WebSphere DataPower XC10 Appliance: Type 7199-92X
1st Edition

Installation and User's Guide

IBM

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Contents

Safety

Before installing this product, read the Safety Information.

Arabic

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

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 pečítaje 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 safety statements in this section apply to the Type 7199 appliances. These statements are duplicate statements from the *IBM Systems Safety Notices* document. However, the *IBM Systems Safety Notices* document provides the complete list of all the safety notices for IBM Systems Software.

You can access the *IBM Systems Safety Notices* document on the *IBM WebSphere DataPower XC10 Appliance: Resource* CD.

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:
Type 7199: 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)

> 18 kg (39.7 lb)

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)
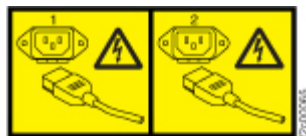
DANGER

> 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 WebSphere® DataPower XC10 Appliance.

Who should read this guide

This guide is intended for personnel who will install, configure, diagnose, and service the IBM WebSphere DataPower XC10 Appliance Type 7199. 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.

Available documents

The following documents are printed and shipped with the appliance:

- *IBM WebSphere DataPower XC10 Appliance: Quick Start Guide*

  Provides basic instructions for installing and powering up the Type 7199 appliances and placing the appliance in operation.

- *IBM Statement of Limited Warranty*

  Contains information about the terms of warranty for Type 7199 appliances.

The following documents are included on the *IBM WebSphere DataPower XC10 Appliance: Resource* CD:

- *IBM Environmental Notices and User's Guide*

  Contains information on recycling or discarding the Type 7199 appliances according to your applicable local and national regulations.

- *IBM Systems Safety Notices*

  Contains all safety notices, by language, for Type 7199 appliances.

- *IBM Software Maintenance Agreement*

  Contains information about the remote support agreement for the Type 7199 appliance.

See the IBM WebSphere DataPower XC10 Appliance information center at: http://publib.boulder.ibm.com/infocenter/wdpxc/v2r0/index.jsp for the following documents:

- *IBM WebSphere DataPower XC10 Appliance: Type 7199: Installation and User's Guide*

  Provides complete instructions for installing and maintaining the Type 7199 appliances. Installation information provides details about powering up the Type 7199 appliances, creating a startup configuration script, and placing the appliance in operation. Maintenance information provides details about diagnosing and troubleshooting hardware problems; ordering, removing, and replacing hardware; and getting additional support to diagnose hardware problems.

- Additional information about configuring, administering, and troubleshooting your appliance.

Warranty information

The *IBM Statement of Limited Warranty* for this product is provided with the appliance. The statement is also available in 29 languages from the IBM web site at http://www.ibm.com/servers/support/machine_warranties/ without the product-specific terms.

Notices conventions

The caution and danger statements in this document are also in the multilingual *IBM Systems Safety Notices* document, which is on the *IBM WebSphere DataPower XC10 Appliance: Resource* CD. Each statement references the corresponding statement in your language in the *IBM Systems Safety Notices*.

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. Introducing the IBM WebSphere DataPower XC10 Appliance

IBM WebSphere DataPower® appliances are network devices that communicate with other nodes on an IP network. The IBM WebSphere DataPower XC10 Appliance is a purpose-built appliance that is optimized for cost-efficient, rapid, drop-in caching for WebSphere applications.

Appliance type 7199-92x specifications and features

Use the specifications and features to determine the physical environment that is needed to contain your appliance.

Specifications

Table 1. Type 7199-92x appliance specifications. Summarizes the specifications for the Type 7199 chassis.

Dimensions:	
	7199
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)
Electrical input:	
Sine-wave	50 - 60 Hz (single-phase) required
110 Voltage AC	Minimum: 100 V_{RMS} Maximum: 127 V_{RMS}
220 Voltage AC	Minimum:200 V_{RMS} Maximum: 240 V_{RMS}
Power usage	10 A for 110 V AC 5 A for 220 V AC The Type 7199 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.
Environment:	
Air temperature	Turned on: • Altitude 0 to 914.4 m (3000 ft.)50° to 95° F (10° to 35° C) • 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.) Turned off: 50° to 109.4° F (10° to 43° C) Shipping: -40° to 140° F (-40° to 60° C)
Humidity	8% to 80%

Features

Table 2. Data storage options

Feature	Description
Local capacity	16 GB of storage on the local file system
Hard disk array	2 1 TB Simple swap Serial Attached SCSI (SAS) hard disk drives
	Capacity: 2 TB
Data grid	320 GB Fusion DUO Drive, which includes the 240 GB cache

Type 7199-92x front view

The front view shows the controls, LEDs, and connectors of the Type 7199 appliance. The Ethernet modules and the hard disk drive modules can be installed from the front panel of the type 7199-92x appliance.

Front view diagram
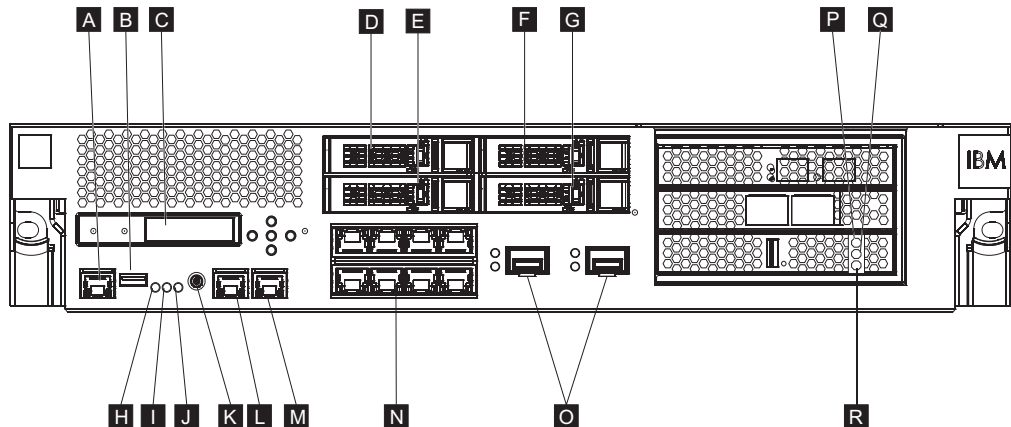
Figure 1. Type 7199-92x front view

The labels in the previous diagram correspond to the following components on the front panel of a Type 7199-92x appliance:

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

| M | MGT1 Ethernet connector |
| N | Left Ethernet modules: |

- eth0
- eth1
- eth2
- eth3
- eth4
- eth5
- eth6
- eth7

| O | Right Ethernet modules: |

- eth8
- eth9

P	The amber, or error LED indicator light for the cache.
Q	The yellow, or writing LED indicator light for the cache.
R	The green, or reading LED indicator light for the cache.

LCD module

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

Figure 2. LCD module

Console connector

The front panel of all Type 7199 appliance has a console connector. For initial configuration, use the RJ45 (IS0 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[1] 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 the 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 the following table. Do not use an Ethernet cable to plug the serial console port into an Ethernet network.

---

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

Table 3. Serial port pinouts. Describes the serial port pinouts for the console connector.

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 all Type 7199 appliances has three stand-alone LEDs.

