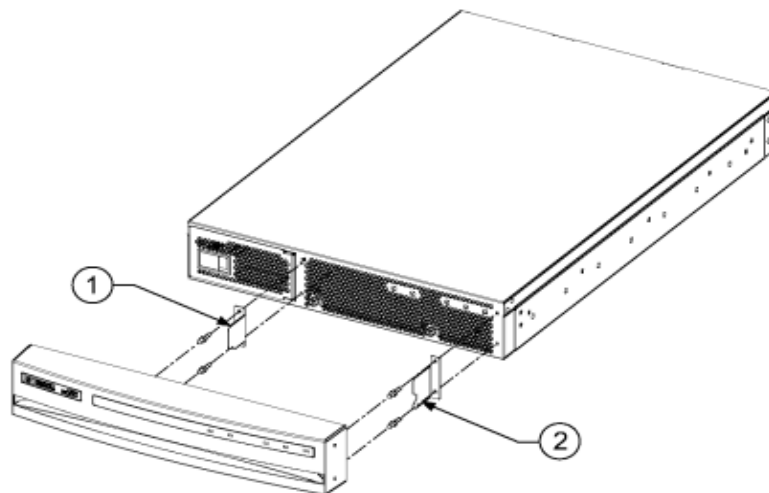
ccrr024

As you are facing the front of the server, item 1 is the left bezel retainer with two ball posts, and item 2 is the right bezel retainer with two ball posts.

CAUTION	Left and right bezel retainers are NOT interchangeable.

The following picture shows one server with the front bezel attached and one server without.

Server Cover Removal

The cover that protects rp24xx server components is secured by two thumbscrews and, when released, slides forward for removal.

To remove the cover, perform the following procedures:

Step 1. Remove the front bezel.

WARNING	**There is a safety interlock between the front of the server cover and the Power Supply. When the cover is taken off, power is automatically removed from the server if power cords were not detached previously.** **DO NOT attempt to defeat this interlock. Doing so will expose you to high levels of electrical amperage that can cause serious injury or death.**

Step 2. Unfasten the two captive knurled thumbscrews located near the bottom edge of the front of the server cover.

Step 3. Grasp the thumb screws and pull the cover toward you. Slide the cover approximately 2.5 MM (1 in.) then lift the cover front to clear the notches on each side of the server. Set the cover aside.

CAUTION	The server weighs approximately 23 kg (50 lbs). Take necessary precautions to prevent muscle strain when lifting and carrying the server.

The following graphic shows the server cover suspended over the server.

Server Cover Replacement

The cover that protects rp24xx server components must be raised in front and positioned on top of the side chassis panels then lowered and slid into the back chassis panel. The cover is secured by two thumbscrews attached to the front chassis panel.

To replace the cover, perform the following procedures:

Step 1. Tilt the cover front up slightly and position it on top of the chassis side panels approximately 2.5 MM (1 in.) from the rear of the server chassis.

Step 2. Lower and slide the cover back over the notches on each side of the front of the server and seat it against the rear chassis panel.

Step 3. Fasten the two captive knurled thumbscrews located near the bottom edge of the front of the server cover.

CAUTION	The server weighs approximately 23 kg (50 lbs). Take necessary precautions to prevent muscle strain when lifting and carrying the server.

The following graphic shows the server cover suspended over the server.

HotPlug Disk Drive Removal (HPUX Systems Only)

The disk drives (up to two) are located at the front left side of the server (as you are facing it). When proper software and hardware procedures are followed, these disk drives can be removed and replaced while the server is running.

NOTE	MPE/iX does not support hotswap. Do not use these procedures on HP e3000 servers.

The procedures in this section are in two parts, a software HotPlug procedure to prepare the drive for removal and the hardware procedures for physically removing the device from the server.

Before starting these procedures, you must have an up-to-date configuration backup file. Configuration backup is performed by default each time an LVM command changes the LVM configuration. The default backup file path is:

```
/etc/lvmconf/base_vg_name.conf
```

The replacement disk drive must be the same product ID as the disk drive that is being replaced.

NOTE	HP often uses different manufacturers for disks that have the same product number. The HotPlug manual procedure will not update the disk drivers internal information to that of the replaced disk drive.

The replacement disk drive will have the same capacity and blocksize as the defective disk because they have the same product number. The only field that can be incorrect is the string specifying the vendor's name. This will not affect the behavior of the LVM. If you desire to update the manufacturer's name, the disks volume group must be deactivated and reactivated.

HotPlug Software Procedure

NOTE	The HotPlug software procedures for Disk Drive removal/replacement described below are for a mirrored boot disk configuration only. If your configuration differs from this, these procedures may not be valid. Consult your System Administrator or contact the HP Response Center for assistance.

Perform these software procedural steps to replace a HotPlug disk drive device:

Step 1. Determine whether or not the LVM found the physical volume to be defective when the volume group was activated.

If the volume was defective when the volume group was activated, *vgchange* would have generated the following message to the console:

```
WARNING

VGCHANGE: WARNING: COULDN'T ATTACH TO THE VOLUME GROUP PHYSICAL
VOLUME "/DEV/DSK/cXtXdX"

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 KERNAL.
```

If you are unsure of the status of the *vgchange*, you may check if this occurred by typing the *vgdisplay* command: *vgdisplay <VG name>*. For example:

```
# vgdisplay /dev/vg00
```

If you see these messages, the disk was defective at the time the volume group was activated. Remove the bad disk as described in the *HotPlug Hardware Procedure* section, then follow the instructions in *Disk Drive Replacement* for replacing the disk and perform the Hot Swap Procedure for Unattached Physical Volumes described there. Otherwise, your disk drive became defective after the *vgchange* and you must continue with step 2 of this section.

Step 2. Display the names of all the logical volumes on this volume group using the *vgdisplay* command. For example:

```
#vgdisplay /dev/vg00
```

Step 3. Determine which logical volumes have mirrors by using the *lvdisplay* command. For example:

```
#lvdisplay /dev/vg00/lvol# | grep -ie "LV Name" -e
"Mirror"
```

Step 4. Determine the *pvkey* for the mirrored logical volume, again using the *lvdisplay* command with the *-k* option. Compare the output to the *lvdisplay* command with the *-v* option to determine the device file to *pvkey* mapping. For example,

```
# lvdisplay -v -k /dev/vg00/lvol1

--- Logical volumes ---
LV Name                     /dev/vg00/lvol1
VG Name                     /dev/vg00
LV Permission               read/write
LV Status                   available/syncd         Mirror copies
1        Consistency Recovery      MWC              Schedule
parallel    LV Size (Mbytes)        256             Current LE
64        Allocated PE            128        Stripes              0
Stripe Size (Kbytes)      0              Bad block             off
Allocation              strict/contiguous      IO Timeout (Seconds)
default          --- Distribution of logical volume ---PV Name        LE
on PV  PE on PV /dev/dsk/c1t6d0   64      64       /dev/dsk/c2t6d0   64
64

--- Logical extents ---LE        PV1        PE1    Status 1 PV2        PE2
Status 2 00000     0      00000 current  1        00000 current  00001
0       00001 current  1        00001 current  00002     0        00002
current  1        00002 current  00003     0      00003 current  1
00003 current  00004     0      00004 current  1        00004 current
00005     0      00005 current  1        00005 current  00006     0
00006 current  1        00006 current  00007     0        00007 current
1        00007 current  00008     0        00008 current  1
00008 current  (etc.)
# lvdisplay -v /dev/vg00/lvol1--- Logical volumes ---LV Name
/dev/vg00/lvol1VG Name                 /dev/vg00LV Permission
```

```
read/write    LV Status                    available/syncd         Mirror
copies              1           Consistency Recovery      MWC
Schedule                 parallel     LV Size (Mbytes)         256
Current LE               64          Allocated PE              128
Stripes                  0          Stripe Size (Kbytes)      0
Bad block                off          Allocation
strict/contiguous        IO Timeout (Seconds)      default          ---
Distribution of logical volume ---PV Name           LE on PV   PE on PV
/dev/dsk/c1t6d0    64         64          /dev/dsk/c2t6d0    64         64
--- Logical extents ---LE      PV1              PE1    Status 1 PV2
PE2    Status 2 00000 /dev/dsk/c1t6d0    00000 current  /dev/dsk/c2t6d0
00000 current  00001 /dev/dsk/c1t6d0    00001 current  /dev/dsk/c2t6d0
00001 current  00002 /dev/dsk/c1t6d0    00002 current  /dev/dsk/c2t6d0
00002 current  00003 /dev/dsk/c1t6d0    00003 current  /dev/dsk/c2t6d0
00003 current  00004 /dev/dsk/c1t6d0    00004 current  /dev/dsk/c2t6d0
00004 current  00005 /dev/dsk/c1t6d0    00005 current  /dev/dsk/c2t6d0
00005 current  00006 /dev/dsk/c1t6d0    00006 current  /dev/dsk/c2t6d0
00006 current  00007 /dev/dsk/c1t6d0    00007 current  /dev/dsk/c2t6d0
00007 current  00008 /dev/dsk/c1t6d0    00008 current  /dev/dsk/c2t6d0
00008 current
```

