

Workload Deployer  
First Edition

*Installation and User's Guide*

**IBM**



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First Edition

*Installation and User's Guide*



**Note**

Before using this information and the product it supports, read the information in "Safety" on page v and, if necessary, the language-specific information for your locale in *IBM Systems Safety Notices*, G229-9054-01.

Before using this information and the product it supports, read the information in "Notices" on page 55.

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This edition applies to IBM Workload Deployer until otherwise indicated in new editions.

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## Safety

Before installing this product, read the Safety Information.

### Arabic

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

### Brazilian Portuguese

Antes de instalar este produto, leia as Informações de Segurança.

### Chinese (simplified)

在安装本产品之前，请仔细阅读 **Safety Information** (安全信息)。

### Chinese (traditional)

安裝本產品之前，請先閱讀「安全資訊」。

### Croatian

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

### Czech

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

### Danish

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

### Dutch

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

### Finnish

Ennen kuin asennat tämän tuotten, lue turvaohjeet kohdasta Safety Information.

### French

Avant d'installer ce produit, lisez les consignes de sécurité.

### German

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

### Greek

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

### Hebrew

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

### Hungarian

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

### Italian

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

### Japanese

製品の設置の前に、安全情報をお読みください。

### Korean

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

### Macedonian

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

**Norwegian**

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

**Polish**

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

**Portuguese**

Antes de instalar este produto, leia as Informações sobre Segurança.

**Russian**

Перед установкой продукта прочтите инструкции по технике безопасности.

**Slovak**

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

**Slovenian**

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

**Spanish**

Antes de instalar este producto, lea la información seguridad.

**Swedish**

Läs säkerhetsinformationen innan du installerar den här produkten.

---

## Guidelines for servicing electrical equipment

Observe the following guidelines when servicing electrical equipment:

- Check the area for electrical hazards, such as moist floors, non-grounded power extension cords, and missing safety grounds.
- Use only approved tools and test equipment. Some hand tools have handles that are covered with a soft material that does not provide insulation from live electrical current.
- Regularly inspect and maintain your electrical hand tools for safe operational condition. Do not use worn or broken tools or testers.
- Do not touch the reflective surface of a dental mirror to a live electrical circuit. The surface is conductive and can cause personal injury or equipment damage if it touches a live electrical circuit.
- Some rubber floor mats contain small conductive fibers to decrease electrostatic discharge. Do not use this type of mat to protect yourself from electrical shock.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Locate the emergency power-off (EPO) switch, disconnecting switch, or electrical outlet so that you can turn off the power quickly in the event of an electrical accident.
- Disconnect all power before you perform a mechanical inspection, work near power supplies, or remove or install main units.
- Before you work on the equipment, disconnect the power cord. If you cannot disconnect the power cord, have the customer power off the wall box that supplies power to the equipment and lock the wall box in the off position.
- Never assume that power has been disconnected from a circuit. Check it to make sure that it has been disconnected.
- If you have to work on equipment that has exposed electrical circuits, observe the following precautions:



- Make sure that another person who is familiar with the power-off controls is near you and is available to turn off the power if necessary.
- When you are working with powered-on electrical equipment, use only one hand. Keep the other hand in your pocket or behind your back to avoid creating a complete circuit that could cause an electrical shock.
- When using a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
- Stand on a suitable rubber mat to insulate you from grounds such as metal floor strips and equipment frames.
- Use extreme care when measuring high voltages.
- To ensure proper grounding of components, such as power supplies, pumps, blowers, fans, and motor generators, do not service these components outside of their normal operating locations.
- If an electrical accident occurs, use caution, turn off the power, and send another person to get medical aid.

---

## Inspecting for unsafe conditions

**Note:** Use this information to help you identify potential unsafe conditions in an IBM® product that you are working on.

Each IBM product, as it was designed and manufactured, has required safety requirements to protect users and service technicians from injury. Use good judgment to identify potential unsafe conditions that might be caused by attachment of non-IBM features or options that are not addressed in this section. If you identify an unsafe condition, you must determine how serious the hazard is and whether you must correct the problem before you work on the product.

Consider the following conditions, and the safety hazards that they present:

- Electrical hazards (especially primary power). Primary voltage on the frame can cause serious or fatal electrical shock.
- Explosive hazards, such as a damaged CRT face or a bulging capacitor.
- Mechanical hazards, such as loose or missing hardware.

To inspect the product for potential unsafe conditions, complete the following steps:

1. Make sure that the power is off and the power cords are disconnected.
2. Make sure that the exterior cover is not damaged or broken, and observe any sharp edges.
3. Check the power cords:
  - Make sure that the third-wire ground connector is in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
  - Make sure that the power cords are the correct type.
  - Make sure that the insulation is not frayed or worn.
4. Check for pinched cables.

---

## Safety statements

The statements in this section are the statements that apply to the IBM Workload Deployer appliance. These statements are the same safety information that the *IBM Systems Safety Notices* document provides. However, the *IBM Systems Safety Notices* document provides the complete list of the safety notices for IBM Systems Software.

## Danger notices

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

## Caution notices

**CAUTION:**

The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

- Do not throw or immerse into water.
- Do not heat to more than 100° C (212° F).
- Do not repair or disassemble.

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

**CAUTION:**

The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb.). It takes two persons to safely lift this part or unit. (C009)



Use the following general safety information for all rack-mounted devices.

## DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment — personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

(R001 part 1 of 2)

## CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001 part 2 of 2)

**CAUTION:**

Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
  - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there are no stabilizer brackets installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - Lower the four leveling pads.
  - Install stabilizer brackets on the rack cabinet.
  - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

## Labels

### DANGER

Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)



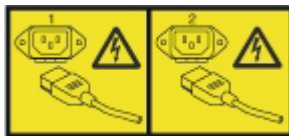
### DANGER

Rack-mounted devices are not to be used as shelves or work spaces. (L002)



### DANGER

Multiple power cords. The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. (L003)



### CAUTION:

Hazardous moving parts nearby. (L008)



---

## Preface

This publication includes installation, configuration, and maintenance information for the IBM Workload Deployer appliance. The IBM Workload Deployer appliance is a 2U rack-mountable appliance.

IBM Workload Deployer is a specialized hardware appliance that uses server virtualization, virtual appliances, and application infrastructure virtualization. It delivers automation and optimization across the life cycle of your environments. Workload Deployer manages people (the users of the system), places (the servers, network and storage to run applications), and things (virtual images, patterns, and virtual machines).

---

## Who should read this guide

This guide is intended for personnel who will install, configure, diagnose, and service the IBM Workload Deployer appliance. The tasks addressed in this guide include:

- Installing rails in the rack frame for the appliance.
- Installing the appliance in the rack.
- Performing the base, initial configuration of the appliance.
- Diagnosing and troubleshooting hardware problems.
- Ordering customer replaceable units.

---

## How this guide is organized

This guide is organized into the following sections:

- Safety  
Provides safety information for the IBM Workload Deployer appliance.
- Chapter 1, “IBM Workload Deployer Appliance overview”  
Provides the features and specifications for the IBM Workload Deployer appliance.
- Chapter 2, “Preparing for installation”  
Provides information about the rack, required tools, and the installation overview.
- Chapter 3, “Installing the appliance in a rack”  
Provides instructions for installing the rails and the appliance in the rack and connecting to the power supply and network.
- Chapter 4, “Setting up the initial firmware configuration”  
Provides instructions for defining the base, initial firmware configuration.
- Chapter 5, “Diagnosing your appliance,” on page 25  
Provides information about the diagnostic features of IBM Workload Deployer appliance.
- Chapter 6, “Troubleshooting your appliance”  
Provides information about troubleshooting hardware problems with IBM Workload Deployer appliances.
- Chapter 7, “Removing or replacing the appliance or parts”

Provides information about removing and replacing hardware, removing IBM Workload Deployer appliances from the rack, and finding and ordering replacement parts.

- Getting help and technical assistance  
Provides information about getting support.

---

## Related documents

The documentation in the *IBM Workload Deployer: Information Center* is referenced by this document. You can find the *IBM Workload Deployer: Information Center* at the following location:

<http://publib.boulder.ibm.com/infocenter/worlodep/v3r0m0/index.jsp>

---

## Warranty information

The warranty statement is available in 29 languages from the IBM web site at [http://www.ibm.com/servers/support/machine\\_warranties/](http://www.ibm.com/servers/support/machine_warranties/) without the product-specific terms.

---

## Notices conventions

The following notices and statements are used in this document:

**Note** This section provides important tips, guidance, or advice.

**Best Practice**

This section provides guidance about best practices.

**Attention**

This section indicates potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.

**Caution**

This section indicates situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.

**Danger**

This section indicates situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

---

## Typeface conventions

The following typeface conventions are used in the documentation:

**bold** Identifies commands, programming keywords, and GUI controls.

*italics* Identifies words and phrases used for emphasis and user-supplied variables.

monospaced

Identifies user-supplied input or computer output.



---

## Chapter 1. IBM Workload Deployer Appliance overview

IBM Workload Deployer manages the people, places, and things in your cloud computing environment. *Cloud computing* is a computing paradigm in which data and services are located in data centers. The data and services can then be accessed from any connected devices over the Internet. Applications can use the cloud for added value, such as storage, queuing, and hosted applications. The applications themselves can also be hosted on the cloud.

Workload Deployer is an appliance that is packaged with software to manage resources and applications in a cloud computing environment. Workload Deployer uses server virtualization and virtual appliances to deliver automation and optimization across the life cycle of your environments. You can deploy topology patterns, made up of the resources in your cloud, or application patterns.

The Workload Deployer appliance is a 2U rack-mountable appliance that can be placed in a data center. The appliance can dispense applications or topologies, for example IBM WebSphere® Application Server Hypervisor Edition topologies, into a pool, or cloud of virtualized hardware, and manage resources. The cloud and resources are running on IBM PowerVM™, IBM z/VM®, or VMware hypervisors.

Using Workload Deployer, you can access the resources in your cloud and centrally manage multiple environments from a single appliance and remote interface. More information about the people, places and things that Workload Deployer manages is available in the IBM Workload Deployer information center at the following location: <http://publib.boulder.ibm.com/infocenter/worlodep/v3r0m0/index.jsp>.

---

### Specifications

IBM Workload Deployer is a hardware and software solution. The Workload Deployer appliance consists of data storage, a system battery, fan modules, and power modules.

Table 1 summarizes the specifications for the dimensions of the Workload Deployer appliance chassis.

*Table 1. Appliance dimensions*

Specification	Measurement
Height	8.89 cm (3.5 in.)
Width	42.8 cm (17.25 in.)
Depth	58.4 cm (23 in.)
Weight	Maximum: 21 kg (46.2 lbs)

Table 2 summarizes the electrical specifications for the Workload Deployer appliance.

*Table 2. Electrical specifications*

Specification	Measurement
Sine-wave	50 - 60 Hz (single-phase) required

Table 2. Electrical specifications (continued)

Specification	Measurement
<b>110 Voltage AC</b>	Minimum: 100 V <sub>RMS</sub> Maximum: 127 V <sub>RMS</sub>
<b>220 Voltage AC</b>	Minimum: 200 V <sub>RMS</sub> Maximum: 240 V <sub>RMS</sub>
<b>Power usage</b>	10 A for 110 V AC 5 A for 220 V AC  The appliance contains two 720-watt power modules. Both power supply modules must be connected to the same power source to prevent a difference in ground voltage between the two power modules.
<b>Heat output</b>	Maximum: 590 watts (2014 Btu) per hour

Table 3 summarizes the environmental requirements for the Workload Deployer appliance.