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. The LED remains lit until deactivated. Use the `locate-led` command in the command-line interface:
> - To activate, enter the following command:
>   ```
>   locate-led on
>   ```
> - To deactivate, enter the following command:
>   ```
>   locate-led off
>   ```

Power LED
> The power LED is lit when the appliance is connected to a power source and you have turned on the appliance.
> - The green power LED is illuminated when the appliance is on and fully functioning.
> - 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 on the appliance.
- Start a graceful shutdown (if the appliance is already turned on).

Pressing the power button and holding for 5 seconds performs an immediate hardware shutdown.

Note: When you press the power button to turn off the appliance, electrical current still flows 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 cannot be used as data ports. The remaining Ethernet interfaces can handle data traffic and logging functions to and from the various DataPower services.

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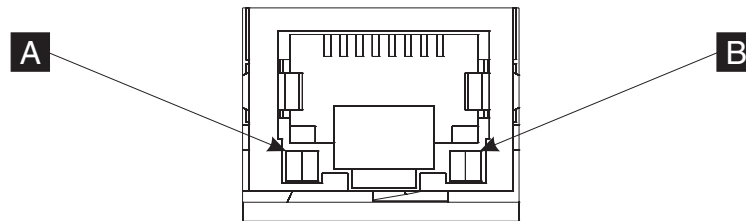

Figure 3. Ethernet port LEDs

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 flashing 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 flashing LED indicates the port is active.

Ethernet modules

The DataPower 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, with the Ethernet interface names dependent on the Ethernet module configuration.

The 1 gigabit module supports Ethernet 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 auto-negotiation:
   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 causes 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 flashing LED indicates that the hard disk drive is being accessed.
- An amber flashing LED indicates that the hard disk drive has failed.
- No LED illuminated indicates the hard disk drive is not active.

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

Type 7199-92x rear view

The rear view 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.
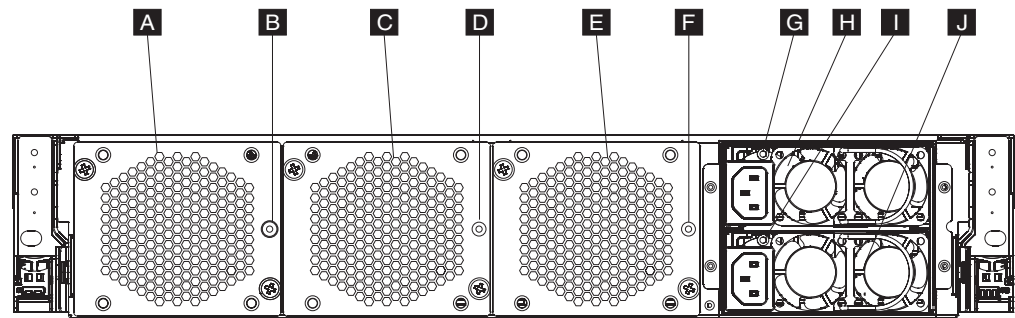
Rear view diagram

Figure 4. Type 7199-92x rear view

The labels in the previous diagram illustrate the following components on the rear panel of a Type 7199-92x 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 LED is not lit, the power supply is working as expected.

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 will use the lowest port number in the range.

Numbering convention

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

Type 7199 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.

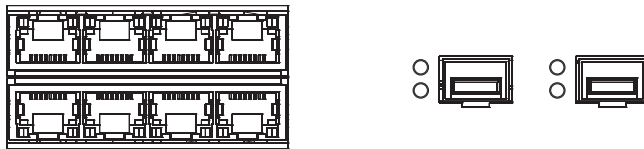The appliance has ten Ethernet connections. The Ethernet interface names are ETH0 through ETH7, ETH8, and ETH9.

Figure 5. 8x2 Ethernet connection

Chapter 2. Preparing for installation

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

Rack requirements

The Type 7199 appliances 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)

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 twelve (12) for the Type 7199 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. Update the appliance firmware.
   d. Verify the initial firmware configuration from the user interface.
3. Define the base configuration.

   Note: If the intrusion switch was tripped during installation, clear the intrusion detection with the **device clear-intrusion** command.

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 Type 7199 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** .
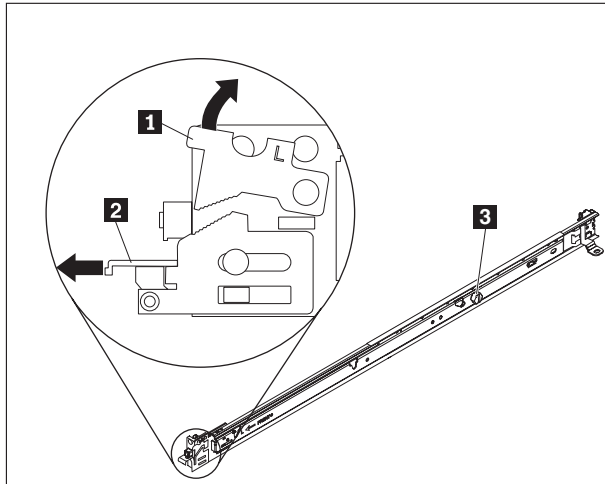   c. If a thumbscrew is installed in the slide rail **3** , remove the thumbscrew.

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.
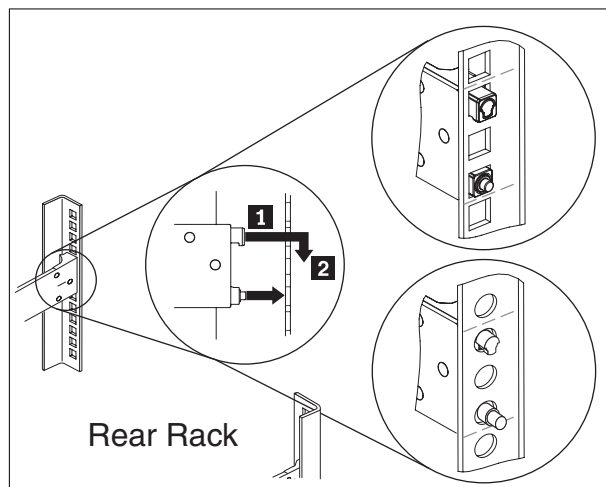

Figure 7. Install the rear end of the slide rails

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
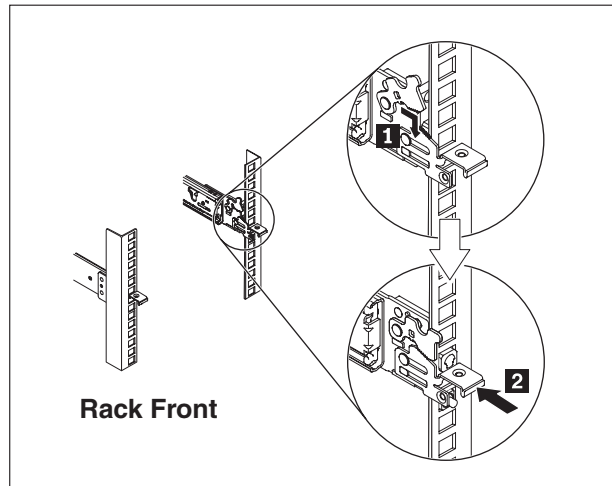
Figure 8. Install the front end of the slide rails