The p*vkey* (0 or 1 in this example) shown in the first command maps to the device file names (/dev/dsk/c1t6d0 or /dev/dsk/c2t6d0) in the second command under columns PV1 and PV2, respectively.

Step 5. Reduce any logical volumes that have mirror copies on the faulty disk drive so that they no longer mirror onto that disk drive (note the *-A n* option):
lvreduce -m 0 -A n -k <LV name> /dev/dsk/cXtXcX <pvkey#>& (for one-way mirroring)
OR
lvreduce -m 1 -A n -k <LV name> /dev/dsk/cXtXcX <pvkey#>& (for two-way mirroring).

For example:
 # *lvreduce -m 0 -A n -k /dev/vg00/lvol4 /dev/dsk/c2t4d0 1&*

The following message will appear:

```
Logical volume /dev/vg00/lvol4 has been successfully reduced.
lvlnboot: Logical Volume has no extents
```

It is important to include the ampersand (&) at the end of the command line. This *lvreduce* process will hang, and you will need terminal control to kill the command. Once the "successfully reduced" message has been generated, manually kill the process, using the kill -9 command.

a. Use the *ps* command to find the PID for the *lvreduce* process.

```
# ps -ef | grep lvreduce
```

b. Stop the process. (This may take several minutes before the process finally ends.

```
# kill -9 <PID>
```

Step 6. Repeat steps 4 and 5 for all logical volumes.

Step 7. With all logical volumes reduced, now reduce the volume group using the *vgreduce* command. For example:

```
# vgreduce /dev/vg00 /dev/dsk/c2t6d0
```

The *vgreduce* process may take a long time to complete. Do NOT kill this process.

Step 8. Update the disk BDRA using the *lvlnboot* command.

```
# lvlnboot -R
```

HotPlug Hardware Procedure

CAUTION (MPE/iX does not support hotswap). Disk Drives can be removed or installed with the server still powered on. This is referred to as a "manual HotPlug". However, DO NOT remove a HotPlug disk drive until all prior software procedures have been completed. The MPE/iX operating system needs to be shut down prior to installing a new disk and then rebooting.

To remove a bad disk drive from the server, perform the following steps:

Step 1. Remove the front bezel.

Step 2. On the left side of the front of the server you will see a door with a spring-loaded latch holding it shut. Open the door to expose the disk drive slots.

Step 3. Perform the following steps in the order shown:

1. Pull out on the extraction levers on each side of the selected disk drive to unlock it.

2. Pull gently on the levers to pull the disk drive partially out of its slot

3. Wait 10 seconds for the drive to spin down.

4. Grasp the disk drive, pull it completely out of its slot, and set it aside.

The following photograph shows a HotPlug disk installed in the disk housing.
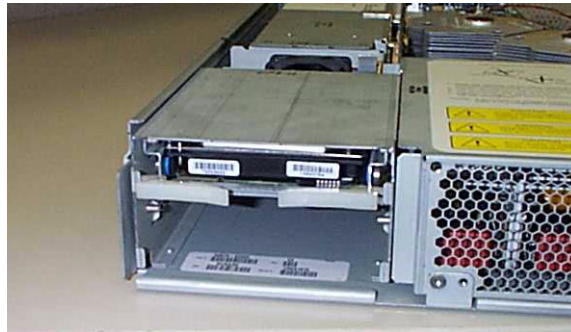
The following graphic shows the location of the HotPlug disks.
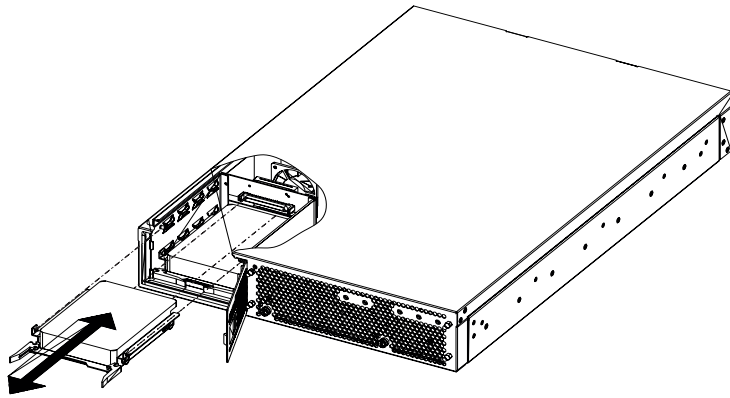
ccrr003

HP-UX HotPlug Disk Drive Replacement

The internal disk drives (two) are located at the front left side of the server (behind the bezel). When proper software and hardware procedures are followed, internal disk drives can be removed and replaced while the server is running.

NOTE   MPE/iX does not support hotplug. Do not use these procedures on HP e3000 servers.

The procedures in this section are in two parts: physically replacing the device in the server and performing the HotPlug software procedure.

The replacement disk drive must be the same product ID as the disk drive that is being replaced.

HotPlug Hardware Procedure

Be sure that all the software procedures in the Disk Drive Removal section have been performed prior to starting these steps.

To install a disk drive from the server, perform the following steps:

Step 1. Remove the front bezel.

Step 2. On the left side of the front of the server you will see a door with a spring-loaded latch holding it shut. Open the door to expose the disk drive slots.

Step 3. Align the drive and carefully slide it completely into the selected slot with the extraction levers out.

Step 4. Fold the extraction levers in to engage and lock the disk drive in place.

Step 5. Close the door and engage the spring-loaded latch to keep it shut.

The following photograph shows a HotPlug disk installed in the disk housing.

The following graphic shows the location of the HotPlug disks.

ccrr003

HP-UX HotPlug Software Procedure

NOTE   The HP-UX HotPlug software procedures for Disk Drive removal/replacement described below are for a mirrored boot disk configuration only. If your configuration differs from this, these procedures may not be valid. Consult your System Administrator or contact the HP Response Center for assistance.

HP-UX HotPlug Software Procedure for Attached Physical Volumes

Follow this procedure if the disk that was removed was recognized as an attached physical volume.

NOTE   HP often uses different manufacturers for disks having the same product number. The HotPlug manual procedure will not update the disk drivers internal information to that of the replaced disk drive.