Table 3. Environment requirements

Specification	Requirement
<b>Air temperature</b>	Turned on: <ul style="list-style-type: none"> <li>• Altitude 0 to 914.4 m (3000 ft.) 50° to 95° F (10° to 35° C)</li> <li>• Altitude: 914.4 m (3000 ft.) to 2133.6 m (7000 ft.) 50° to 89.6° F (10° to 32° C) Maximum altitude: 2133.6 m (7000 ft.)</li> </ul> Turned off: 50° to 109.4° F (10° to 43° C) Shipping: -40° to 140° F (-40° to 60° C)
<b>Humidity</b>	8% to 80%

## Features

The Workload Deployer appliance provides the hard disk array for data storage. The hard disk array is a simple swap Serial Attached SCSI (SAS) hard disk drive.

**Note:** There are four 600 GB hard drives with a total of 1200 GB of storage (RAID 10). Of the 1200 GB of storage, you can only use 600 GB. The remaining 600 GB of storage is reserved.

## Front view

Figure 1 on page 3 shows the controls, LEDs, and connectors of the appliance. The Ethernet modules and the hard disk drive modules can be installed from the front panel of the appliance, as discussed in Chapter 7, “Removing or replacing the appliance or parts,” on page 33.

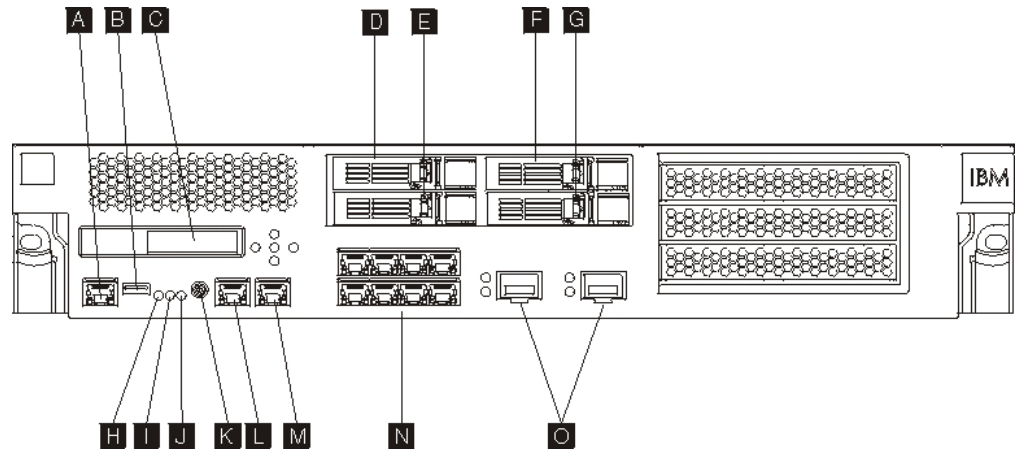


Figure 1. front view

The labels in Figure 1 correspond to the following components on the front panel of the appliance:

- A Console connector
- B USB port
- C LCM module
- D Hard disk drive module 3
- E Hard disk drive module 1
- F Hard disk drive module 2
- G Hard disk drive module 0
- H Fault LED
- I Locate LED
- J Power LED
- K Power button
- L MGT0 Ethernet connector
- M MGT1 Ethernet connector
- N Left Ethernet modules
- O Right Ethernet modules

### LCD module

The front panel of the appliance has a liquid crystal display (LCD) module that includes an LCD and five menu buttons (see Figure 2). The LCD provides information on the model type of the appliance; however, the menu buttons are not functional.



Figure 2. LCD module

## Console connector

The front panel of the appliance has a console connector. For initial configuration, use the RJ45 (ISO 8877) to DB-9 (also known as a DE-9 or EIA/TIA-562) serial null-modem cable that is shipped with the appliance to connect from an ASCII terminal<sup>1</sup> or to connect from a PC that is running terminal emulation software to the appliance. There is a RJ45 connection on one end of the cable, and a DB-9 serial null-modem connection on the other end of the cable. The RJ45 end connects to the appliance and the DB-9 serial null-modem cable end connects to your ASCII terminal or personal computer. Use a USB-to-serial converter cable to attach the cable to your personal computer.

**Note:** For initial configuration, you can use the RJ45 to serial connection cable that ships with the appliance or you can create a cable based on the cable pinout specifications listed in Table 4. Do not use an Ethernet cable to plug the serial console port into an Ethernet network.

Table 4 describes the serial port pinouts for the console connector.

Table 4. Serial port pinouts

RJ45		DB9	
Pin number	Signal	Pin number	Signal
1	RTS	8	CTS
2	DTR	6	DSR
3	TXD	2	RXD
4	GND	5	GND
5	GND	5	GND
6	RXD	3	TXD
7	DSR	4	DTR
8	CTS	7	RTS

## USB Port

The front panel of the appliance has a USB interface conforming to USB 2.0 devices. This USB connector is not enabled and therefore does not provide any connection.

## LEDs

The front panel of the appliance has three standalone LEDs that you can use for troubleshooting.

### Fault LED

The amber fault LED is lit when a critical event is detected.

### Locate LED

The blue locate LED is lit when activated by the firmware. You can control whether this LED is lit from the command line interface. From the command line interface, use the `locate-led` command with the values `on` or `off`. Once activated, the LED remains lit until it is deactivated.

### Power LED

The green power LED is lit when the appliance is connected to a power

---

1. A simple device that transmits (inputs) and receives (outputs) ASCII data.

source and you have turned on the appliance. If the LED is not illuminated, the appliance has been turned off.

## Power button

The power button is located on the front panel of the appliance. Press the power button to:

- Turn the appliance on.
- Start a graceful shutdown (if the appliance is already turned on).

Pressing the power button and holding for five seconds performs an immediate hardware shutdown. See “Turning off the appliance” on page 38 for detailed information on turning off the appliance.

**Note:** When you press the power button to turn off the appliance, there is still electrical current flowing to the device. To completely stop all electricity to the appliance, unplug all power cords.

## Network connectors

The front panel of each appliance has two LAN management Ethernet ports and two Ethernet modules. See “Ethernet network configuration” on page 8 for a description of the Ethernet naming convention.

### LAN management Ethernet ports

The two system management Ethernet ports provide connection to the LAN. These ports provide remote management access to the device and should not be used as data ports. The remaining Ethernet interfaces can handle data traffic and logging functions to and from the various services.

**Best Practice:** Use MGT0 or MGT1 Ethernet interface for system-wide management functions to handle network traffic for incoming SNMP, SSH, and Web user interface functions on your intranet.

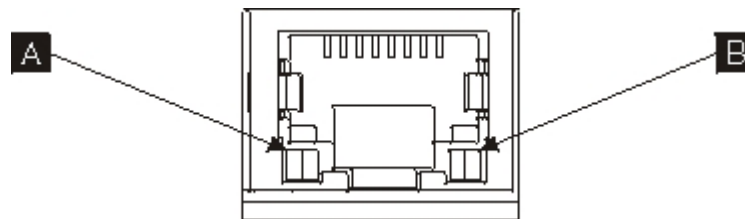


Figure 3. Ethernet port LEDs

### MGT0 Ethernet connector

This Ethernet interface can manage all transaction data on the appliance. The MGT0 Ethernet connector also supports IPMI over LAN, including serial over LAN. MGT0 has an associated speed LED and activity LED:

#### Speed LED ( **A** )

- The green LED indicates a 1 Gbps connection.
- The amber LED indicates a 10 Mbps or 100 Mbps connection.

#### Activity LED ( **B** )

- The green LED indicates the port is linked.

- The green blinking LED indicates the port is active.

### **MGT1 Ethernet connector**

This Ethernet interface can manage all transaction data on the appliance. MGT1 has an associated LED activity light and a LED speed light:

#### **Speed LED ( A )**

- The green LED indicates a 1 Gbps connection.
- The amber LED indicates a 10 Mbps or 100 Mbps connection.

#### **Activity LED ( B )**

- The green LED indicates the port is linked.
- The green blinking LED indicates the port is active.

### **Ethernet modules**

The appliance has two Ethernet modules for Ethernet connectivity. The left Ethernet module has eight RJ45 ports, and the right Ethernet module has two 10 Gb small-form factor pluggable (SFP+) ports. The name of the Ethernet interface depends on the module configuration.

The 1 gigabit module supports Ethernets with unshielded, twisted-pair with interface standards and includes:

- 10BASE-T
- 100BASE-TX
- 1000BASE-T

The 10 Gigabit module supports SFP+ ports with interface modules and patch cables that always includes autonegotiation:

10GBASE-SR  
10GBASE-LR

#### **Left Ethernet module**

Has eight unshielded, twisted-pair (RJ45) Ethernet ports. The Ethernet numbers range from ETH0 to ETH7 and correlate to the number of available ports.

#### **Right Ethernet module**

Has two 10 Gigabit small form-factor pluggable (SFP+ ports. The Ethernet numbers range from ETH8 to ETH9 and correlate to the number of available ports.

See “Ethernet network configuration” on page 8 for a description of Ethernet numbering.

**Note:** The Ethernet modules are not hot-swappable. Hot swapping the modules will cause your system to crash, and could possibly damage your appliance.

### **Hard disk drive modules**

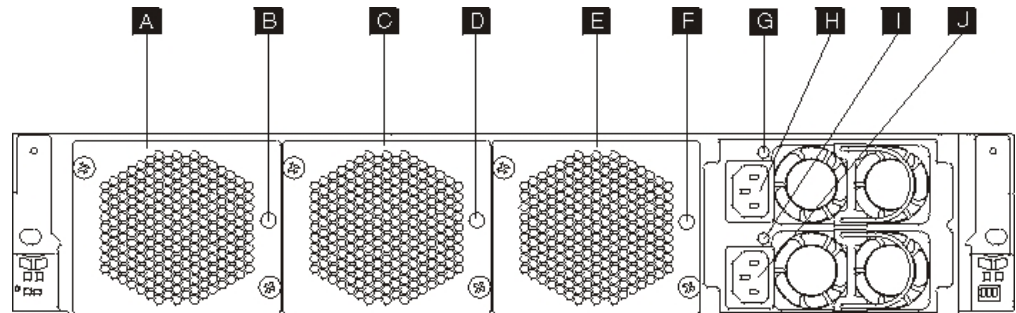
The front panel of the appliance includes four, 2.5 inch hard disk drive modules. The appliance supports SAS hard disk drives, and there are two LEDs on each hard disk drive module. The left LED monitors hard disk activity, and the right LED indicates a potential problem:

- A green blinking LED indicates that the hard drive is being accessed.
- An amber blinking LED indicates that the hard drive has failed.
- No LED illuminated indicates the hard drive is not active.

**Note:** The hard disk drive modules are not hot-swappable. Hot swapping the modules could cause your system to crash.

## Rear view

Figure 4 shows the components and LEDs on the rear of the appliance. The fan modules and power modules are installed from the rear of the appliance.



*Figure 4. Rear view*

The labels in Figure 4 illustrate the following components on the rear panel of the appliance:

- A Fan module 1
- B Fan module 1 LED
- C Fan module 2
- D Fan module 2 LED
- E Fan module 3
- F Fan module 3 LED
- G Power supply module 1 LED
- H Power supply module 1
- I Power supply module 2 LED
- J Power supply module 2

### Fan modules

The appliance includes three fan modules. Each fan module contains an individual cooling fan with an LED in each fan module:

- If the amber LED is lit, there is a problem with the fan module.
- If the amber LED is not lit, the fans are operating normally.

The speed of the fans are dependent on the temperature of the appliance. As the temperature increases, the fan speed increases to maintain a balanced temperature for the appliance.

### Power supply modules

The appliance is powered by two redundant power supply modules. A single power supply module can supply enough power to support appliance operations.

The power supply modules can be hot-swapped, so you can replace a single power supply module without powering down the appliance. Each power supply module contains an LED:

- If the amber power LED is lit, the power supply has an error.
- If the green power LED is lit, the power supply is working as expected.

See “Turning off the appliance” on page 38 for detailed information on turning off the appliance.

**Note:** When you press the power button to turn off the appliance, there is still electrical current flowing to the device. To completely stop all electricity to the appliance, unplug all power cords.