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.
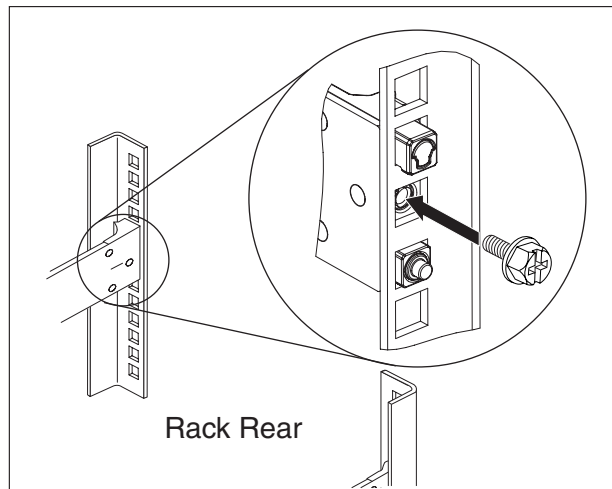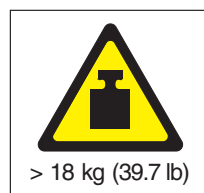

Figure 9. Securing the appliance on slide rails in the rack

Installing the appliance on the slide rails

CAUTION:
Type 7199: 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.
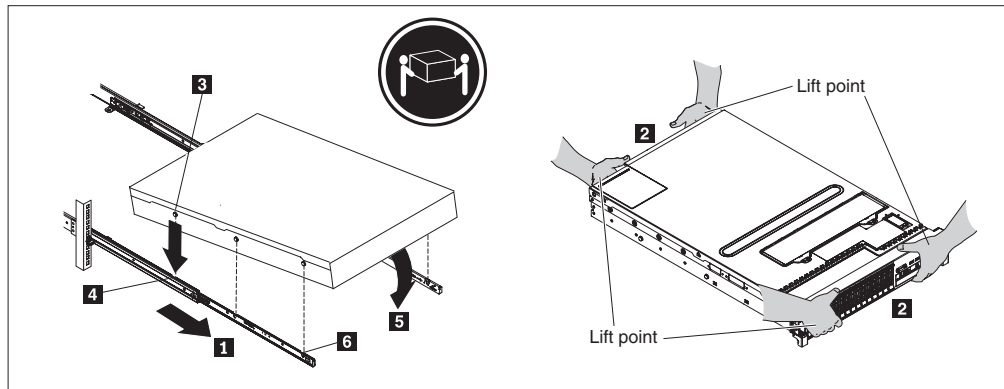4. Make sure that the front latch **6** slides over the nail heads.

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.
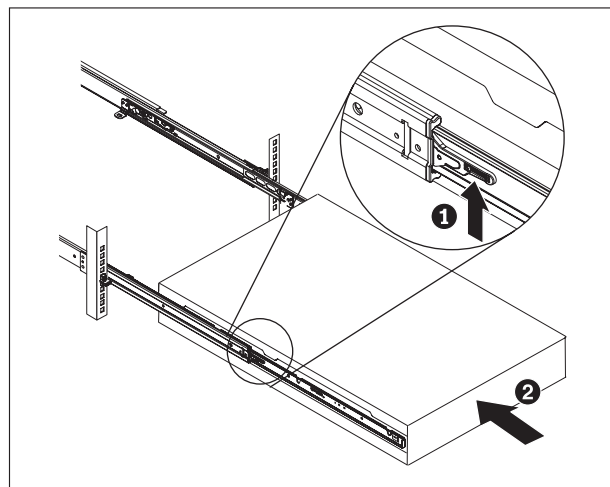6. Slide the appliance into the rack, as shown in Figure 11.

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 modules. 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 DataPower 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 DataPower 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 confirming 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**

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 DataPower appliance to your environment.

Initializing and configuring IBM WebSphere DataPower XC10 Appliance

When theDataPower XC10 Appliance hardware has been installed and connected, you are ready to initialize and configure the appliance.

Before you begin

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. If you are using a PC for the serial console, you must use a PC-based serial communications program for Windows or Linux. You can use a dedicated hardware device, such as a VT100-style console, or a PC running an emulator, such as HyperTerminal or Minicom. To make this connection, use the provided serial cable.

Note:

1. Use the serial cable that was provided with the appliance. Other serial cables might not work with the appliance.
2. If the terminal or PC is not equipped with a serial port, use a USB-to-serial converter cable.

Before defining the base configuration, gather the following information:

- Whether you are using the 1 gigabit or 10 gigabit Ethernet ports for your data grid. You must use either all 1 gigabit ports or all 10 gigabit ports. Connect the management port at `MGMT0`.
- The IP address and subnet mask for the Ethernet interface for appliance management access (`MGMT`).
- The IP address of the default gateways (routers) that supports the subnets for the Ethernet interfaces.
- The IP address of the Domain Name System (DNS) server.
- Mail server information (to set up email notifications).
- Network Time Protocol (NTP) server information to enable communication between the appliances in the collective.

About this task

Use this task to initialize theDataPower XC10 Appliance for the first time. The first time you sign onto your appliance the process is slightly different from signing on afterward.

CAUTION:

1. **See the important information about preserving the xcadmin user ID and password in "xcadmin password" on page 24.**

2. **Do not attempt to physically open the case of the appliance. Opening the case triggers a security fault and the appliance no longer operates. You must run the `device clear-intrusion` command to restore the appliance.**

3. **Do not misplace the serial cable that was included with the appliance. You need this cable for the initial appliance setup, and it could also be needed later for problem determination. This cable has been specially designed to work with this appliance. Other serial cables might not work with this appliance.**

Perform the initial, base firmware configuration. This configuration is the minimal configuration to add a WebSphere DataPower XC10 Appliance to your environment.

Procedure

1. Initialize the appliance. Use the following procedure:

   a. Connect your serial console to the appliance using the serial cable supplied with the appliance. You must connect the serial cable to the CONSOLE connector on the front of the device and have the ASCII terminal or a PC running terminal emulation software running, so you can see messages from the appliance as it starts. Configure the emulation software with 9600 baud 8N1 (8 bits per character, no parity, 1 stop bit), and no flow control. Use the supplied serial cable for this connection. If your serial console does not have a serial port but has only a USB port, then use a USB-to-serial adapter. The recommended terminal emulation on the serial console is VT100.

   b. Ensure that the appliance is on. If the appliance is not turned on, toggle the power button. The power button is on the front of the appliance. Wait for a few seconds for the appliance to boot. When the appliance is on:

      - The green power LED light illuminates on the front of the appliance and the fans start.

      - The login prompt displays. For the initial appliance configuration, log in with the user ID and default password: xcadmin/xcadmin.

   c. Accept the WebSphere DataPower XC10 Appliance license agreements. Before proceeding, for the first time, you must accept the licenses. Type `Accept`, `Reject`, or `StartOver` at each license prompt.

   d. Configure the `MGMT` Ethernet port. Provide the IP address in classless inter-domain routing (CIDR) format.

   e. Configure the default gateway for the `MGMT` Ethernet port.

   f. Configure the Ethernet ports for your data grid. Specify whether you are using all 1 gigabit ports or all 10 gigabit ports. Configure the CIDR address for the applicable ports.

   g. Configure the Domain Name System (DNS) servers. Specify a valid IP address for your DNS server.