Step   1. Perform an *ioscan* on the replaced disk drive to ensure that it is accessible (claimed) and also as a double check that it is a proper replacement and the device files are present. Refer to the above note. For example:

```
# ioscan -fnC disk
```

Step   2. Mirror the root disk:

    a.   Create the new physical volume using the *pvcreate* command. For example:

```
#pvcreate -B /dev/rdsk/cXtXdX
```

    b.   Extend the volume group to include the new physical volume using the *vgextend* command. For example:

```
#vgextend /dev/vg00 /dev/dsk/cXtXdX
```

    c.   Run the *mkboot* command to make the device bootable. For example:

```
#mkboot /dev/rdsk/cXtXdX
```

d. Use the *mkboot* command again to add the HP-UX auto-file-string. For example:

```
#mkboot -a "hpux" /dev/rdsk/cXtXdX
```

e. Run *lvlnboot*. For example:

```
#lvlnboot -R
```

f. *lvextend* a mirror into the replaced disk drive. This may take several minutes because this function copies all the data from the original copy of the data to the mirrored extents. The logical volume(s) are still accessible for users' applications during operation of this command.

```
#lvextend -m 1 <LV name> /dev/dsk/cXtXdX
```

For example:

```
#lvextend -m 1 /dev/vg00/lvol4/dev/dsk/cXtXdX
```

```
#lvextend -m 1 /dev/vg00/lvol5/dev/dsk/cXtXdX
```

Repeat this procedure for each logical volume to be mirrored

Step 3. Verify that the mirror is bootable and AUTO file is correct.

```
#lifls -l /dev/rdsk/cXtXdX
```

```
#lifcp /dev/rdsk/cXtXdX:AUTO -
```

Step 4. Verify that the mirroring is set up properly.

```
#vgdisplay -v /dev/vg00
```

```
#lvdisplay /dev/vg00/lol1 - lvol8
```

```
#lvlnboot -v /dev/vg00
```

Both disks should list as "Boot Disk" and both should appear in the *lvol* lists.

At this point, the system is fully functional.

HP-UX HotPlug Procedure for Unattached Physical Volumes

Follow these steps to replace a HotPlug disk drive for unattached physical volumes.

NOTE   HP often uses different manufacturers for disks having the same product number. The HotPlug manual procedure will not update the disk drivers internal information to that of the replaced disk drive.

Step 1. Perform an *ioscan* on the replaced disk drive to ensure that it is accessible (claimed) to verify that it is a proper replacement and the device files are present. Refer to the above note. For example:

```
# ioscan -fnC disk
```

Step 2. Restore the LVM configuration/headers onto the replaced disk drive from your backup of the LVM configuration:

```
#vgcfgrestore -n <volume group name> /dev/rdsk/cXtXdX
```

For example:

```
#vgcfgrestore -n /dev/vg00 /dev/rdsk/c2t4d0
```

Step 3. Attach the new disk drive to the active volume group with the *vgchange* command.

```
# vgchange -A y <volume group name>
```

For example:

```
# vgchange -A y /dev/vg00
```

Step 4. Run the *mkboot* command to make the device bootable. For example:

```
#mkboot /dev/rdsk/cXtXdX
```

Step 5. Use the *mkboot* command again to add the HP-UX auto-file string. For example:

```
#mkboot -a "hpux" /dev/rdsk/cXtXdX
```

Step 6. Run *lvlnboot*:

```
#lvlnboot -R
```

Step 7. Resynchronize the mirrors of the replaced disk drive. This may take several minutes since it has to copy all the data from the original copy of the data to the mirrored extents. The logical volume(s) are still accessible for users' applications during operation of this command.

```
#vgsync <VG name>
```

For example:

```
#vgsync /dev/vg00
```

The system is now functional.

I/O Card Cage Removal

The I/O Card Cage is located at the rear left side of the rp24xx server. To remove the I/O Card Cage, follow the steps listed below:

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

Step 1. On the rear bulkhead, remove cables attached to I/O card slots 2 through 4, located inside the card cage. Remove the cable attached to I/O card slot 1, located outside the card cage.

Step 2. Within the chassis, remove the I/O card from slot 1 on the right side of the I/O Card Cage, attached to the I/O Backplane as follows: If the card in slot 1 is a Secure Web Console card, unplug the 5V power connector from the receptacle on the card.

   a. Remove the screw that attaches the I/O card to the rear bulkhead.

NOTE	A short-shaft or right-angle Phillips-head screwdriver must be used to remove the screw due to the short distance between the screw head and the right side of the chassis.

   b. Pull the I/O Card out of its slot on the I/O Backplane and place it on a clean anti-static surface.

Step 3. Loosen the two captive Phillips-head screws located at the front of the Card Cage.

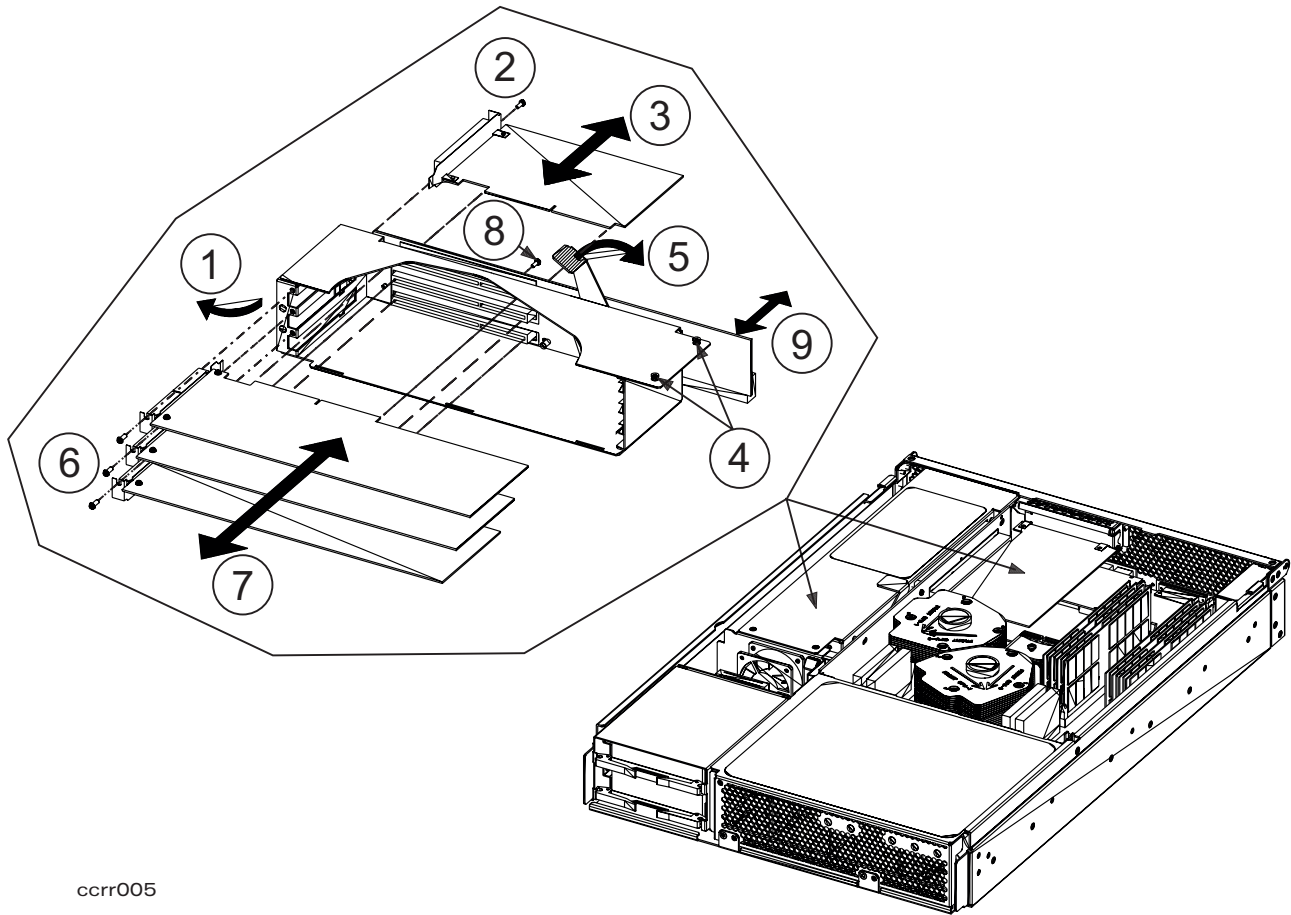**Step 4.** Grasp the flat lever handle on the right side of the Card Cage and pull it up and forward to release the I/O Backplane from the System Board.