---

## Ethernet network configuration

The Ethernet modules expand the network connectivity options. Each appliance has two Ethernet modules. The Ethernet modules are numbered from left to right, but if a module has less than eight ports, the module uses the lowest port number in the range. The numbering convention for configuring Ethernet interfaces and installing network cables is:

- Left module ranges from ETH0 to ETH7
- Right module ranges from ETH8 to ETH9

### Connections

Each Ethernet module has one of the following configurations:

- The left Ethernet module has eight 1 Gigabit Ethernet ports, which are RJ45 connectors.
- The right Ethernet module has two 10 Gigabit Ethernet ports, which are small form-factor pluggable (SFP+) transceivers.

The appliance has ten Ethernet connections. The Ethernet interface names are ETH0 through ETH7, ETH8, and ETH9 (as shown in Figure 5).



Figure 5. 8x2 Ethernet connection



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## Chapter 2. Preparing for installation

This section provides information about the rack, required tools, and an installation overview.

---

### Rack requirements

The appliance can use a standard 19 in (48.26 cm) rack with a minimum of 28 in. (71.1 cm) of depth. When planning the installation, keep in mind:

- The rack must provide rear mounting columns. The appliance requires both front and rear mounting support.
- There must be at least 30 in. (76.20 cm) of free space behind the rack frame to remove replaceable parts.
- The ambient temperature in the operating environment and within the rack should not exceed 95° F (35° C).

## DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

## DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment — personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

(R001 part 1 of 2)

## CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001 part 2 of 2)

**CAUTION:**

Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
  - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there are no stabilizer brackets installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - Lower the four leveling pads.
  - Install stabilizer brackets on the rack cabinet.
  - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

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## Tool requirements

You will need the following tools, hardware, and cables to install the appliance rack-mounting kit:

- A medium Phillips screwdriver
- Two (2) standard rack screws

You will need the following cables to connect the appliance to your network:

- At least two (2) network cables, but up to 12 for the appliance.

---

## Installation overview

The overall installation process makes the following assumptions:

- You have fully unpacked the appliance and have located the included two (2) power cords, one (1) USB-A to DB9-M serial adapter cable, and one (1) RJ45 to DB9-F serial console cable.
- You need to install the mounting rails and have the rack-mounting kit.

To fully set up and test the appliance in your network, use the following high-level processes:

1. Install the appliance in a rack:
  - a. Install the rails in the rack.
  - b. Secure the appliance in the rack.
  - c. Connect the appliance to an AC source.
  - d. Connect the appliance to the network.
2. Set up the initial firmware configuration:
  - a. Connect the USB serial cable to the serial port.
  - b. Initialize the appliance.
  - c. Verify the initial firmware configuration from the WebGUI.
3. Define the base configuration.



---

## Chapter 3. Installing the appliance in a rack

Use the procedures in this section to install the appliance in a rack. The rails for the appliance are for a 19 in. (48.26 cm) rack. The appliance ships with a slide rail kit and a shipping bracket kit. The contents of the slide rail kit are required to install the appliance. You can use the shipping bracket kit if you plan to transport the rack cabinet to another location. If any of the items listed below are not included in your shipment, contact your place of purchase.

The slide rail kit includes the following parts:

- Two (2) slide rails
- Four (4) screws (M6) to secure the brackets to the appliance
- Two (2) screws (10-32)

The shipping bracket kit includes the following parts:

- Two (2) shipping brackets (left and right)
- Four (4) cage nuts
- Four (4) clip nuts
- Four (4) screws (M6)

---

### Installing rails in the rack frame

**Note:** If the slide rails in your rack installation kit came with shipping thumbscrews, remove them before you start installing the appliance.

To install your appliance in the rack cabinet, complete the following steps:

1. Open the front slide rail latches, as shown in Figure 6 on page 16.
  - a. Notice that each slide rail is marked with either an R (right) or an L (left).
  - b. Select one of the slide rails and push up on the front moveable tab **1**; then, pull out the front latch **2**.
  - c. If a thumbscrew is installed in the slide rail **3**, remove the thumbscrew.

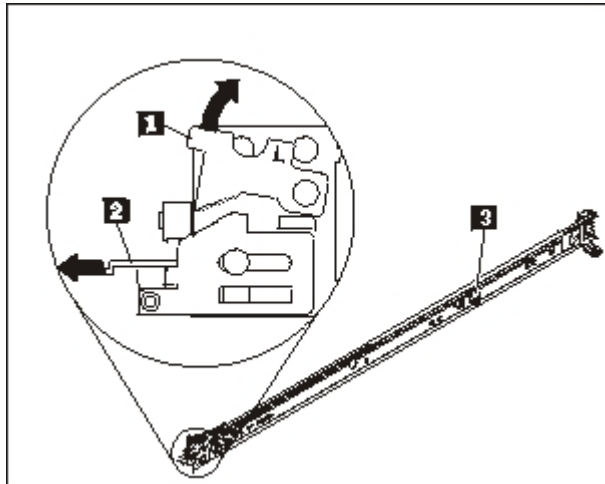


Figure 6. View of the slide rails

2. Install the rear end of the slide rails, as shown in Figure 7:
  - a. From the front of the rack, line up the three pins on the rear of the slide rail with the three holes in the selected U on the rear of the rack.
  - b. Push the rails so that the pins go into the holes **1**, and latch down into place **2** until it latches into place.

**Notes:**

- 1) When you install a 2U appliance, be sure to install the slide rails in the bottom of the 2U area in the rack.

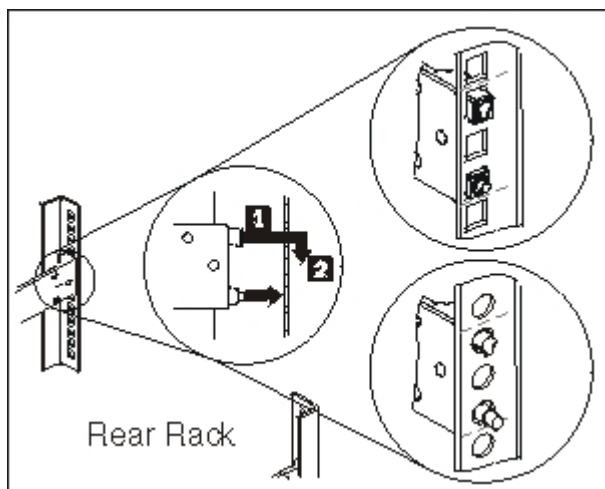


Figure 7. Install the rear end of the slide rails

3. Install the front end of the slide rails, as shown in Figure 8 on page 17.
  - a. Pull the slide rail forward and insert the two pins **1** on the front of the rail into the two lower holes in the U on the front of the rack.
  - b. Drop the rail into place until it clicks. Push the front latch **2** in all the way.
  - c. Repeat steps 1 through 3 to install the other rail into the rack. Make sure that each front latch is fully engaged.



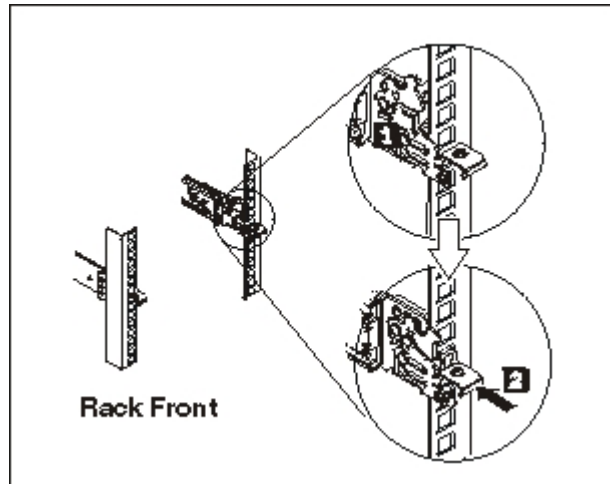


Figure 8. Install the front end of the slide rails

4. Secure the appliance slide rails in the rack, as shown in Figure 9:
  - a. Install a 10-32 screw in the rear of right slide.
  - b. Install a 10-32 screw in the rear of left.

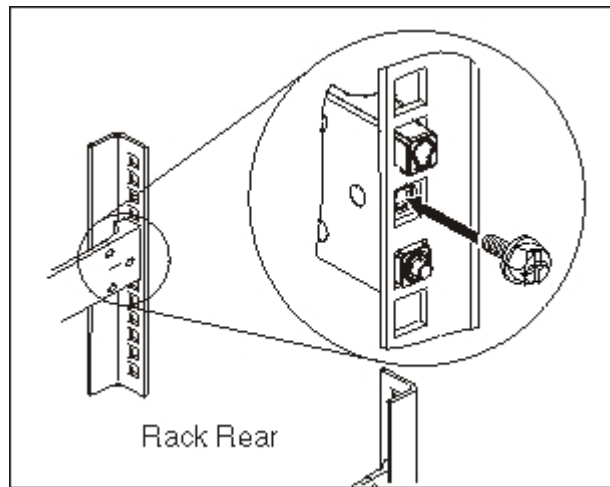


Figure 9. Securing the appliance on slide rails in the rack

## Installing the appliance on the slide rails

### CAUTION:

The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb.). It takes two persons to safely lift this part or unit. (C009)



To install the appliance on the slide rails, complete the following steps as shown in Figure 10.

1. Pull the slide rail forward and insert the two pins **1** on the front of the rail into the two lower holes in the U on the front of the rack.
2. Use two people to carefully lift the appliance **2** and tilt it into position over the slide rails so that the rear nail heads **3** on the appliance line up with the rear slots **4** on the slide rails.
3. Slide the appliance down until the rear nail heads slip into the two rear slots, and then slowly lower the front of the appliance **5** until the other nail heads slip into the other slots on the slide rails.
4. Make sure that the front latch **6** slides over the nail heads.

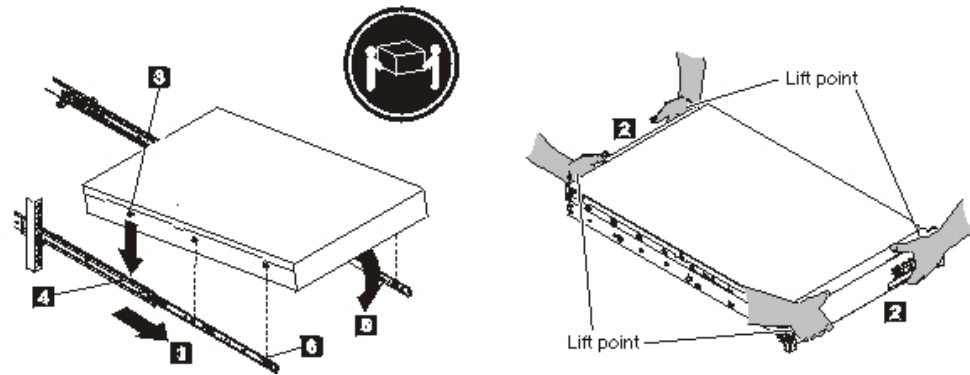


Figure 10. Secure the appliance in the rack

5. If the appliance is locked into place, slide the appliance toward you so that you can attach the brackets with the captive screws.
6. Slide the appliance into the rack, as shown in Figure 11.