2. Update the appliance firmware. To download or update the WebSphere DataPower XC10 Appliance firmware, you must have Appliance administration permissions. The appliance is not required to have connectivity to the external internet to retrieve the firmware update. For more information about downloading or updating firmware, see "Updating the firmware" on page 24.

3. If you are installing the firmware for the first time on a new appliance, you must run the **clear-all** command on the appliance. Complete the following steps after the restart from the firmware upgrade finishes:

   a. Establish a connection with the appliance using the xcadmin user.

   b. Run the **clear-all** command.

      ```
      Console> clear-all
      Force Stopped all XC-10 processes
      Deleting configuration data and logs
      Deleting grid data
      ```

      CAUTION:
      Do not run any other commands before running the clear-all command. Running other commands can create problems with your appliance configuration.

   c. After you run the **clear-all** command, you can use the **start-progress** command to monitor the percentage of completion for the restart. When the **start-progress** command displays a response of STARTED, you can log in to the user interface.

      CAUTION:
      Do not run any other commands while the clear-all command is running. Use only the start-progress command to monitor the progress.

4. To secure the configuration, change the password for the xcadmin user. The default password is xcadmin. You can change the password with the following command:

   `user password <old_password> <new_password>`

5. Verify the configuration. Use the user interface with a Web browser to verify the configuration.

   Attention: The verification procedure assumes that the host name for the Ethernet interface is myXC10.ibm.com.

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

   a. Open a Web browser. From a network-connected PC, open your Web browser.

   b. Enter the URL. In the address bar, enter the URL defined during the device initialization. For example: https://myXC10.ibm.com.

      Note: Use the https protocol, not http.

   c. Log on to the appliance. Log on to the appliance with the local XCADMIN account and password. The password you are entering is in clear text so it is not displayed.

   d. Click **Log In**.

      If the Welcome page displays, authentication of the local XCADMIN account is successful.

6. Complete the configuration.

Results

The initial setup for the WebSphere DataPower XC10 Appliance is complete.

What to do next

Configure your appliance settings in the user interface. These settings include users and user groups, security, email delivery, Domain Name System (DNS) servers, and date and time settings.

xcadmin password

After you set the administrative (xcadmin) user ID and password, store the information in a reliable location. You can configure email delivery to enable the ability for password resets in the user interface.

Save the user ID and password

The xcadmin user ID and password are necessary to log on to the appliance so put them in a secure location after you change them. If you lose them, and you have no means to recover them, then the appliance must be returned to IBM for remanufacturing

Email reset of passwords

If you configure email delivery, all users can restore their passwords by clicking a **Forgot password?** link on the user interface login screen. An email is delivered to the user that contains a new generated password.

CAUTION:
The only way to reset the xcadmin password is through the Forgot password? link on the user interface login screen. If you forget the password and do not have email delivery configured, then you must reset the appliance with the `device RESET` command, which resets all of the appliance settings.

Change the xcadmin password

You can edit the password for xcadmin in the user interface or in the command line interface for the appliance.

To change the password in the user interface, edit the user.

To change the password in the command line interface for the appliance, you can use the `user password` command. See "Initializing and configuring IBM WebSphere DataPower XC10 Appliance" on page 21 for more information.

Updating the firmware

Upgrades to the IBM WebSphere DataPower XC10 Appliance software are installed using firmware updates. New firmware versions can be downloaded from the Web site and used to update your appliance software.

Before you begin

You must be assigned the Appliance administration permission to perform these steps.

Check to ensure that all active jobs have completed before starting the firmware update process. The firmware update process interrupts any jobs that are actively running, which can cause the data to become inconsistent. Ensure that you have planned for this behavior before beginning the update process.

CAUTION:

If you are installing the firmware for the first time on a new appliance, you must run the `clear-all` command on the appliance after the firmware update completes. See "Initializing and configuring IBM WebSphere DataPower XC10 Appliance" on page 21 for more information about running this command after the firmware update.

About this task

You can update the firmware of the appliance by downloading a new firmware update from IBM and updating your appliance with the new firmware. You can run the firmware update in the user interface or on the command line.

Important: If your appliances are in a collective, you must complete the firmware upgrade process on one appliance before starting the process on another appliance within the collective. If you attempt to update the firmware on multiple appliances in the collective simultaneously, data loss might occur.

Procedure

- **To run the firmware update in the user interface:**
  1. Navigate to IBM Fix Central and download a firmware update to your local file system. From the Fix Central page, select **WebSphere** as the **Product Group** and **WebSphere DataPower XC10 Appliance** from the list of products. The firmware update is a single file with `.scrypt2` extension. This file has been signed to ensure the integrity of update being run. Save this file on the computer that you use to access the user interface.
  2. Log on to the user interface.
  3. Navigate to the Settings panel.
     - From the menu bar at the top of the WebSphere DataPower XC10 Appliance user interface, navigate to **Appliance** > **Settings**.
     - From the **Home** panel, click the **Customize settings** link in the **Step 1: Set up the appliance** section.
  4. Expand **Firmware**. This section displays the level of firmware that is currently installed on the appliance.
  5. Install a new firmware update.
     a. Click **Browse...** to navigate the file system for the new firmware update file.
     b. Select the new firmware update file and click **OK**.
     c. Click **Upgrade**. The amount of time the firmware update takes to upload is dependent on your connection speed. A message is displayed when the upload has completed and the firmware update is starting. When the update begins the appliance is restarted, your screen does not indicate any progress or display any changes on the user interface. The changes are not displayed because your session ended when the appliance restarted and the user interface is not available during the upgrade process. To confirm the firmware update has completed, you need to log in again when you expect the update has completed. The actual firmware update takes an average of about 10 minutes to 15 minutes after it has begun but can possibly take longer.
- **To run the firmware update in the command line interface:**
  1. Navigate to IBM Fix Central and download a firmware update to your local file system. From the Fix Central page, select **WebSphere** as the **Product**

Group and **WebSphere DataPower XC10 Appliance** from the list of products. The firmware update is a single file with `.scrypt2` extension. This file has been signed to ensure the integrity of update being run. Save this file on a server that you can access from the appliance.

2. Connect to the appliance with the command line or through the serial console.

3. Put the `.scrypt2` file on the appliance. From the command line interface, run the following command:

   ```
   file get <url_to_scrypt2_file> <firmware_file>
   ```

   Where *url_to_scrypt2_file* is the local server where you saved the `.scrypt2` file from Fix Central, and *firmware_file* is the name of the `.scrypt2` file that you want to use on the appliance.

4. Install the firmware update. Run the following command:

   ```
   firmware upgrade <firmware_file>
   ```

   After the firmware upgrade has completed, the appliance restarts.

5. Run the `start-progress` command to monitor the progress of the appliance startup. When this command returns STARTED, the firmware upgrade is complete.

Results

The appliance has the updated firmware version. To confirm the firmware upgrade was successful, you can view the current firmware level in the Firmware section of the **Appliance** > **Settings** panel. This panel also displays the appliance model type and appliance serial number. Repeat these steps for the other appliances in your collective.