Step 5. Grasp the I/O Card Cage, tilt the front up, and pull it up and out of the chassis.

CAUTION	Do not scrape the I/O Backplane against the CPU heat sink when you lift the card cage out of the chassis.

The following photograph shows an empty I/O Card Cage.
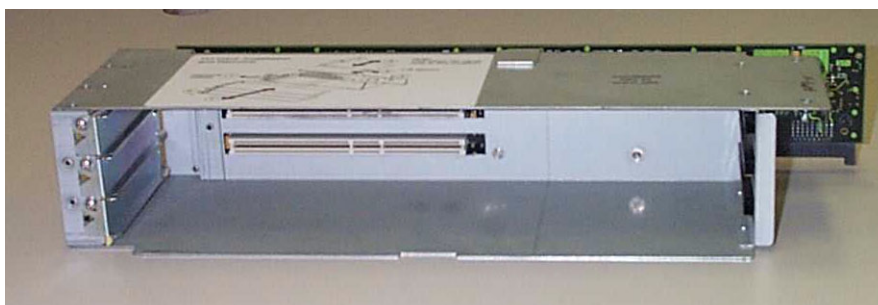
The following graphic shows an I/O Card Cage.
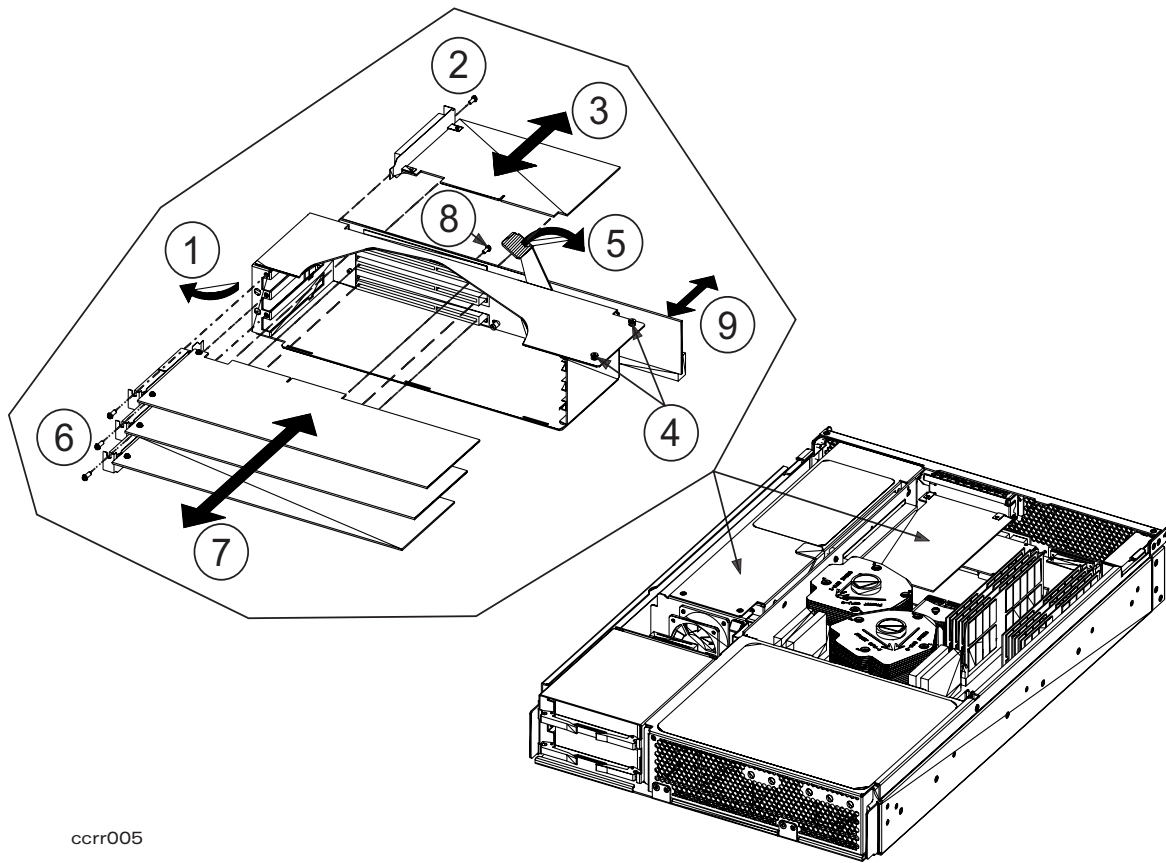
ccrr005

No.	Title
1	I/O Card Cage
2	I/O Card #1 slot tab
3	I/O Card #1 (short card only)
4	Top front captive screws
5	Flat lever handle
6	I/O Cards #2 through 4 slot tabs
7	I/O Cards #2 through 4 (long or short cards)
8	I/O Backplane retainer screw
9	I/O Backplane

I/O Card Cage Replacement

The I/O Card Cage is located at the rear left side of the rp24xx server. To replace the I/O Card Cage, follow the steps listed below:

CAUTION   Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

Step 1. Grasp the I/O Card Cage, tilt the front up, and slide it down and into the chassis.

CAUTION   To prevent damage to the I/O Backplane when removing or replacing the card cage, do not scrape it against the CPU heat sink as you move the card cage into or out of the chassis.

Step 2. Grasp the flat lever handle on the right side of the Card Cage and pull it up and out of the way. Align the I/O Backplane card connector with the System Board receiver and push in firmly to seat it. Push the flat lever handle down flush with the top of the Card Cage.

Step 3. Secure the two captive Phillips-head screws located at the front of the Card Cage.

Step 4. Replace the I/O card attached to the right side of the I/O Card Cage (slot 1) on the I/O Backplane as follows:

   a.   Seat the I/O Card into its slot on the I/O Backplane.

   b.   Replace the screw that attaches the I/O card to the rear bulkhead.

NOTE   A short-shaft or right-angle Phillips-head screwdriver must be used to replace the screw due to the short distance between the screw head and the right side of the chassis.

---

   c.   If the card in slot 1 is a Secure Web Console card, plug the 5V power connector into the receptacle on the Guardian Service Protector card.

The following photograph shows an empty I/O Card Cage.

The following graphic shows the components of an I/O Card Cage.

ccrr005

No.	Title
1	I/O Card Cage
2	I/O Card #1 slot tab
3	I/O Card #1 (short card only)
4	Top front captive screws
5	Flat lever handle
6	I/O Cards #2 through 4 slot tabs
7	I/O Cards #2 through 4 (long or short cards)
8	I/O Backplane retainer screw
9	I/O Backplane

PCI I/O Card Removal

PCI slots 2, 3, and 4 are located in the I/O Card Cage, which must be taken out of the chassis prior to removing these cards. PCI slot 1 supports a short PCI I/O card attached to the I/O Backplane and is located outside of the card cage If a Secure Web Console card was ordered as part of the system, it may be located in this slot and must be removed before taking the I/O Card Cage out of the chassis.

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component. Always use an antistatic wrist strap and mat when working on the server.

Remove PCI I/O cards as follows:

- To remove PCI I/O card 1:

  a. Remove the screw that fastens the connector to the inside bulkhead.

  b. Pull the I/O card out of its slot on the outside I/O Backplane.

NOTE	If you are removing the Secure Web Console card in the slot 1 position, ensure that the 5v power plug is removed from the power outlet (located on the Guardian Service Processor (GSP), front right side).

- To remove PCI I/O cards 2, 3, and 4:

  a. Take the I/O card cage out of the server.

  b. Grasp the edge of the I/O card and pull it out of its slot in the card cage.