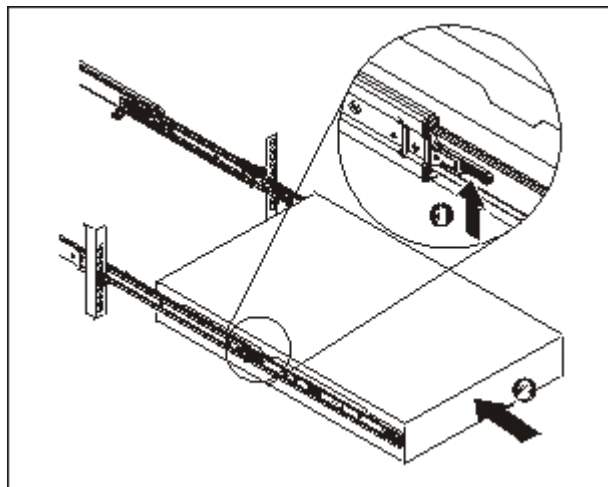


Figure 11. Slide the appliance into the rack

---

## Connecting the appliance to an AC power source

Use the provided power cords to connect both power supply modules to an AC power source. You must connect each power supply module. Otherwise, the unconnected module is considered to be in a failed state. Both power supplies must be connected to prevent a difference in ground voltage between the two power supplies.

---

## Connecting the appliance to the network

Use Ethernet cables or transceivers (not provided) to connect the appliance to its neighboring network devices (link partners), such as switches or load balancers.

**Attention:** Do not connect to telephone or other telecommunication circuits.

Do not use a fiber optic cable that is longer than 100 meters. The cables for small-form factor pluggable (SFP+) modules can be longer than 100 meters. See the product documentation for detailed information on SFP+ modules.

The appliance Ethernet port must be connected to a compatible link partner, preferably set to auto-negotiate connection speed and mode (half duplex or full duplex). Depending on the negotiated or static connection speed and mode, ensure that the cable complies with the following requirements:

### **10BASE-T (10 Mbps) connection**

Two pairs of Category 3 wiring or better.

### **100BASE-TX (100 Mbps) connection**

Two pairs of Category 5 wiring or better.

### **1000BASE-T (1 Gbps) connection**

Four pairs of Category 5 wiring or better.

### **10GBASE (10 Gbps) connection:**

- **Short-reach (300 meters) SFP+ modules with LC connector (multi-mode orange fiber)**
  - Optical interface specifications per IEEE 802.3ae 10GBASE-SR
  - Mechanical specifications per SFF Committee SFF 8432 Improved Pluggable Formfactor IPF
  - Class 1 Eye safe per requirements of IEC 60825-1 / CDRH
- **Long-reach (10 km) SFP+ modules with LC connector (single-mode yellow fiber)**
  - Optical interface specifications per IEEE 802.3ae 10GBASE-LR
  - LC Duplex optical connector interface conforming to ANSI TIA/EA 604-10 (FOCIS 10A)
  - Class 1 Eye safe per requirements of IEC 60825-1 / CDRH
- **SFP+ Copper Direct Attach twinaxial cables**



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## Chapter 4. Setting up the initial firmware configuration

Use the procedures in this section to perform the initial, base firmware configuration. This configuration is the minimal configuration to add a IBM Workload Deployer appliance to your environment.

---

### Configuration requirements

Before beginning the initial firmware configuration, you should make sure you have the following hardware and software available, and you have documented the following information.

#### Information requirements

Collect the following data to define your IBM Workload Deployer appliance base configuration:

- The IP address and subnet mask for the Ethernet interface for appliance management access.
- The IP address of the default gateways that support the subnets for the Ethernet interfaces.
- The IP address of the Domain Name System (DNS) server. Ensure that the DNS server is configured for both forward and reverse look ups.
- Communication parameters for the serial interface: 9600.8.n.1, which is 9600 baud, 8 data bits, no parity bits, and 1 stop bit.
- Mail server information to set up email notifications.
- Network Time Protocol (NTP) server information to enable IBM WebSphere Application Server cells to function.
- (Optional) The IP addresses and subnet mask for Ethernet interfaces for appliance service access, for example ETH0, ETH1, and ETH2.

**Best Practice::** For all network-wide and system-wide management functions, use the MGMT Ethernet interface on a dedicated subnet. The dedicated subnet handles network traffic for Web management, using the Web GUI, functions.

To handle data traffic to and from the various hypervisors, use the remaining Ethernet interfaces.

#### Hypervisors types

The following hypervisor types can be used with Workload Deployer:

- IBM PowerVM server with IBM Systems Director and VMControl  
For more information about IBM PowerVM hypervisors, see: [http://publib.boulder.ibm.com/eserver/roadmap\\_powervm.html](http://publib.boulder.ibm.com/eserver/roadmap_powervm.html).
- IBM z/VM with Directory Maintenance Facility (DirMaint™) enabled.  
For more information about z/VM hypervisors, see: <http://www.vm.ibm.com/library/>.
- VMware ESX  
For more information about VMware hypervisors, see: <http://www.vmware.com/support/pubs/>.

For information about the versions of these products supported by Workload Deployer and additional configuration information, see the IBM Workload Deployer information center.

The following managers can be used with Workload Deployer:

- IBM Systems Director VMControl™ for PowerVM hypervisors
- VMware Virtual Center for VMware hypervisors

## Cloud requirements

Your cloud configuration requires the following resources:

- Servers with a hypervisor installed
- Local or storage area network (SAN) storage
- A pool of available IP addresses that can be assigned to virtual systems
- IP address ranges to support the number of concurrent virtual machines to be deployed
- Credentials for the PowerVM, z/VM, or VMware ESX hypervisors to be used in the cloud

## Hardware configuration requirements

To perform the initial configuration, you must use a serial connection. The serial connection must be between an ASCII terminal or a PC running terminal emulation software to the serial port on the appliance. To make the serial connection, use the provided RJ45 to DB-9 serial null-modem cable.

**Note:** If the terminal or PC is not equipped with a serial port, use a USB-to-serial converter cable.

Storage space, in a location other than the appliance, is needed to create a backup. A backup can be quite large in size, depending on content. The following minimum hardware configuration is required:

- At least 4 processors/core systems
- At least 16 GB RAM
- At least 147 GB Storage

To optimize your IBM Workload Deployer appliance environment, the following hardware configuration is required:

- 16 core systems
- At least 64 GB RAM
- SAN storage, for example, IBM System Storage® DS4000®

## Consideration for the password for the admin account

The first time that you start the Workload Deployer appliance is different from any subsequent restarts. On subsequent restarts from a serial connection, you are not prompted to accept the licensing agreement or to change the password for the CBADMIN account. However, you are prompted to log on with a local account. The ID and password you set are required to log in on subsequent restarts.

**Note:** If you lose the administrative ID and password without a way to retrieve them, the appliance must be returned to IBM for remanufacturing. The remanufacturing process erases all data on the appliance.

Save the user ID and password. Put them in a secure location after you set them.

Configure your Simple Mail Transfer Protocol (SMTP) server and provide an email address. If you did not change the user ID, you can configure your SMTP server and provide an email address for the administrative user, `CBADMIN`. If the password is lost, it can be sent to the email address you provide.

Enable a password reset from the serial console. Depending on your security requirements, you can use the option to Allow password reset from the serial console. Using this option, your password can be reset to the original factory default setting, `cbadmin`. The password reset option provides a measure of security. It prevents anyone from resetting the password remotely but still provides access to the appliance if you forget the password.

If another user can log in and has the appropriate access permission, that user can log in and reset the password for the `cbadmin` account.

## Consideration for the intrusion switch

**Note:** Do not attempt to open the chassis of the appliance.

There is an intrusion detection switch in the chassis that is continuously monitored. If the switch is triggered, the appliance does not start. The appliance must be sent back to IBM for remanufacturing before the appliance can be started again. The design of the appliance ensures that you can access the replaceable items from the rear of the appliance without opening the case.

---

## Connecting the serial cable to the appliance

To make the serial connection:

1. Use the RJ45 (ISO 8877) to DB-9 (also known as a DE-9 or EIA/TIA-562) serial null-modem cable that is shipped with the appliance to connect from an ASCII terminal<sup>2</sup> or to connect from a PC that is running terminal emulation software to the appliance.
2. Ensure that the terminal or PC is configured for standard 9600 8N1 and no flow control operation. 8N1 is a notation for a serial configuration in asynchronous mode, where there are eight (8) data bits, no (N) parity bit, and one (1) stop bit.

---

## Initializing the appliance

To initialize the appliance:

1. Press the power button located on the front panel to turn on the appliance. The green power LED illuminates and the fans change speed as the serial console displays.

Wait for a few seconds for the appliance to boot.

2. Follow the wizard prompts to set the password for the administrative ID, accept the license agreements, and configure the Ethernet ports, including the following information:
  - IP address
  - Subnet mask in Classless Inter-Domain Routing (CIDR) format

---

<sup>2</sup> A simple device that transmits (inputs) and receives (outputs) ASCII data.

- Default gateway
- 3. Manually restart your appliance by entering the following command: `device restart`.
- 4. Update your appliance firmware to the latest version. See the information about updating the firmware in the IBM Workload Deployer information center.

---

## Verifying the configuration

From a web browser, verify the configuration from the user interface. For more information about supported web browsers, see “Administrative client requirements.”

To access the web user interface from a browser, use the following procedure:

1. From a network-connected PC, open your web browser.
2. In the address bar, enter the URL defined during the device initialization. This is the host name for the Ethernet interface, for example: `https://myDeployer.ibm.com`. Use the secure Hyper Text Transfer Protocol, which is `https`, not `http`.
3. Log on to the appliance with the local `CBADMIN` account and password. The password you enter is in clear text so it is not displayed.
4. Click **Login**. If the Welcome page is displayed, authentication of the local `CBADMIN` account is successful. If the Welcome page is not displayed, there might be a problem with your configuration.

---

## Administrative client requirements

You can administer Workload Deployer with one of the following administrative clients:

### Command-line interface

You can use this tool on Windows or Linux operating systems. Download and configure the command-line interface tool.

### Web user interface

Use one of the following browsers:

- Mozilla Firefox, version 3.5 or 3.6
- Microsoft Internet Explorer, version 7 or 8



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## Chapter 5. Diagnosing your appliance

Before you perform maintenance on this product, read the safety information in “Safety” on page v.

---

### Understanding the LEDs

There are LEDs on the front and back of the appliance to help you diagnose possible problems. The following LEDs are included on the front and rear of the appliance.

#### Front panel LEDs

Figure 12 shows the LEDs on the front of the appliance:

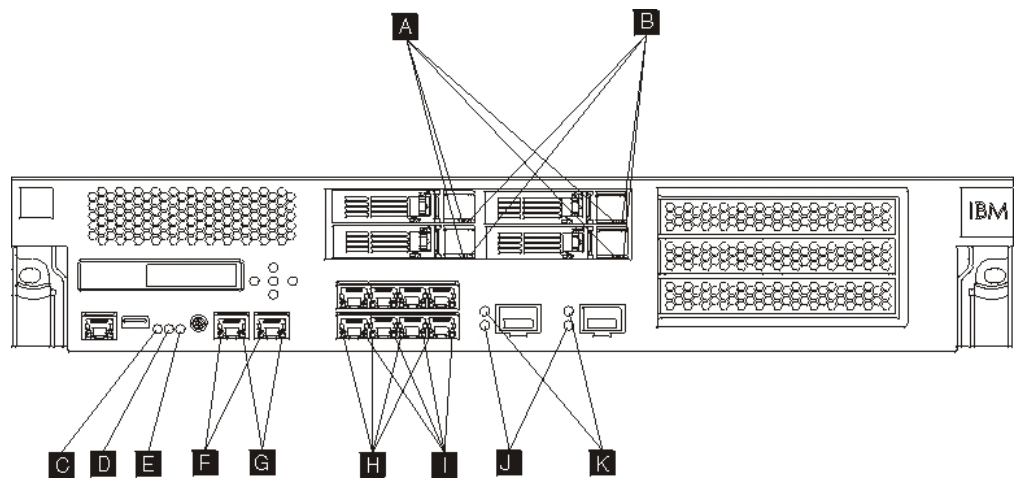


Figure 12. LEDs on the front on the appliance

The front of the appliance has the following LEDs:

- A If the green LED is lit, it indicates that the hard drive is active.
- B If the amber LED is lit, it indicates that the hard drive has failed.
- C If the fault LED is amber, the appliance has detected a critical error condition. The fault LED is activated by the firmware, and not illuminated when deactivated by the firmware. For information about controlling this LED, see “LEDs” on page 4.
- D The blue locate LED is lit when an administrator is trying to locate and identify a certain appliance in the rack. The locate LED is activated by the firmware, and the locate LED is turned off when deactivated by the firmware. For information about controlling this LED, see “LEDs” on page 4.
- E The power LED indicates the status of the power source for the appliance.
  - If the green power LED is illuminated, the appliance is on and fully functioning.
  - If the LED is not illuminated, the appliance has been turned off.
- F The speed LED for the MGT0 and MGT1 Ethernet interfaces indicates the connection speed.