What to do next

If you are installing the firmware for the first time on a new appliance, you must run the `clear-all` command on the appliance after the firmware update completes. See "Initializing and configuring IBM WebSphere DataPower XC10 Appliance" on page 21 for more information about running this command after the firmware update.

Chapter 5. Diagnosing your appliance

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

Understanding Type 7199 LEDs

There are LEDs on the front and back of the Type 7199 appliance to help you diagnose possible problems. The following LEDs are included on the front and rear of the Type 7199 appliance.

7199 front panel LEDs

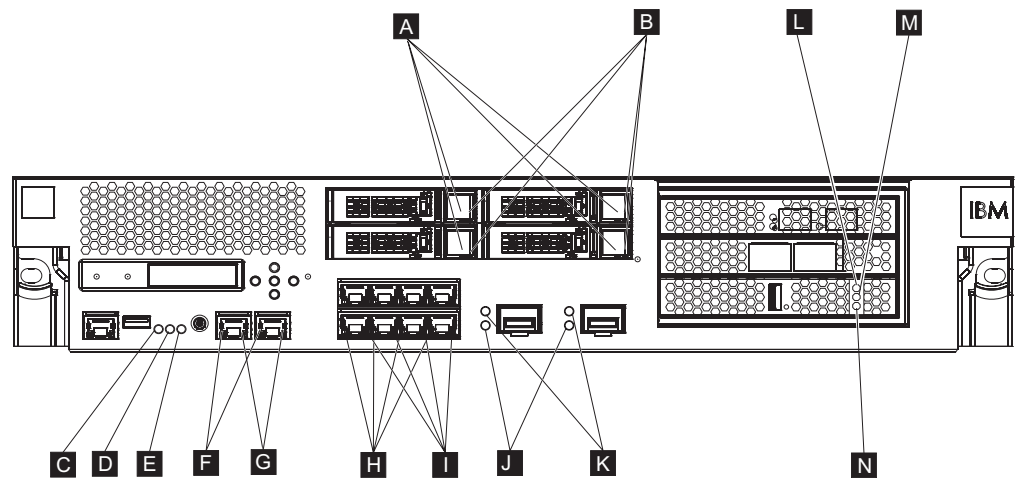Figure 12 shows the LEDs on the front of the Type 7199 appliance:

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 DataPower firmware, and not illuminated when deactivated by the DataPower firmware.

D   The blue locate LED is lit when an administrator is trying locate and identify a certain appliance in the rack. The locate LED is activated by the DataPower firmware, and the locate LED is turned of when deactivated by the DataPower firmware.

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.

| G | The activity LED for the `MGT0` and `MGT1` Ethernet connections indicates that traffic is passing through the interface. |

• 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.

L   The amber LED light for the cache indicates possible error conditions with the cache.
- If illuminated at the same time as the green LED (light N in the diagram), the power is on but the driver is not loaded.
- If illuminated at the same time as the yellow and green LED lights (lights M and N in the diagram), a firmware update might be in progress.

M   The yellow LED light for the cache indicates when data is being written to the cache.
- If flashing, data is being written to the cache. The flashing indicates the write volume. Can occur in combination with the green LED (labeled as N in the diagram).
- If illuminated at the same time as the amber and green LED lights (lights L and N in the diagram), a firmware update might be in progress.

N   The green LED light for the cache indicates when data is being read from the cache.
- If flashing, data is being read from the cache. The flashing indicates the read volume.
- If illuminated at the same time as the amber LED (light L in the diagram), the power is on but the driver is not loaded.
- If illuminated at the same time as the amber and yellow LED lights (lights L and M in the diagram), a firmware update might be in progress.
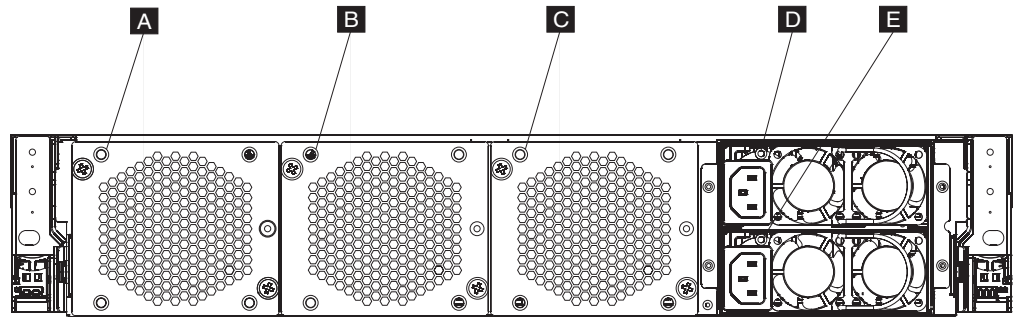
7199 rear panel

Figure 13. LEDs on the rear on the Type 7199 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 LED is not lit, the power supply is working as expected.

Viewing status providers for sensors

The DataPower appliance provides the following sensors status providers:

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**.

Temperature sensors
> Provides the measured temperature for internal components:
> - Temperature of each of the two internal CPU components
> - Temperature of each of the two internal inlet air temperatures
> - Temperature of each of the two outlet air temperatures
> - System ambient temperature
>
> From the user interface, click **Appliance** → **Troubleshooting** → **Hardware Temperatures**.
>
> From the command line, enter **status temperature**.

Voltage sensors
> Provides the measured voltage for the internal components.
>
> From the command line, enter **status voltage**.

RAID battery backup status
> Monitors the battery backup unit on the RAID controller.
>
> From the command line, enter **status raidphystatus**.

Intrusion status

Provides truth values for the intrusion switch.

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

Battery status

Provides information on the batteries.

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

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 32.

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 32.
   - If the power supply module, see "Troubleshooting the power supply module" on page 32.
   - If the hard disk drive module, see "Troubleshooting the hard disk drive module" on page 33.
   - If one of the FRUs, contact your IBM Support.

   No   Continue to step 4 on page 32.

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

Yes Continue with step 5.

No See "Troubleshooting the appliance" on page 33.

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 33.

No See "Troubleshooting the appliance" on page 33.

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 33

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 41 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 55.

Troubleshooting the power supply module

- If the LED is not illuminated, the power supply module is functioning correctly.
- 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 43 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 55.

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 55.

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 off 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 startup 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 55.

Chapter 7. Removing or replacing the appliance or parts

The Type 7199 appliance includes two of three types of replacement parts: Tier 1 customer replaceable unit (CRU) and field replaceable unit (FRU). However, replacement parts for other IBM machine types can be any of the following types:

Tier 1 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.

Tier 2 CRU
> Replacement of a Tier 2 CRU can be installed by you or can be installed at your request by an IBM representative for no charge if still under warranty. If installed by an IBM representative after your warranty has expired, you **will** be charged for the installation.

FRU FRUs must be installed by trained service technicians only.

For information about the terms of warranty, see the *IBM Statement of Limited Warranty* document that is provided with the appliance.

For information about obtaining service or assistance, see "Getting help and technical assistance," on page 55.

Installation guidelines

Before you remove or replace a component, read the following information:
- Read "Handling static-sensitive devices" on page 36 and "Safety" on page v. This information will 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 Type 7199 appliances 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 Type 7199 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 Type 7199 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 Type 7199 appliance, open or close a latch, and so forth.

Handling static-sensitive devices

Read the following guidelines before handing static-sensitive devices.