The following graphic shows an exploded view of the I/O card cage with I/O cards.
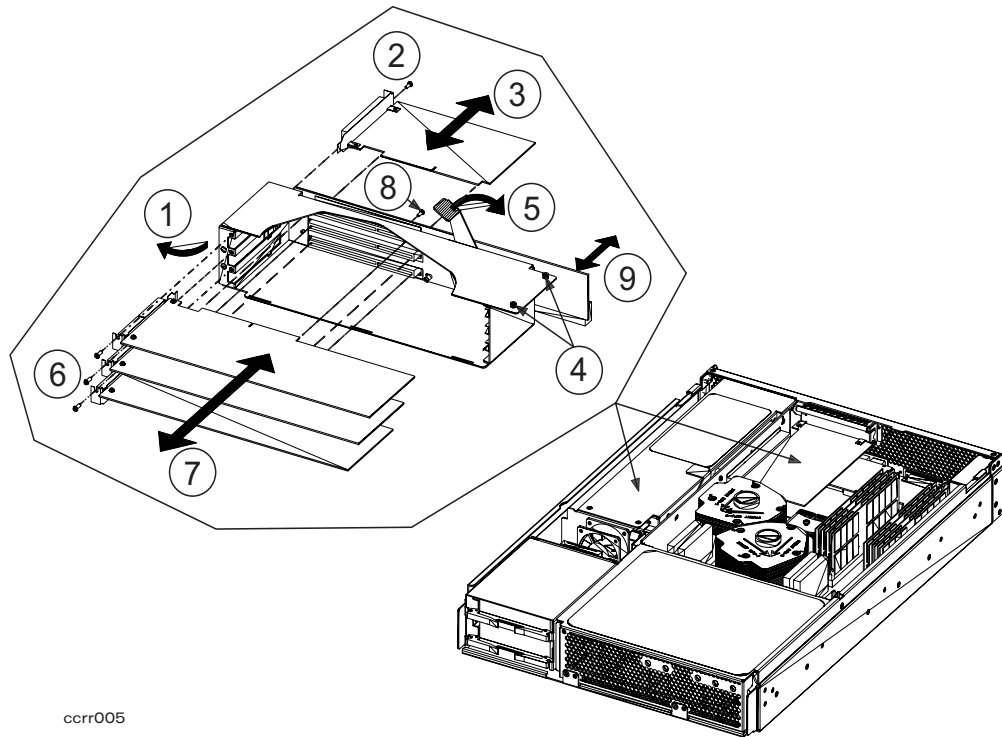
ccrr005

No.	Title
1	I/O Card Cage
2	I/O Card #1 slot tab
3	I/O Card #1 (short card only)
4	Top front captive screws
5	Flat lever handle
6	I/O Cards #2 through 4 slot tabs
7	I/O Cards #2 through 4 (long or short cards)
8	I/O Backplane retainer screw
9	I/O Backplane

PCI I/O Card Replacement

PCI slots 2, 3, and 4 are located in the I/O Card Cage, which must be taken out of the chassis prior to replacing these cards. PCI slot 1 supports a short PCI I/O card attached to the I/O Backplane and is located outside of the card cage. If a Secure Web Console card was ordered as part of the system, it may be located in this slot and must be replaced after reinstalling the I/O Card Cage in the chassis.

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component. Always use both an ESD antistatic wrist strap and and ESD mat when working on the server.

To replace PCI I/O cards, proceed as follows:

- To replace PCI I/O cards 2, 3, and 4:

NOTE	If a PCI card is installed in slot #1 (outside of the I/O card cage), it must be removed before the card cage can be removed from the server.

   a. Take the I/O card cage out of the server.

   b. Orient the replacement I/O card in its guide slot and push it into the card cage until the card connector seats in the I/O Backplane.

   c. Replace the screw that fastens the I/O connector to the bulkhead.

- To replace PCI I/O card 1:

   a. Push the I/O card into its slot until the card connector seats in the outside I/O Backplane.

   b. Replace the screw that fastens the connector to the inside bulkhead.

NOTE	If you are replacing the Secure Web Console card, ensure that the 5v power plug is seated into power outlet (located on the Guardian Service Processor, front right side) after the card is installed.

The following graphic shows an exploded view of the I/O card cage with I/O cards.
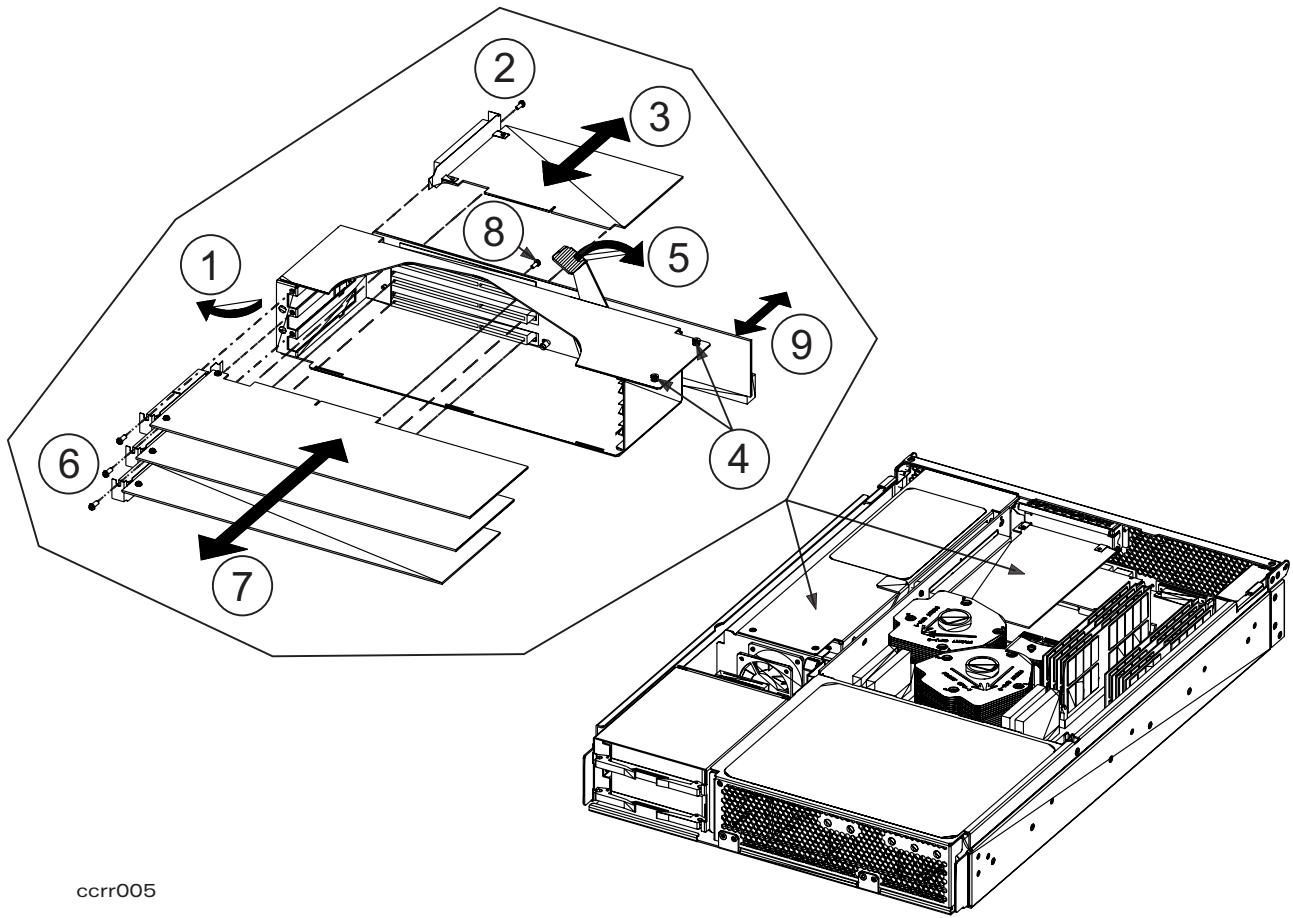
ccrr005

No.	Name	No.	Name
1	I/O Card Cage	6	I/O Card anchor screws
2	Outside I/O Card anchor screw	7	I/O Cards #2 through #4
3	Short I/O Card #1 (may be Secure Web Console)	8	I/O Backplane anchor screw
4	I/O Card Cage anchor quarter-turn fasteners	9	I/O Backplane
5	I/O Backplane disconnect lever		

PCI Backplane Removal

The PCI backplane is located on the back of the I/O Card cage. I/O slot 1 is located on the outside of the PCI I/O card cage and slots 2, 3, and 4 are attached to the PCI backplane inside the I/O card cage.