- If the LED is illuminated in green, the connection speed is 1 Gbps.
  - If the LED is illuminated in amber, the connection speed is 10 or 100 Mbps.
- G** The activity LED for the MGT0 and MGT1 Ethernet connections indicates that traffic is passing through the interface.
- If the green LED is illuminated, the Ethernet port is linking to the interface.
  - If the green LED is illuminated and blinking, the Ethernet port is active.
- H** The LEDs on the 8-port Ethernet module indicate the speed of the connection.
- If these LEDs are illuminated in green, the connection speed is 1 Gbps.
  - If these LEDs are illuminated in amber, the connection speed is 100 Mbps.
- I** The LEDs on the 8-port Ethernet module specify the port activity.
- If these LEDs are illuminated, the Ethernet port is linking to the interface.
  - If these LEDs are illuminated and blinking, the interface is active.
- J** If the green LED on the 10 Gb SFP+ module is illuminated, the Ethernet port is active and linking to the interface.
- K** The LEDs on the 10 Gb SFP+ module LED indicate the speed of the port.
- If these LEDs are illuminated in green, the connection speed is 10 Gbps.
  - If these LEDs are illuminated in amber, the connection speed is 1 Gbps.

## Rear panel

Figure 13 shows the LEDs on the rear of the appliance.

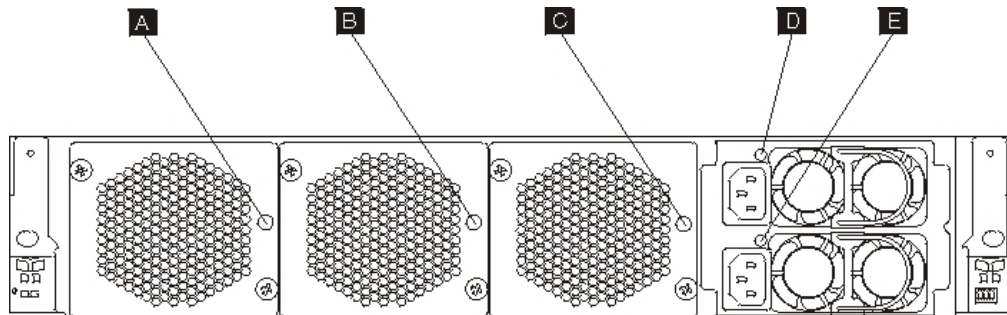


Figure 13. LEDs on the rear on the appliance

The rear of the appliance has the following LEDs:

### A, B and C

The fan module LEDs indicate the following status:

- If the amber LED is lit, there is a problem with the fan module.
- If the amber LED is not lit, the fans are operating normally.

### D and E

The power supply module LEDs indicate the following status:

- If the amber power LED is lit, the power supply has an error.
- If the green power LED is lit, the power supply is working as expected.

---

## Viewing status providers for sensors

The Workload Deployer appliance provides the following sensors status providers:

**Battery status**

Provides information on the batteries. From the command line, enter **status battery**.

**CPU usage status**

Shows the average CPU use over some intervals. From the command line, enter **status cpu-usage**.

**Fan speed sensors**

Provides the measured speed in revolutions per minute (RPM) for each of the fans in each fan module.

From the command line, enter **status fan**.

**Flash drive status**

Shows the flash drive status sensors.

From the command line, enter **status flash**.

**Memory status**

Shows the memory usage. From the command line, enter **status memory**.

**Network status**

Shows the network interface (shows all by default). From the command line, enter **status netif**.

**Intrusion status**

Provides truth values for the intrusion switch. From the command line, enter **status intrusion**.

**RAID battery backup status**

Monitors the battery backup unit on the RAID controller.

From the command line, enter **status raidphystatus**.

**Temperature sensor**

Shows the appliance temperature.

From the command line, enter **status temperature**.

**Uptime status**

Shows the appliance uptime.

From the command line, enter **status uptime**.

**Voltage sensors**

Provides the measured voltage for the internal components.

From the command line, enter **status voltage**.

**Volume sensors**

Shows the storage volume status.

From the command line, enter **status volume**.



---

## Chapter 6. Troubleshooting your appliance

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and to explain how to resolve the problem. To begin troubleshooting hardware problems with the appliance, use the procedure in “Troubleshooting workflow.” This procedure guides you to the appropriate troubleshooting task.

---

### Troubleshooting workflow

To help you troubleshoot the problem and determine whether you need to contact IBM Support for assistance or to order a replacement part, use the following workflow:

1. Did you receive a critical event through SNMP or SMTP notification?  
For information about creating log targets for notification, see the managing logs topic in the information center.  
**Yes** Continue to step 3.  
**No** Continue to step 2.
2. Does the log file contain a critical message?  
For information about viewing logs, see the viewing logs topic in the information center.  
**Yes** Continue to step 3.  
**No** Continue to step 4 on page 30.
3. Does the critical event or critical log message identify the part that is failing or has failed?  
**Yes** Continue troubleshooting to determine whether you need a replacement part:
  - If a fan module, see “Troubleshooting the fan modules” on page 30.
  - If the power supply module, see “Troubleshooting the power supply module” on page 30.
  - If the hard disk drive module, see “Troubleshooting the hard disk drive module” on page 31.
  - If one of the FRUs, contact your IBM Support.**No** Continue to step 4 on page 30.

4. Is the Fault LED illuminated on the front of the appliance?

**Yes** Continue with step 5.

**No** See “Troubleshooting the appliance” on page 31.

5. Are the LEDs lit for any modules?

**Yes**

If a fan module, see “Troubleshooting the fan modules.”

If the power supply module, see “Troubleshooting the power supply module.”

If the hard disk drive module, see “Troubleshooting the hard disk drive module” on page 31.

**No** See “Troubleshooting the appliance” on page 31.

---

## Troubleshooting CRU parts

Use the following procedures to troubleshoot a CRU part:

- “Troubleshooting the fan modules”
- “Troubleshooting the power supply module”
- “Troubleshooting the hard disk drive module” on page 31

If there is a problem with a FRU, contact IBM Support.

## Troubleshooting the fan modules

To troubleshoot the fan modules, use the **status fan** command.

- If the output shows that all fans are running at 0 RPM, the fan module is not seated correctly in the appliance.
- If the output shows that at least one fan is running at less than 2000 RPM, contact IBM Support.

**Note:** Turn off the appliance as soon as possible to avoid overheating. The remaining fans might not be able to maintain the appropriate environmental temperature.

If the module is not seated correctly, generally it is not locked in place. To ensure that the module is seated, use the appropriate steps in “Replacing a fan module” on page 39 to remove and reinsert the module.

If you believe that the module needs to be replaced, contact IBM Support. For information about contacting IBM Support and what information you need to gather before contacting IBM Support, see “Getting help and technical assistance” on page 53.

## Troubleshooting the power supply module

To troubleshoot the power supply, use the **show other-sensors** command.

- If the green power LED is lit, the power supply is working as expected.
- If the LED is illuminated in amber, the power supply module might need to be replaced.

**Note:** Remove the power cord from the power supply module. The appliance can operate with a single power supply module.

If the module is not seated correctly, generally it is not locked in place. To ensure that the module is seated, use the appropriate steps in “Replacing a power supply module” on page 41 to remove and reinsert the module.

If the module does not have AC power, ensure that the power cords are connected correctly to the power supply and to a working AC power outlet.

If you believe that the module needs to be replaced, contact IBM Support. For information about contacting IBM Support and what information you need to gather before contacting IBM Support, see “Getting help and technical assistance” on page 53.

## Troubleshooting the hard disk drive module

To troubleshoot the hard disk drive module, use the **status raidphystatus** command.

Contact IBM Support to replace your the hard disk drive module. For information about contacting IBM Support and what information you need to gather before contacting IBM Support, see “Getting help and technical assistance” on page 53.

---

## Troubleshooting the appliance

Use the following procedure to troubleshoot the appliance:

1. Turn off the appliance by pressing the power button. Before proceeding, verify that the power LED is not illuminated.
2. Use the RJ45 to DB-9 null-modem cable to connect a terminal or PC to the console connector on the appliance.
3. Ensure that the terminal or PC is configured for standard 9600 8N1 and to no flow control operation. 8N1 is a notation for a serial configuration in asynchronous mode, where there are eight (8) data bits, no (N) parity bit, and one (1) stop bit.
4. Turn on the appliance by pressing the power button located on the front of the appliance.

You should hear the fans change speed as the screen displays.

5. Wait for a few minutes for the appliance to boot.
6. If the appliance demonstrates any of the following symptoms, contact IBM Support:
  - The screen does not display a start up screen.
  - The appliance boots in “Fail Safe” mode.
  - The appliance does not boot.

For information about contacting IBM Support and what information you need to gather before contacting IBM Support, see “Getting help and technical assistance” on page 53.





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## Chapter 7. Removing or replacing the appliance or parts

The appliance includes the following types of replacement parts:

### **Tier 1 customer replaceable unit (CRU)**

Replacement of a Tier 1 CRU is your responsibility. If an IBM representative installs a Tier 1 CRU at your request, you will be charged for the installation.

### **Field replaceable unit (FRU)**

FRUs must be installed by trained service technicians only.

For information about obtaining service or assistance, see “Getting help and technical assistance” on page 53.

---

## Installation guidelines

Before you remove or replace a component, read the following information:

- Read “Handling static-sensitive devices” and “Safety” on page v to help you work safely.
- Observe good housekeeping in the area where you are working. Place removed parts in a safe place.
- You do not have to disconnect the appliance from the power supply to install or replace any hot-swap module.
- Ensure that you have an adequate number of properly grounded electrical outlets for the appliance.
- Have a medium Phillips screwdriver available.
- Orange on a component indicates that the component can be hot-swapped. You can remove or install the component while the appliance is running. Orange can also indicate touch points on hot-swap components. See the instructions for removing or installing a specific hot-swap component for additional procedures that you might have to perform before you remove or install the component.
- Blue on a component indicates touch points, where you can grip the component to remove it from or install it in the appliance, open or close a latch, and so forth.

## Handling static-sensitive devices

Read the following guidelines before handling static-sensitive devices.

**Attention:** Static electricity can damage the chassis and other electronic devices. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- The use of a grounding system is recommended. For example, wear an electrostatic-discharge wrist strap, if one is available.
- Handle the device carefully, holding it by its edges or its frame.

- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the chassis or rack for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it immediately without setting down the device. If it is necessary to set down the device, put it back into its static-protective package.
- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

## Returning an appliance or part

If you are instructed to return an appliance or component, follow all packaging instructions and use any of the packaging materials that is provided for shipping.

**Note:** You may be charged for the replacement appliance or part if IBM does not receive the defective appliance or part within a reasonable timeframe.

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## Model type parts listing

Table 5 lists the part numbers for replacement Type 7199 models and their corresponding descriptions.

*Table 5. Part numbers*

Model type	Description	Part number
42X	XI52: 2U	97Y0429
62X	XB62: 2U	97Y0426

---

## Parts listing

The appliance includes Tier 1 CRU replaceable parts and FRU parts.

For information about obtaining service or assistance, see “Getting help and technical assistance” on page 53.