Attention: Static electricity can damage the Type 7199 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 Type 7199 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.

7199 parts listing

The Type 7199 appliance includes Tier 1 CRU replaceable parts and FRU parts.

For information about the terms of warranty, see the *IBM Statement of Limited Warranty* document that is provided with the appliance.

For information about obtaining service or assistance, see "Getting help and technical assistance," on page 55.

CRU parts listing

The Ethernet modules, hard disk drive modules, fan modules and power supply modules are CRU parts. Figure 14 on page 37 shows the CRU parts on the front and the back of the Type 7199 appliance.
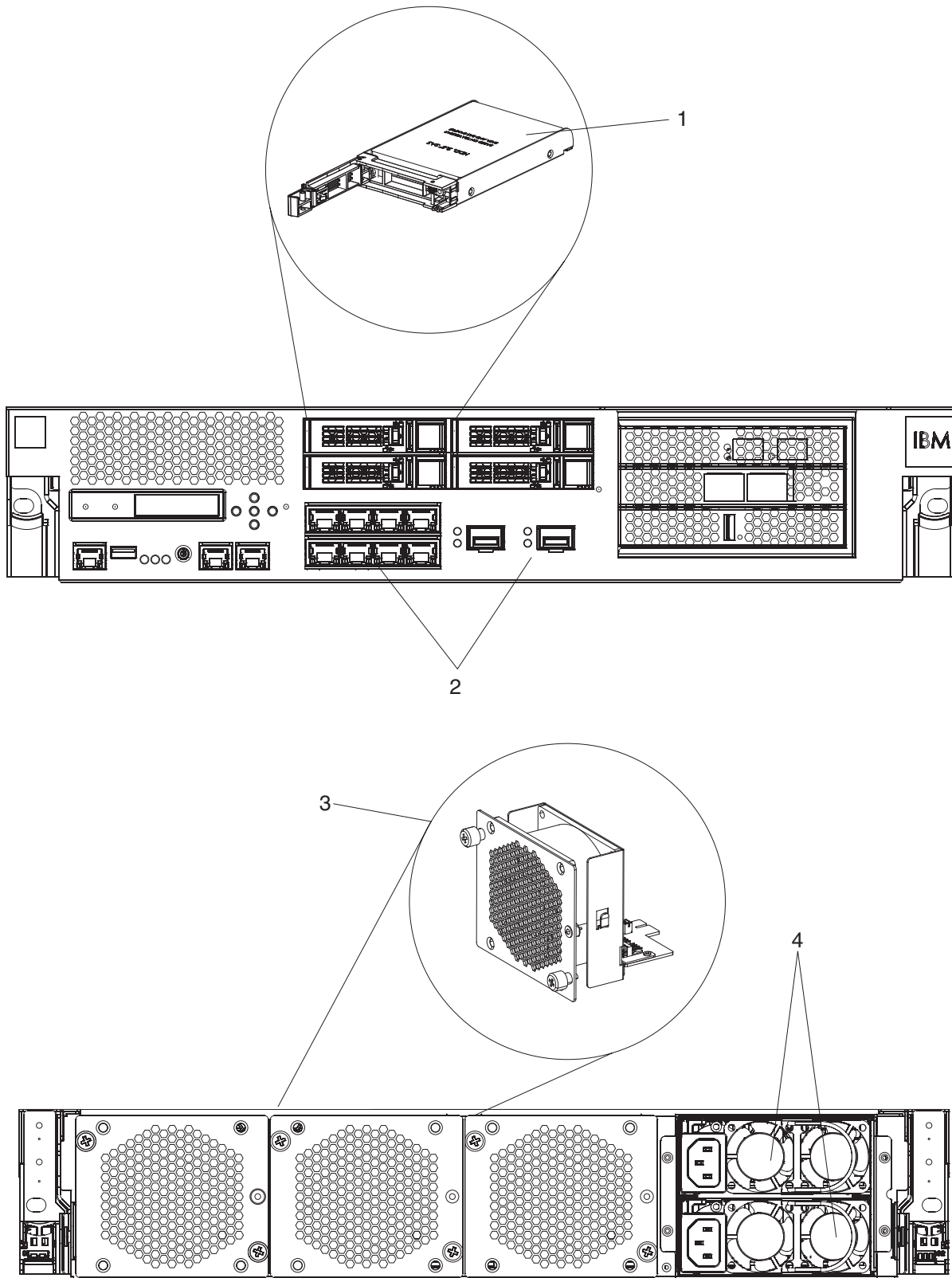
Figure 14. 7199 CRU parts numbers

Table 4 on page 38 lists the part numbers and their corresponding descriptions.

Table 4. 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
4	Power supply module, 720 watts	97Y0440
	Console cable	46M0494
	SFP+ module transceivers (LR)	46N5592
	SFP+ module transceivers (SR)	46N5592
	Rack-mounting kit	9740415

FRU parts listing

Table 5 lists the FRUs that are included in the appliances. These FRUs must be replaced by a trained service technician.

Table 5. FRU part numbers

Description	Part number
RAID backup battery	46M0917
CMOS coin cell battery	33F8354
Fusion I/O card	46N5664
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 6. 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

Table 6. Power cords and cables (continued)

Country	Tier 1 CRU part number	Description
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
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[1]

[1] 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.

Turning off the appliance

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

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 thumb-screws located on the front of the fan module.
5. Remove the fan module, as illustrated in Figure 15.
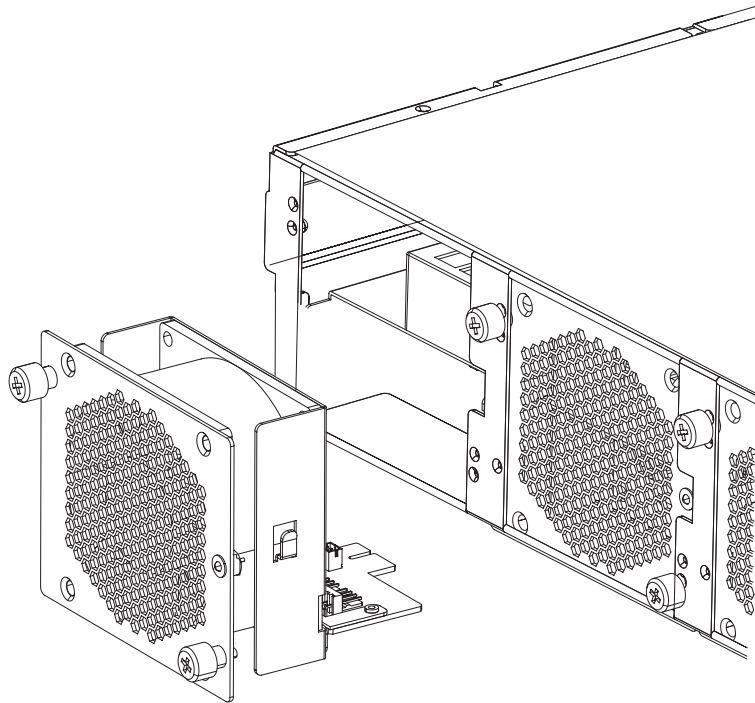
Figure 15. Removing the fan module on a Type 7199 appliance

   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 36.