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

To remove the PCI backplane from the server, perform the following steps:

Step 1. Remove the I/O cables from the back of the server.

Step 2. Remove the I/O card from slot 1.

Step 3. Remove the I/O card cage from the server.

CAUTION	Do not scrape the I/O Backplane against the CPU heat sink when removing or replacing the card cage. Failure to heed this precaution could cause serious damage to the backplane and require replacement.

Step 4. Remove all PCI cards.

NOTE	Note the order of PCI card installation prior to removal. Cards must be re-installed in the same slots, or I/O reconfiguration may be required.

Step 5. Lay the I/O card cage, open side down, on a clean, dry surface. The PCI backplane is facing up.

Step 6. Remove the T-10 retainer screw from the PCI backplane.

Step 7. Slide the PCI backplane to one side, so that the retainer posts will clear the keyhole slots.

Step 8. Grasp the PCI backplane by the edges and carefully remove it from the card cage.

The following photograph shows the PCI Backplane.
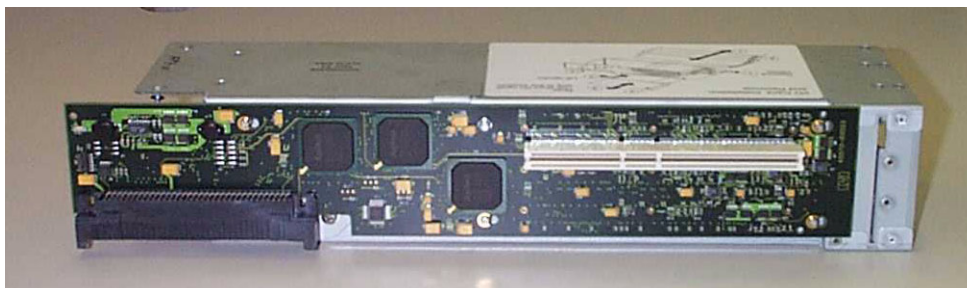
PCI Backplane Replacement

The PCI backplane is located on the back of the I/O Card cage. I/O slot 1 is located on the outside of the PCI I/O card cage and slots 2, 3, and 4 are attached to the PCI backplane inside the I/O card cage.

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

To replace the PCI backplane, perform the following steps:

Step 1. Lay the I/O card cage, open side down, on a clean, dry surface. When installed, the PCI backplane will be facing up.

Step 2. Grasp the PCI backplane by the edges and carefully set it on the card cage retainer posts.

Step 3. Slide the PCI backplane to one side so that the retainer posts lock into the keyhole slots.

Step 4. Replace the T-10 retainer screw that secures the PCI backplane to the card cage.

Step 5. Replace all PCI cards.

NOTE	PCI Cards must be re-installed in the same slots from which removed, or I/O reconfiguration may be required.

Step 6. Replace the I/O card cage into the server.

CAUTION	Do not scrape the I/O Backplane against the CPU heat sink when removing or replacing the card cage. Failure to heed this precaution may cause serious damage to the backplane.

Step 7. Replace the I/O card in slot 1.

Step 8. Attach the I/O cables to the back of the server.

The following graphic shows the PCI Backplane.

DC-DC Converter Removal

DC-DC Converter boards and slave boards are required to power each CPU.

CPU MHz	Master	Slave
440	1	1
550*	1	2
* When available		

NOTE   Each CPU requires a DC-DC Converter and slave(s) to operate. When upgrades are performed on the CPU, change the accompanying DC-DC Converter and slave(s) also. When returning replaced CPUs, return the accompanying DC-DC Converter and slave(s) also.

The converter boards stand on edge in slots and are located immediately behind the Power Supply on the left and right sides of the System Board, next to the CPU assemblies.

CAUTION   DC-DC converter boards are not "hot-swap" or "hot-plug" units. Shut the server down and unplug the electrical connection prior to removing or replacing DC-DC converter boards.
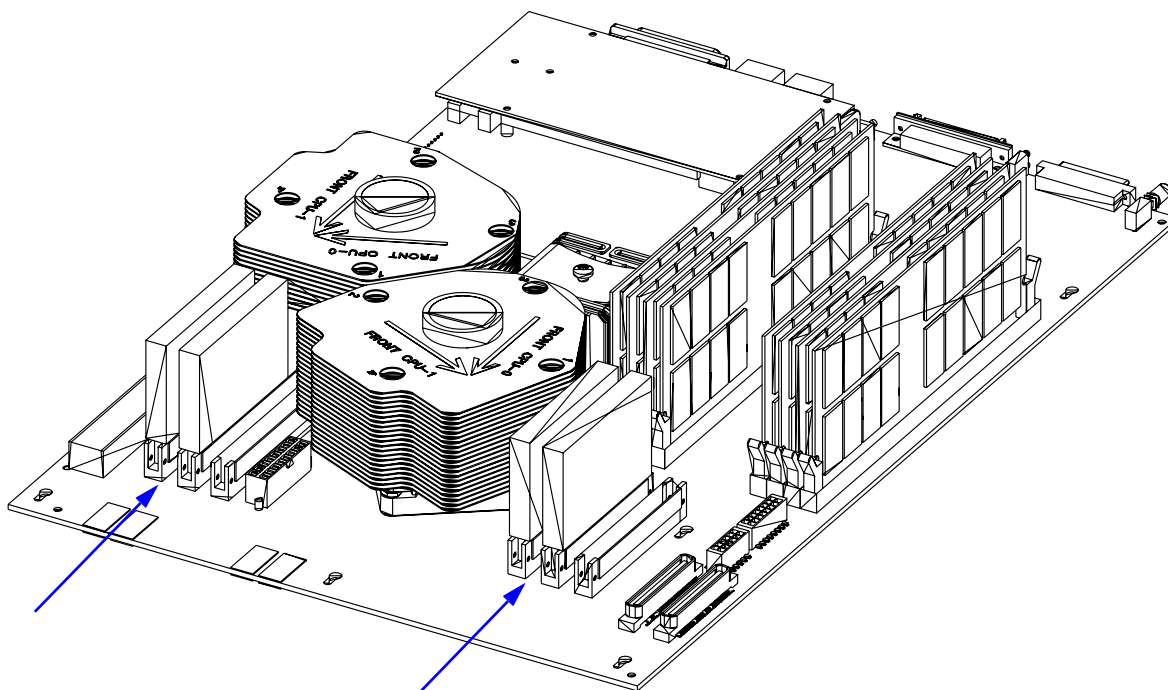
To remove a DC-DC Converter board and its slave(s) from the server, perform the following steps:

Step   1. Gently pull the left and right levers away from each side of the board approximately 0.635 cm (1/4 in.).

CAUTION   DO NOT press hard on the left/right levers or they will break. The levers do not extract the board from its socket. They provide vertical stability, only.

Step   2. Grasp the board by the left and right edges.

Step   3. With a gentle rocking motion, pull the board up and out of its slot.

Step   4. Place the board on a clean, static-free surface.

CAUTION   There is little working room between the DC-DC converter boards and slave(s) and CPU-1. If necessary, use a flat-blade screw driver to reach and release the levers prior to removing these boards.