## CRU parts listing

The Ethernet modules, hard disk drive modules, fan modules and power supply modules are CRU parts. Figure 14 on page 35 shows the CRU parts on the front and the back of the Type 7199 appliance.

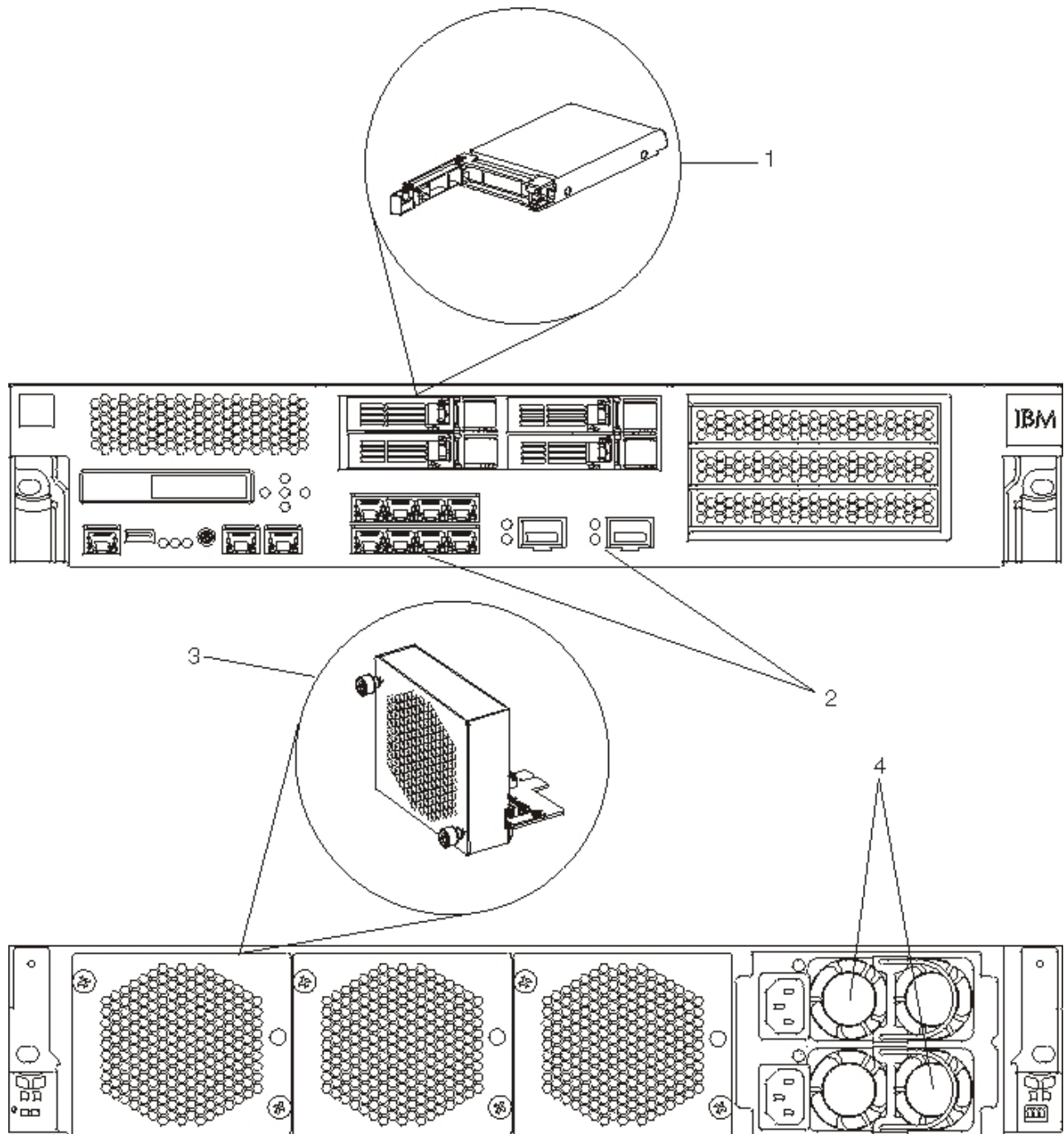


Figure 14. 7199 CRU parts numbers

Table 6 lists the part numbers and their corresponding descriptions.

Table 6. Part numbers

Index	Description	Tier 1 CRU part number
1	Hard disk drive modules	46N5587
2	Ethernet module eight port 1 gigabit connector	97Y0446
2	Ethernet module two port 10 gigabit connector	97Y0444
3	Fan module	46N5599

Table 6. Part numbers (continued)

Index	Description	Tier 1 CRU part number
4	Power supply module, 720 watts	97Y0440
	Serial console cable	46N5656
	SFP+ SR transceiver	46N5592
	SFP+ LR transceiver	46N5593
	Rack-mounting kit	9740415

## FRU parts listing

Table 7 lists the FRUs that are included in the appliances. These FRUs must be replaced by a trained service technician.

Table 7. FRU part numbers

Description	Part number
Batteries: CMOS and RAID BBU	46N5595
Cryptographic accelerator card	97Y0443
RAID controller	97Y0447

---

## Power cables

When you receive your appliance, the shipping carton contains power cords specific to the country. In the United States, you might need to purchase optional rack power cables and ferrite cores for rack mounting needs.

To maintain warranty or service contracts, you must use IBM parts for power cords, rack cables, and ferrite cores.

Table 8. Power cords and cables

Country	Tier 1 CRU part number	Description
Argentina	39M5068	2.8m, 10A/250V, C13 to IRAM 2073
Australia / New Zealand	39M5102	2.8m, 10A/250V, C13 to AS/NZ 3112
Brazil	39M5233	2.8m, 10A/125V, C13 to IEC 320
Chile	39M5165	2.8m, 220 - 240V
China	39M5206	2.8m, 10A/250V, C13 to gigabit 2099.1
Denmark	39M5130	2.8m, 10A/250V, C13 to DK2-5a
Europe	39M5123	2.8m, 10A/250V, C13 to IEC 309 Type 2P+Gnd
	39M5179	2.8m, 10A/250V, C13 to IEC 320 Inline
India	39M5226	2.8m, 10A/250V, C13 (2P +Gnd)
Israel	39M5172	2.8m, 10A/250V, C13 to SI 32
Italy	39M5165	2.8m, 220 - 240V
Japan	39M5199	2.8m, 12A/100V, C13 to JIS C-8303
Korea	39M5219	2.8m, 12A/250V, C13 to KETI
South Africa	39M5144	2.8m, 10A/250V, C13 to SABS 164

Table 8. Power cords and cables (continued)

Country	Tier 1 CRU part number	Description
Switzerland	39M5158	2.8m, 10A/250V, C13 to SEV 1011-S24507
Taiwan	39M5247	2.8m, 10A/125V, C13 to CNS 10917-3
United Kingdom	39M5151	2.8m, 10A/250V, C13 to BS 1363/A
United States	39M5081	2.8m, 10A/250V, C13 to NEMA 6-15P
	39M5377	2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable <sup>1</sup>
<p><sup>1</sup> You must purchase a ferrite core. The IBM part number for the ferrite core is 46M0349. Attach the ferrite core to each rack power cable for the appliance. Attach the ferrite core at 10 cm from the C13 end of the cable. The C13 end of the cable attaches to the appliance. See the power cords shipped with the appliance as an example. Therefore, each appliance needs two rack power cables and two ferrite cores.</p>		

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## Turning off the appliance

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

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## Removing and replacing CRU parts

Replacement of Tier 1 CRU parts is your responsibility. If an IBM representative installs a Tier 1 CRU part at your request, you will be charged for the installation.

Use the following hardware maintenance procedures to remove and replace a CRU part when directed by IBM Support:

- “Replacing a fan module”
- “Replacing a power supply module” on page 41
- “Replacing a hard disk drive module” on page 43
- “Replacing an Ethernet module” on page 45
- “Removing the 10 Gb SFP Transceiver” on page 48

## Replacing a fan module

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

You might need to turn off the appliance and replace a fan module when directed by IBM Support if the following situation occurs:

- After the appliance generates a critical message that indicates a fan failure. The message identifies which fan module to replace.
- When one of the following LEDs are illuminated:
  - The amber LED on one of the fan modules in the rear of the appliance. The illuminated LED light indicates which fan module needs to be replaced.
  - The amber fault LED on the front of the chassis.

**Best Practice:** Turn off the appliance as soon as possible to avoid overheating. The remaining fans might not be able to maintain the appropriate environmental temperature.

To replace a failed fan module:

1. If the appliance is not turned off, press the power button to turn off the power to the appliance.
2. Verify that the power LED is not illuminated.
3. Unplug all power cords.
4. Unscrew the thumbscrews located on the front of the fan module.
5. Remove the fan module, as illustrated in Figure 15.

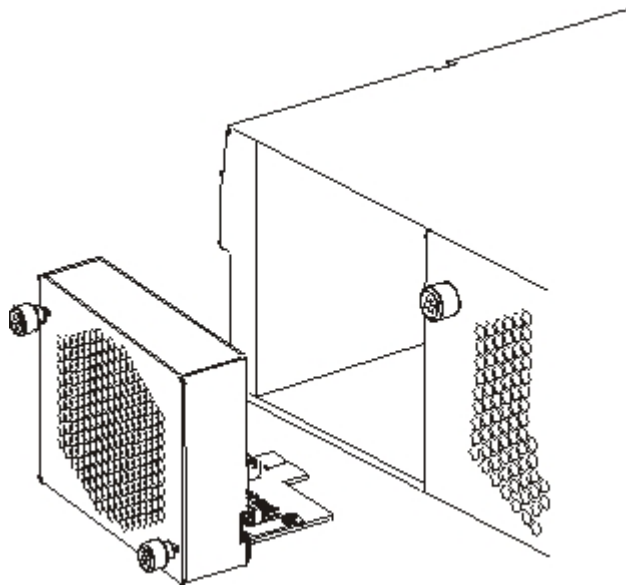


Figure 15. Removing the fan module on a Type 7199 appliance

**Attention:** Ensure that the gold connectors at the rear of the module do not come into contact with your hands or with the packing material as you unpack the replacement module. Avoid damaging the gold connectors against the chassis as you insert the replacement module.

6. Unpack the replacement module.
7. Carefully align the replacement module, and insert into the chassis until you hear the release latch click in place.
8. Plug in all power cords.
9. Turn on the appliance by pressing the power button.

After replacing the fan module, confirm that the new module is working by verifying that neither of the following LEDs are illuminated:



- The amber fan module LED light on the rear of the chassis
- The amber fault LED light on the front of the chassis

After verifying that the replacement module is working, return the part to IBM. For details, see “Returning an appliance or part” on page 34.

## Replacing a power supply module

There are two hot-swappable power supplies in the back of the appliance. You might need to turn off your appliance and replace a power supply module, when directed by IBM Support, if the following situation occurs:

- After the appliance generates a critical or warning message that indicates a power supply failure. The message identifies which power supply module to replace.
- When the amber LED on the power supply module on the rear of the appliance is illuminated.

**Best Practice:** Replace a failed power supply module as soon as possible.

To replace a power supply module:

1. Unplug the power cord of the failed module.
2. Remove the power supply module.
  - a. Firmly grip the handle **A** of the failed module while pressing the orange release latch **B** toward the handle, and hold the release latch in this position, as shown in Figure 16.