Replacing a power supply module

There are two hot-swappable power supplies in the back of the appliance. You need to 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.
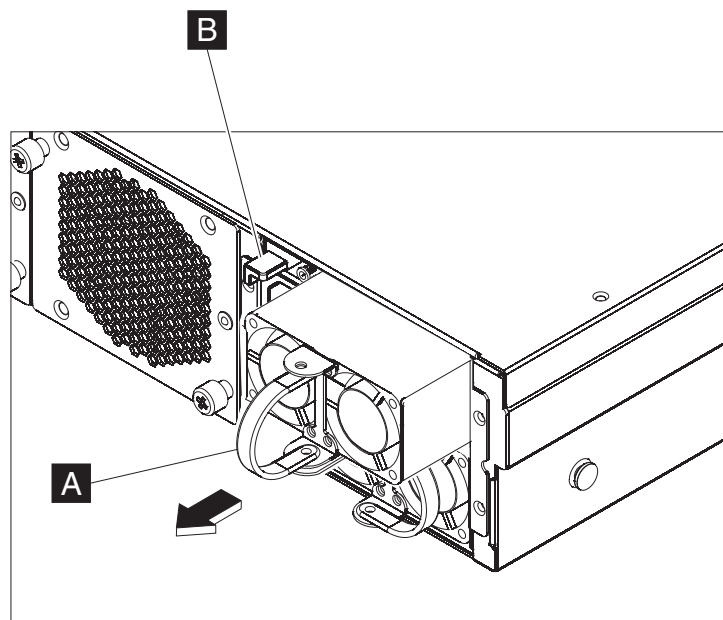

Figure 16. Removing a power supply module

   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.

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 power supply module LED light on the rear of the chassis is not 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 36.

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.

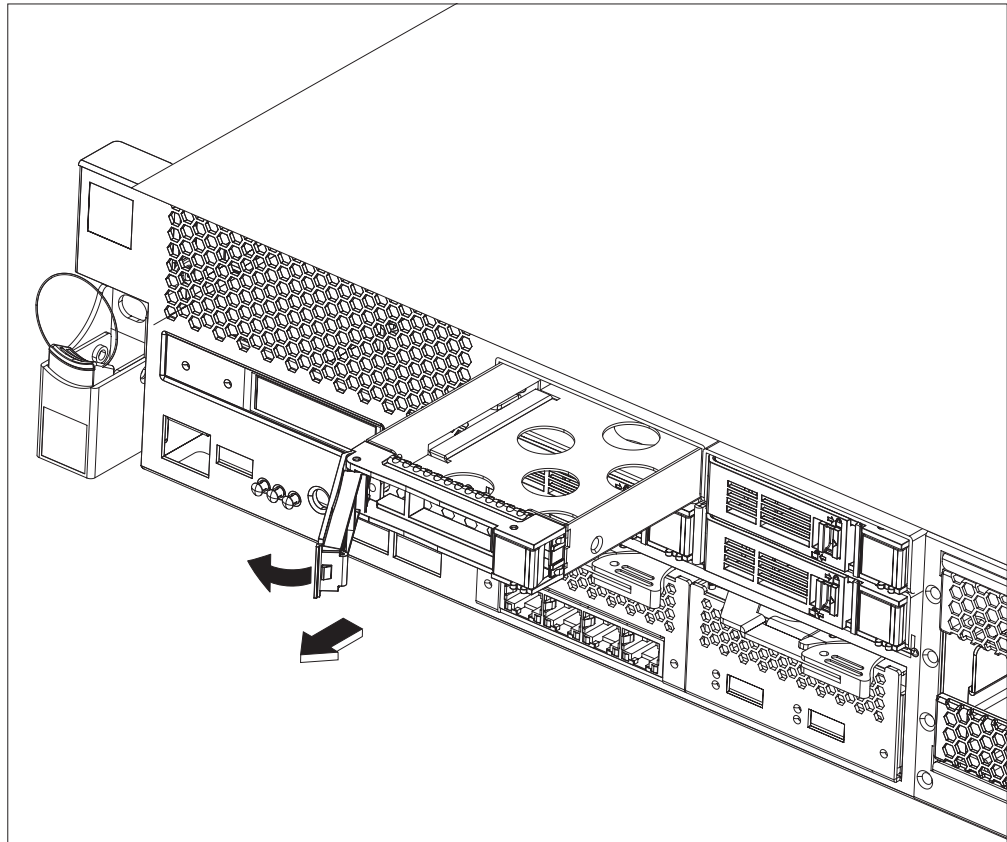2. Press the blue button and the lever pops open. Figure 17 illustrates the following steps.

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 36.

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** → **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.
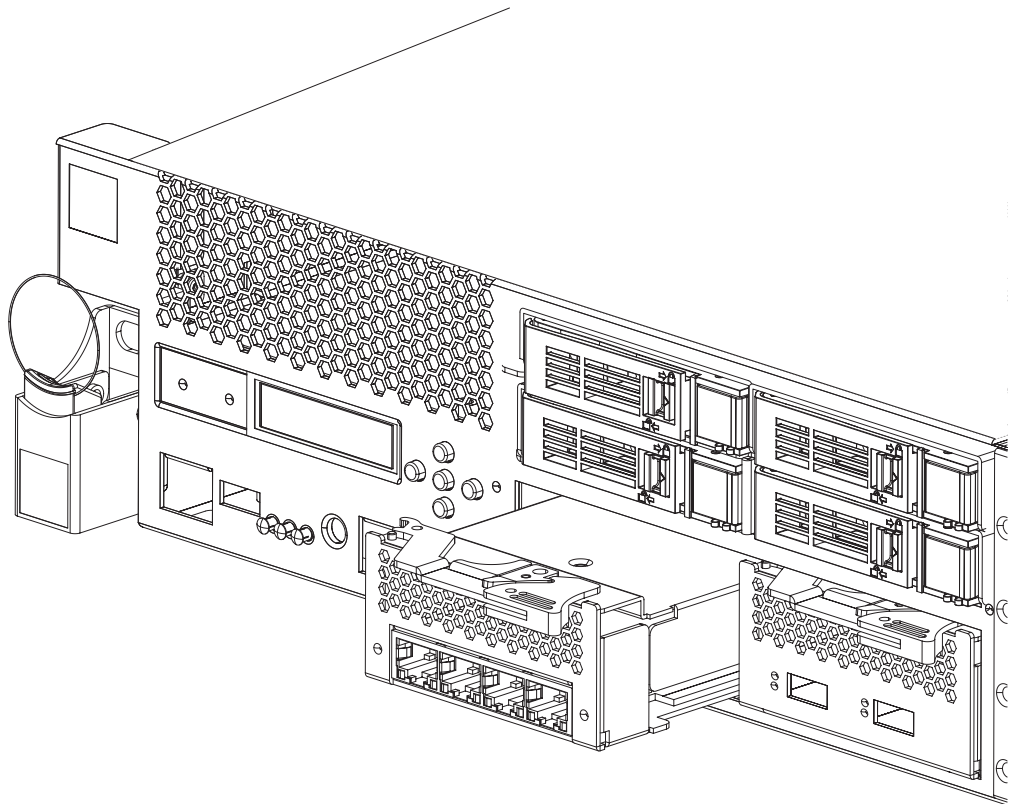
Figure 18. Removing an Ethernet module