The following graphic shows the location of the DC-DC converter boards and slaves.
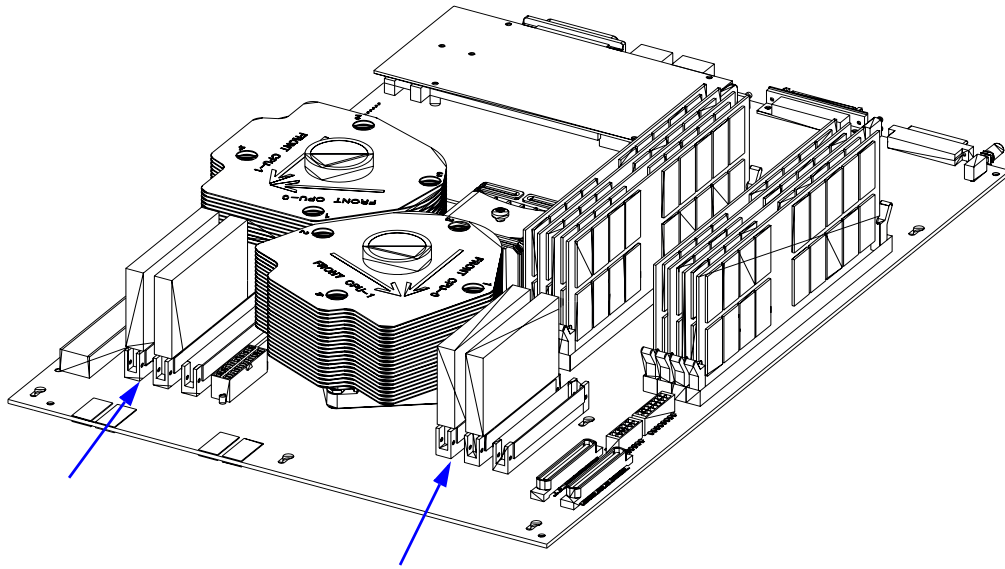
ccrr010

DC-DC Converter Replacement

DC-DC Converter boards and one or two slave boards (depending on the CPU speed) are required to power each CPU.

CPU MHz	Master	Slave
440	1	1
550*	1	2
* When available		

NOTE   Each CPU requires a DC-DC Converter and slave(s) to operate. When CPUs are upgraded or replaced, ensure that the accompanying DC-DC Converter and slave(s) are changed. When returning replaced CPUs to Hewlett-Packard, ensure that the accompanying DC-DC Converter and slave(s) are returned also.

The converter boards stand on edge in slots and are located immediately behind the Power Supply on the left and right sides of the System Board, in front of the CPU assemblies.

CAUTION   DC-DC converter boards are not "hot-swap" or "hot-plug" units. Shut the server down and unplug the electrical connection prior to removing or replacing DC-DC converter boards.

To replace a DC-DC Converter board and its slave(s) from the server, perform the following steps:

Step 1. Grasp the board by the left and right edges.

Step 2. Align the board connector with the slot. The slot and board are keyed so that the board will only fit one way. Place your thumbs on the top edge of the board, near the left and right sides, and push the board straight down into its slot until either an audible "click" is heard, or the levers close and seat into the slots in the side edges of the board

CAUTION   DO NOT press hard on the left/right levers or they will break. Levers provide vertical stability, only.

The following graphic shows a DC-DC converter board and slave(s).

ccrr010

Memory DIMM Removal

Memory DIMMs reside in eight sockets (two sets of four sockets each) located on the right side of the System Board. They are normally loaded in DIMM pairs of equal size.

CAUTION Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.
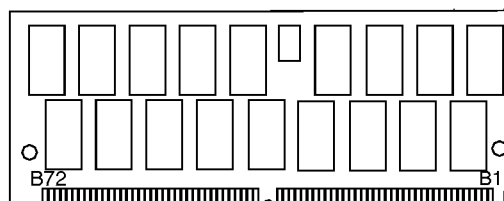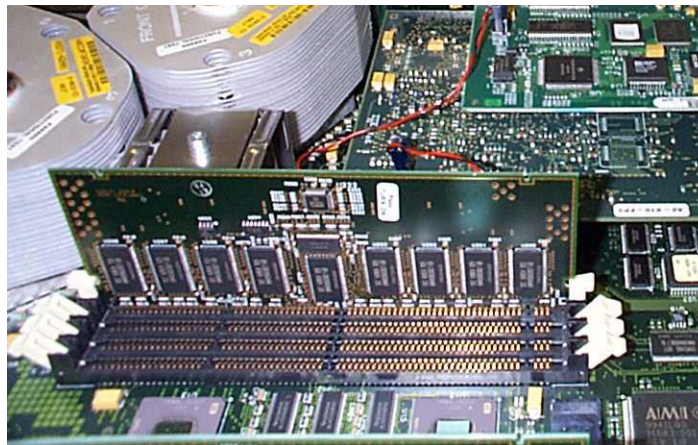

To remove a memory DIMM, perform the following steps:

Step 1. Press down on the extractor levers on each end of the selected memory DIMM to unseat the DIMM from its socket.

Step 2. When the DIMM is unseated, pull it up and out of the System Board.

The following picture shows a memory DIMM located on the right side (from the server front) of the server system board.

The next graphic is a drawing of a generic memory DIMM, followed by drawings that show DIMM removal/replacement.

ulmu701

strr007

Memory DIMM Replacement

Memory DIMMs reside in sockets located on the right side (from the front) of the System Board.

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

To replace a memory DIMM, perform the following steps:

CAUTION	Be careful to insert the DIMM into the socket evenly. Do not rock the DIMM when seating it.

Step 1. Match the guide slots on the bottom of the DIMM with the guides on the socket and seat the memory DIMM into the socket. Insert the DIMM connectors into the guides until the card snaps firmly in place. It may be necessary to apply downward force using the palm of your hand on the DIMM. Ensure that one side the DIMM is not higher than the other.

Step 2. Use the BCH command `in me` to verify that the system recognizes the memory that you have just replaced.

The following picture shows the memory DIMMs located on the right side (from the server front) of the server system board.
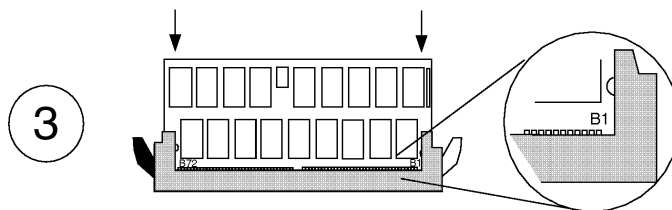

The following graphic is a drawing of a generic memory DIMM, followed by drawings that show DIMM removal/replacement.

ulmu701

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Guardian Service Processor (GSP) Removal

The GSP card resides on the System Board at the rear left center, under the short PCI I/O card (slot 1), which must be removed for access.

Before removing the GSP from the server, perform the following steps:

CAUTION	Ensure that the system is shut down and power removed from the server before attempting removal or replacement of a component.

To remove the GSP from the server, perform the following steps:

Step 1. Loosen the four mounting screws that hold the GSP card in place.

Step 2. Grasp the card by the left and right edges, rock it gently to free it from its socket on the System Board, and lift it out of the server.

The following picture shows the a GSP installed in a server.

The following graphic shows the location of a GSP in the server.
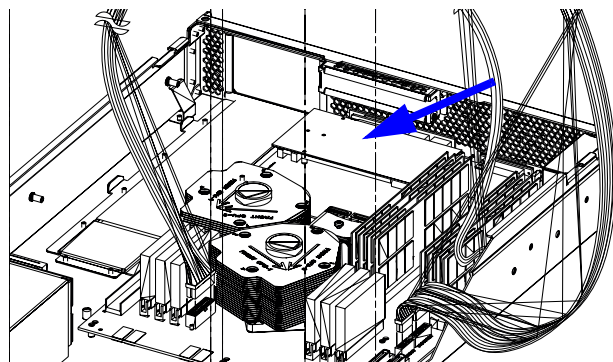
Guardian Service Processor Replacement

The GSP card resides on the System Board at the rear left center, under the short PCI I/O card (slot 1), which must be removed for access.

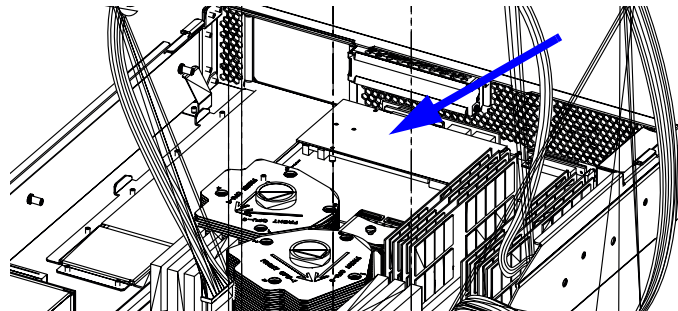To replace the GSP, perform the following steps:

Step 1. Grasp the card by the left and right edges and press it gently into its socket on the System Board.