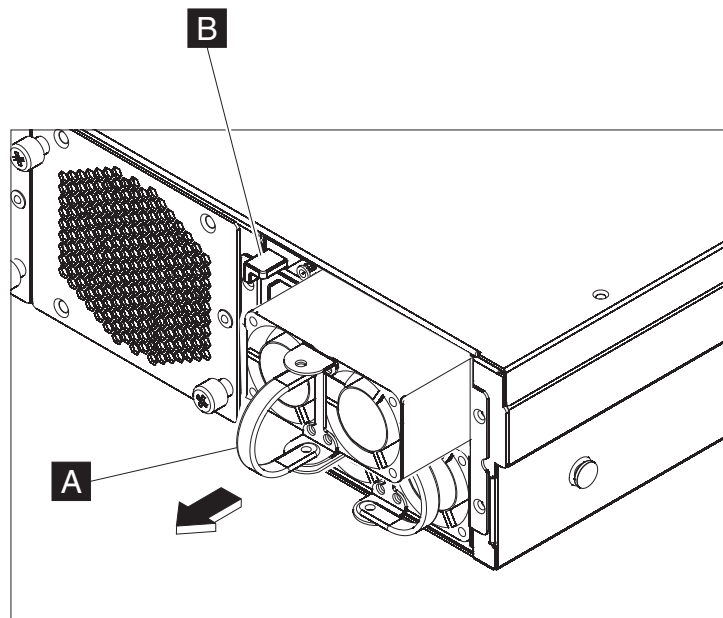


Figure 16. Removing a power supply module

- b. Pull the failed module from the back of the appliance.
3. When fully removed from the back of the appliance, set aside the failed module.

**Attention:** Ensure that the gold connectors at the rear of the module do not come into contact with your hands or with the packing material as you unpack the replacement module. Avoid damaging the gold connectors against the chassis as you insert the replacement module.

4. Unpack the replacement module.
5. Carefully align the replacement module, and insert into the chassis until you hear the release latch click in place.
6. Plug in the power cord to the replaced module.

After replacing the module, you can verify that the new module is working.

- The green power supply module LED light on the rear of the chassis is illuminated.
- The fault LED light on the front of the chassis is not amber.

After verifying that the replacement module is working, return the part to IBM. For details, see “Returning an appliance or part” on page 34.

## Replacing a hard disk drive module

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

You need to replace a hard disk drive module when the hard disk state is Unconfigured Bad or if directed by IBM Support. You must turn off the appliance before replacing the hard disk drive module.

To replace the hard disk drive module:

1. If the appliance is not turned off, turn off the appliance by pressing the power button located on the front of the chassis. The power LED on the front of the appliance will turn off.

2. Press the blue button and the lever pops open. Figure 17 illustrates the following steps.

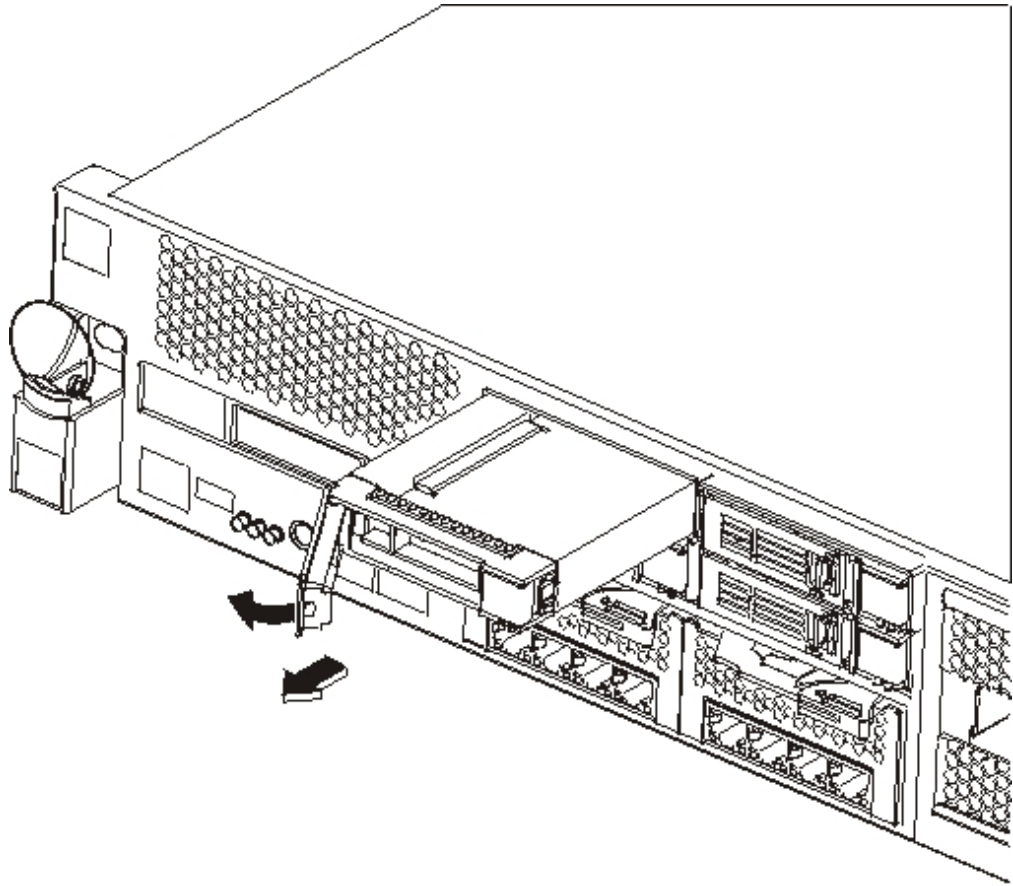


Figure 17. Removing a hard disk drive module (Type 7199)

- a. Pull the lever towards you to pull out the hard disk drive module.
  - b. Pull the failed module out of the chassis.
3. Set aside the failed module.  
**Attention:** Ensure that the gold connectors at the rear of the module do not come into contact with your hands or with the packing material as you unpack the replacement module. Avoid damaging the gold connectors against the chassis as you insert the replacement module.
  4. Unpack the replacement module.
  5. Carefully align the module, and insert into the chassis.
  6. Push the lever forward until you hear the release latch click in place.
  7. Turn on the appliance by pressing the power button located on the front of the chassis.
  8. Verify that the power LED is illuminated.

After replacing the module, you can verify that the new module is working if:

- For the Type 7199, the amber LED on the hard disk drive module is not illuminated.
- The fault LED light on the front of the chassis is not illuminated.

After verifying that the replacement module is working, return the part to IBM. For details, see "Returning an appliance or part" on page 34.

## Replacing an Ethernet module

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

You can replace an Ethernet module if you have a problem with your module or if directed by IBM Support if the following situation occurs:

- You are unable to connect to the network even though the cable is plugged in and the link status LED is lit.

- If the amber LED on the power supply module is illuminated.
- When you use listing, all the Ethernet ports in the module are not included in the list:
  - From the **netif status** command.
  - From the user interface: click **Appliance** → **settings** and expand **Ethernet Interfaces**.

You must turn off the appliance before replacing the Ethernet module.

To replace an Ethernet module:

- If the appliance is not turned off, turn off the appliance by pressing the power button located on the front of the appliance. The fault LED on the front of the appliance should not be illuminated.
- Unplug all power cords.
- Grasp the blue latch and pull outward.
- Pull the lever toward you to pull out the Ethernet modules, as shown in Figure 18.

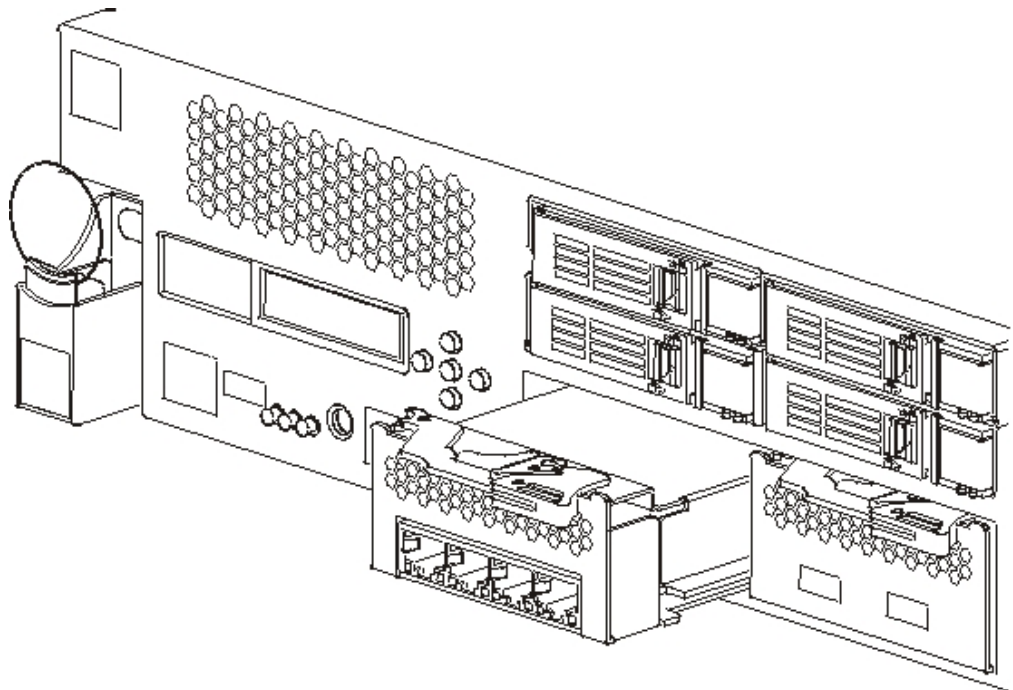


Figure 18. Removing an Ethernet module

- Set aside the Ethernet module.
  - Attention:** Ensure that the gold connectors at the rear of the module do not come into contact with your hands or with the packing material as you unpack the replacement module. Avoid damaging the gold connectors against the chassis as you insert the replacement module.
- Unpack the replacement module.
- Carefully align the module, and insert into the appliance.
- Push the Ethernet module forward until the module is in place.
- Push the blue latch back into place.
- Plug in all power cords.

- Turn on the appliance by pressing the power button located on the front of the appliance.
- Verify that the power LED is illuminated.

After replacing the module, you can verify that the new module is working if:

- You are able to connect to the network after you plug in the cable and the link status LED is lit.
- The fault LED light on the front of the chassis is not illuminated.

If you are replacing a failed Ethernet module, verify that the replacement module is working and return the failed part to IBM. See “Returning an appliance or part” on page 34 for details on returning parts to IBM.

## Removing the 10 Gb SFP Transceiver

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the cables to the connectors.
  4. Attach the power cords to the outlets.
  5. Turn on the devices.
- Sharp edges, corners, and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes, and pinching.

(D005)

To remove the 10Gb SFP transceiver, complete the following steps.

- If the appliance is not turned off, turn off the appliance by pressing the power button located on the front of the chassis. The power LED on the front of the appliance will turn off.
- Unplug all power cords.
- Pull downward on the blue latch on the front of the transceiver, as shown in Figure 19 on page 49.
- Pull the transceiver out by pulling forward the blue latch.



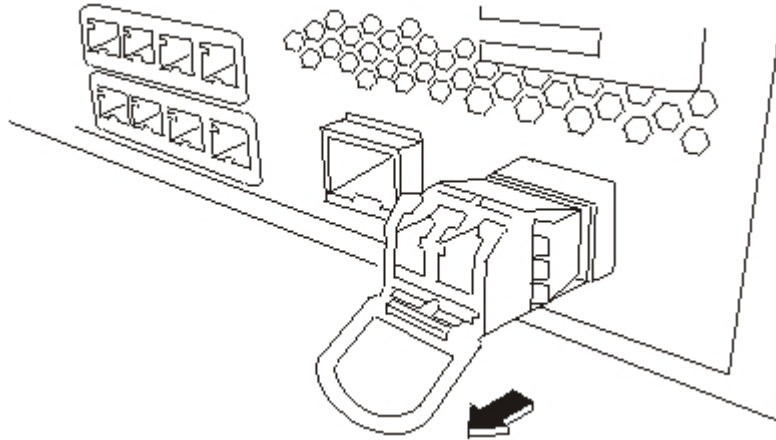


Figure 19. Removing the SFP transceiver

## Removing the appliance from the rack

**Best Practice:** Two people should slide the appliance forward on the rails for removal. One person should pull from the front, and the other should push from the rear.

Generally, after installing the appliance in the rack, you need to remove it only under the following conditions:

- To move it to another position in the rack
- To return it as a defective appliance to IBM

**Note:** Do not return an appliance to IBM unless explicitly instructed by a support representative.

## Removing the appliance from the rack

### CAUTION:

The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb.). It takes two persons to safely lift this part or unit. (C009)



To remove the appliance from the rack, complete the following steps:

**Note:** Make sure two people lift the appliance, with hands positioned as illustrated by **2** in Figure 20 on page 50.

1. Unlatch and rotate the front of the appliance, as shown in Figure 20 on page 50.
  - a. If the appliance is not turned off, press the power button located on the front of the chassis. The power LED should not be illuminated.
  - b. Unplug all power cords.
  - c. Disconnect the cables from the rear of the appliance.

- d. Pull the locking levers **1** forward, then with two people supporting the front and the rear of the appliance **2**, lift the front of the appliance up slightly **3** to clear the nailhead from the slot.

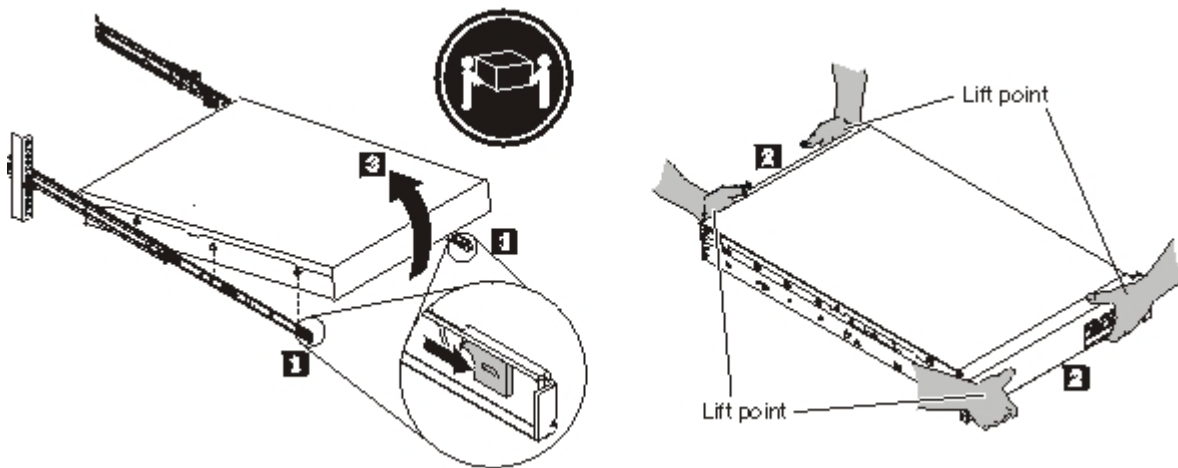


Figure 20. Unlatching and rotating the front of the appliance

2. Lift the appliance off of the slide rails, as shown in Figure 21.
  - a. After the front nailheads clear the latches, lift up on the rear **1** of the appliance to level the appliance.
  - b. Lift the server out of the rack **2** and place it on a sturdy surface.
  - c. Slide the rail back in the rack.

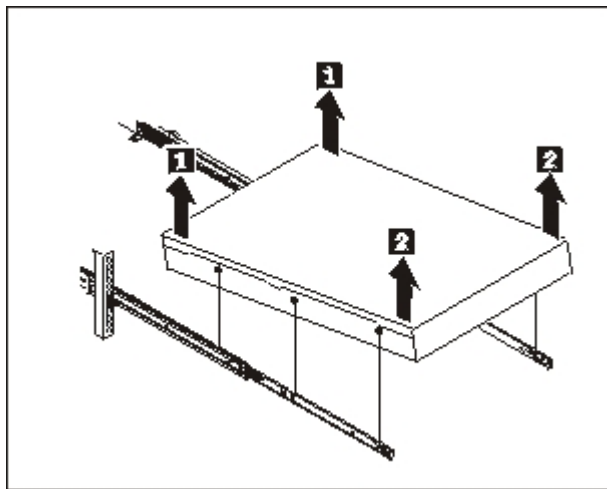


Figure 21. Lifting the appliance off the slide rails

3. Remove the rear end of the slide rails, as shown in Figure 22 on page 51.
  - a. Remove the 10-32 screw **1**.
  - b. Push in the pin **2**.
  - c. Push back on the rail **3** to disengage the slide rails from the rear of the rack.

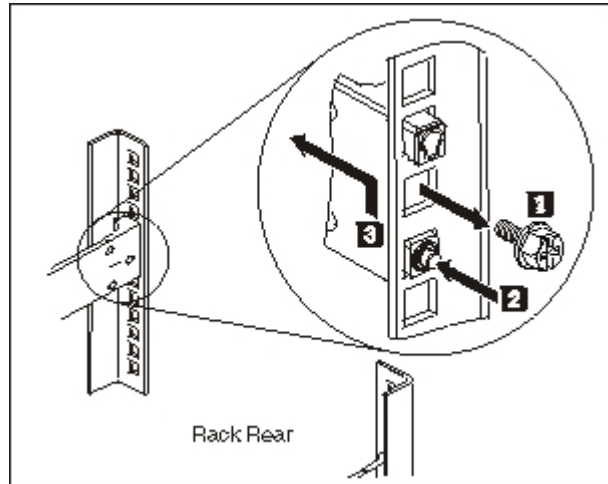


Figure 22. Lifting the rear of appliance off the rail

4. Remove the end of the slide rails, as shown in Figure 23.
  - a. Push up the front tab **1** and slide out the front latch **2**.
  - b. Push in the lower pin **3** and lift up slightly on the front of the slide rail **4**.
  - c. Remove the slide rail from the rack.

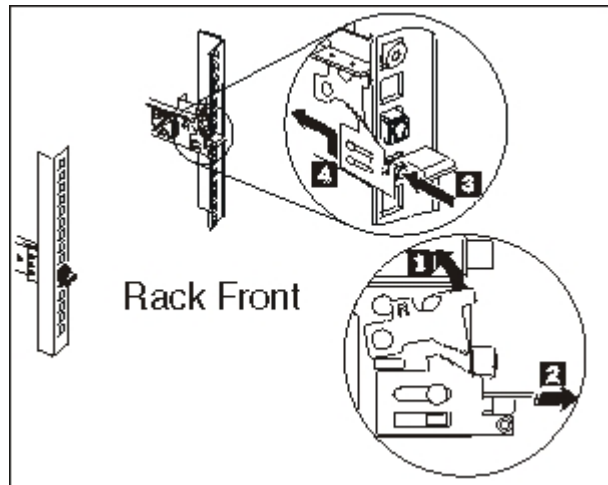


Figure 23. Removing the end of the slide rails

## Applying the repair identification tag

When you receive a replacement appliance, the box contains a repair identification (RID) tag. The RID tag is important for transferring the serial number of the defective appliance to the replacement appliance. The RID tag maintains the original serial number record of the appliance and allows IBM to entitle the appliance for future maintenance or warranty service. Replacement exchange requires the completion and securing of the RID tag to the replacement appliance.

When replacing your appliance:

1. Locate the defective appliance. The serial number of the defective appliance should match the serial number that you reported to IBM.

2. With a ballpoint pen, transcribe the machine type, model, and serial number of the defective appliance to the RID tag.
3. Secure the RID tag as close as possible to, but not covering, the serial number of the replacement appliance. The original serial number of the replacement appliance must be visible.

Figure 24 shows an example of the RID tag that is included in the box that contains the replacement appliance.

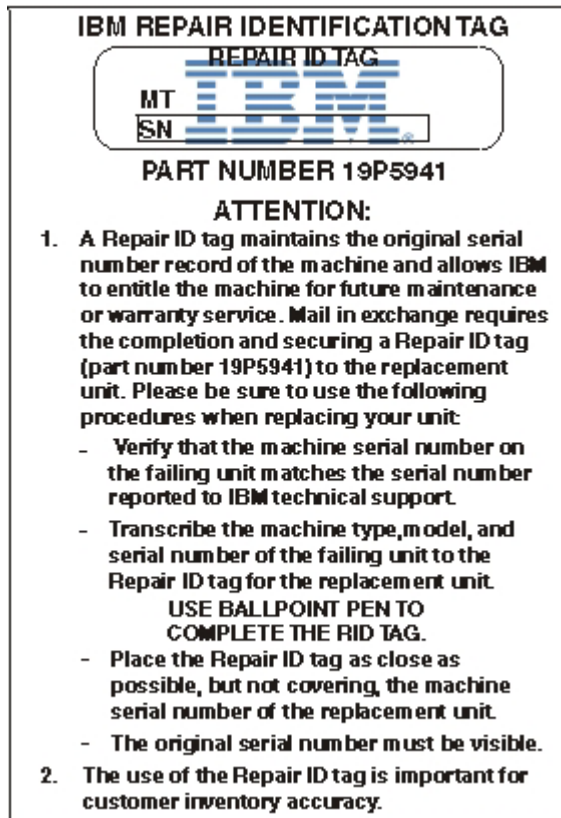


Figure 24. Example of the RID tag

---

## Getting help and technical assistance

This section describes the following options for obtaining support for IBM products:

- “Searching knowledge bases”
- “Contacting IBM Support”

---

### Searching knowledge bases

If you encounter a problem, you want it resolved quickly. You can search the available knowledge bases to determine whether the resolution to your problem was already encountered and is already documented.

#### Documentation

The Workload Deployer appliance documentation provides extensive product documentation. See the IBM Workload Deployer information center at <http://publib.boulder.ibm.com/infocenter/worlodep/v3r0m0/index.jsp>.

#### IBM Support

If you are unable to find a resolution in the documentation, use the *Search Support* feature from the product-specific support page.

From the **Search Support (this product)** area of the product-specific support page, search the following IBM resources:

- IBM technote database
- IBM downloads
- IBM Redbooks®
- IBM developerWorks®

---

### Contacting IBM Support

IBM Software Support provides support for this appliance, as noted in the IBM Software Support Handbook (<http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>). IBM Software Support can help debug problems with the appliance, including CRUs.

Before contacting IBM Support, verify that you have met the following criteria:

- Your company has an active maintenance contract.
- You are authorized to submit problems.
- You have the appliance serial number.
- You have the customer number that was used to purchase the appliance.

You can submit a software problem report to IBM for the Workload Deployer appliance in one of two ways:

1. Use the service request (SR) problem submission web page. You will need to sign in with your IBM user ID and password.
2. Contact IBM via telephone. See the directory of worldwide contacts in the IBM Software Support Handbook at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html> for the appropriate support telephone number.



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## Important notes

This product is not intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks nor is it intended to be used in a public services network.

---

## Electronic emission notices

### Federal Communications Commission (FCC) statement

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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## **Industry Canada Compliance Statement**

This Class A digital apparatus complies with Canadian ICES-003.

## **Avis de conformité à la réglementation d'Industrie Canada**

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## **United Kingdom telecommunications safety requirement**

**Notice to Customers:** This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

## **European Union EMC Directive conformance statement**

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

**Attention:** 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.

European Community contact:

IBM Technical Regulations  
Pascalstr. 100, Stuttgart, Germany 70569  
Telephone: 0049 (0)711 785 1176  
Fax: 0049 (0)711 785 1283  
Email: tjahn@de.ibm.com



## Japanese Voluntary Control Council for Interference (VCCI) statement

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。

The following is a summary of the VCCI Japanese statement in the box above.

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

## Taiwanese Class A warning 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。

## Chinese Class A warning statement

声 明  
此为 A 级产品。在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

## Korean Class A warning statement

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## Russian Class A warning statement

**ВНИМАНИЕ! Настоящее изделие относится к классу А.  
В жилых помещениях оно может создавать  
радиопомехи, для снижения которых необходимы  
дополнительные меры**

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