Step 2. Insert and tighten the four mounting screws that hold the GSP card in place.

The following picture shows a GSP installed in a server.
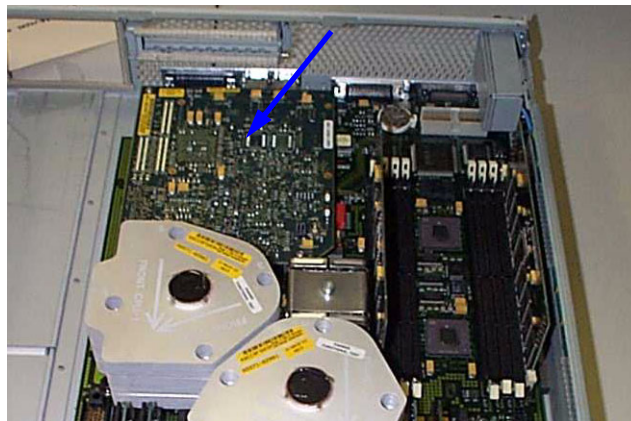
The following graphic shows the location of a GSP in the server.

Extend a Server From the Rack

rp24xx servers are available in three configurations: rack-mounted, stacked, or stand-alone. Access to servers mounted in an HP-supported rack is covered in this section.

NOTE	Ensure that there is enough area (Approximately 82 centimeters (32 in.) to fully extend the server out the front and work on it.

WARNING	**Ensure that all anti-tip features (front anti-tip feet installed; adequate ballast properly placed, etc.) are employed prior to extending the server.**

To extend the server, perform the following steps:

Step 1. Remove the front Bezel.

Step 2. Remove the four T-25 screws that fasten each side of the server to the rack.

WARNING	**DO NOT press the rail clips after they reach the stops. Defeating this safety feature when the server is fully extended will cause it to be pulled completely off the rails. Servers weigh approximately 50 lbs each and failure to observe this precaution can cause serious injury and/or equipment damage.**

Step 3. Grasp the server chassis and slowly pull forward. The server is fully extended when the rail clips are locked in place.

The following graphic shows the server extended and indicates the rail clip location.
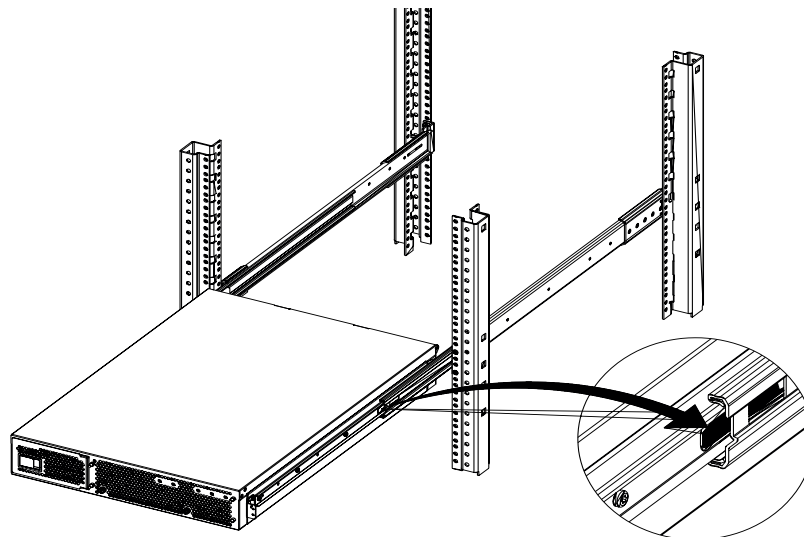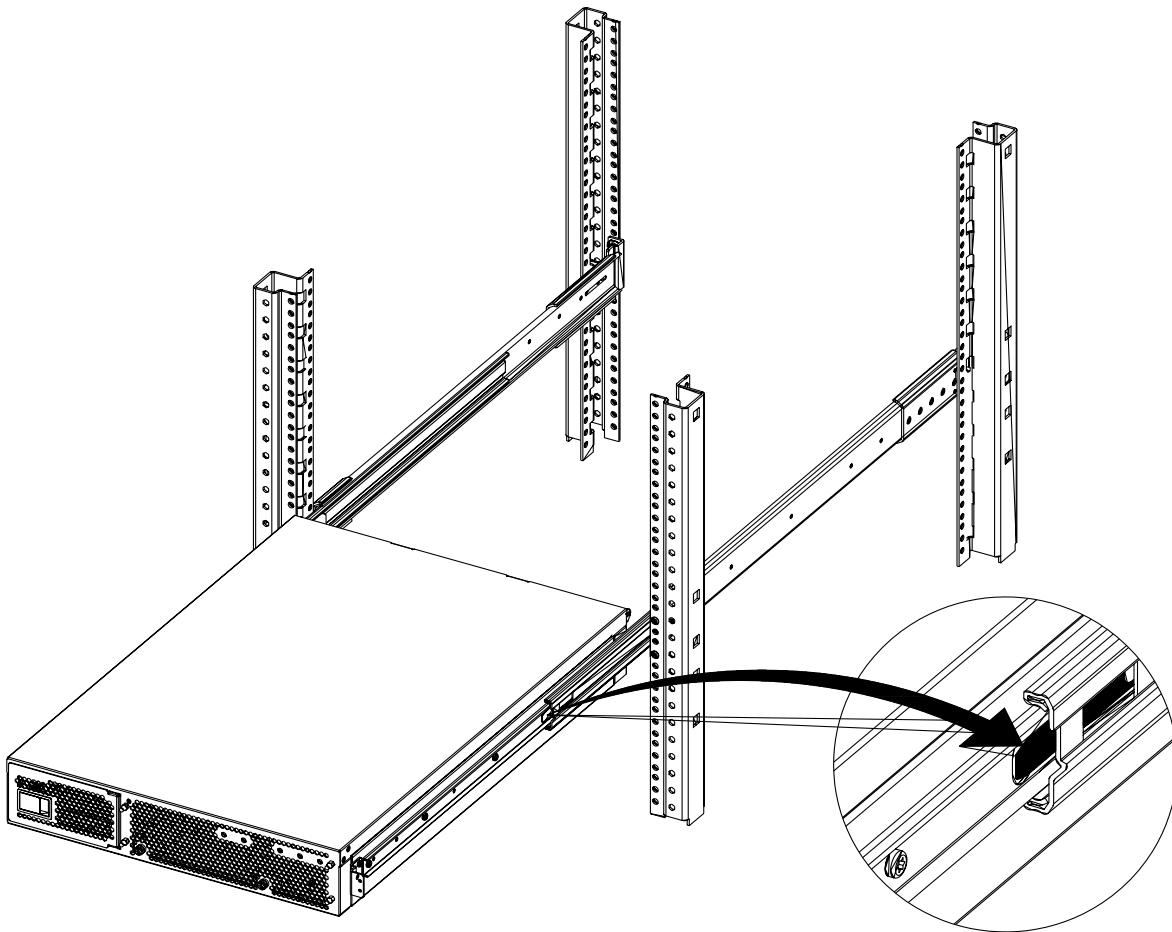

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Insert the Server into the Rack

rp24xx servers are available in three configurations: rack-mounted, stacked, or stand-alone. Access to servers mounted in an HP-supported rack is covered in this section.

To return the server into the rack, perform the following steps:

Step 1. Push and hold each rail clip in to unlock the rail from the fully extended position. Slowly push server chassis completely into the rack.

Step 2. Replace the four T-25 screws on each side of the server that fasten it to the rack.

Step 3. Attach the front Bezel.

The following graphic shows the server extended and indicates the rail clip location.

ccrr014