- 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 in 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 36 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 (**A**) on the front of the transceiver, as shown in Figure 19 on page 51.
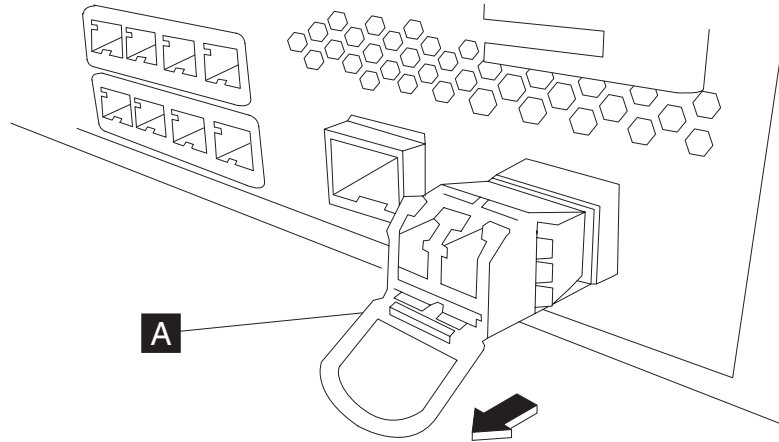- Pull the transceiver out by pulling forward the blue latch.

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 rear.

Generally, after installing the appliance in the rack, you need to remove it only under the following conditions:
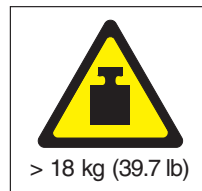
- To move it to another position in the rack
- To return it as a defective appliance to IBM

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

Removing the appliance from the rack

CAUTION:
Type 7199: 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 52.

1. Unlatch and rotate the front of the appliance, as shown in Figure 20 on page 52.

   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.
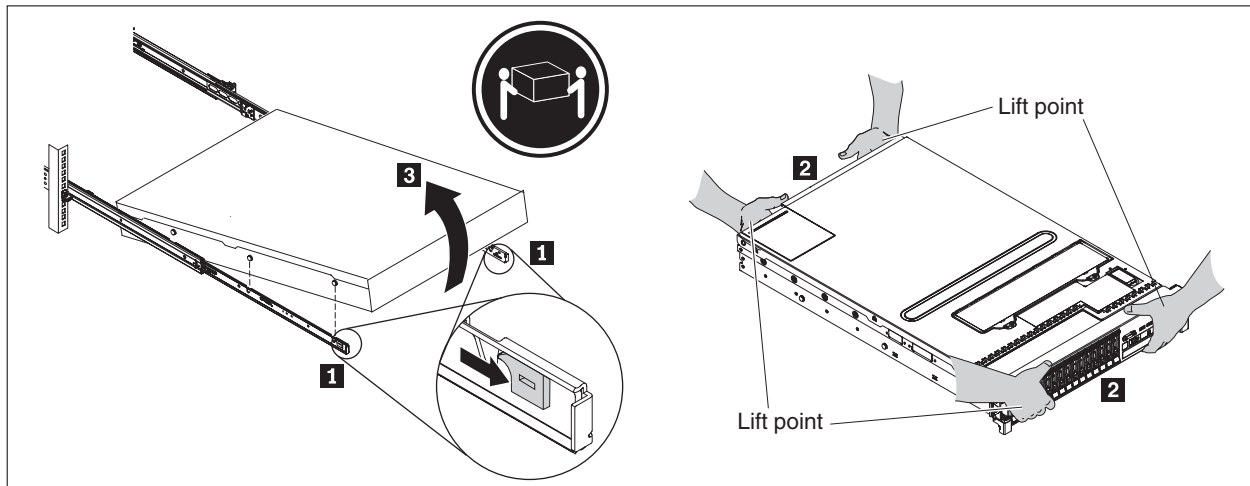

Figure 20. Unlatching and rotating the front of the appliance

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.
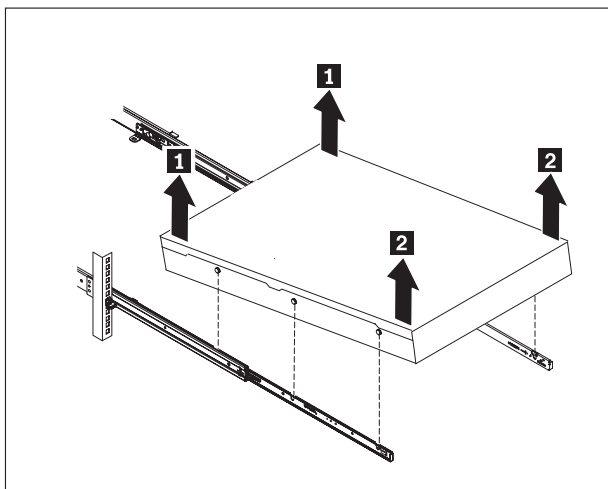
Figure 21. Lifting the appliance off the slide rails

3. Remove the rear end of the slide rails, as shown in Figure 22 on page 53. Push in the pins **1** and **2** push back on the rail **3** to disengage the slide rails from the rear of the rack.
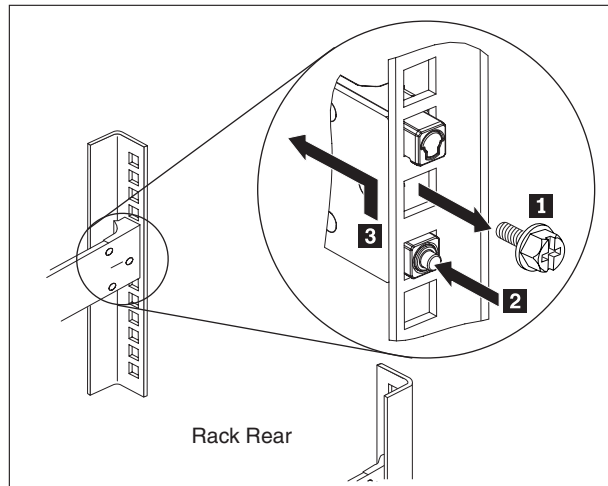
Figure 22. Lifting the rear of appliance off the rail

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**.
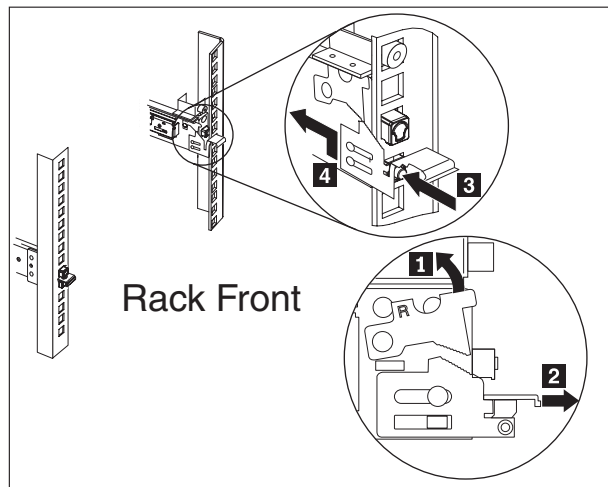   c. Remove the slide rail from the rack.

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.
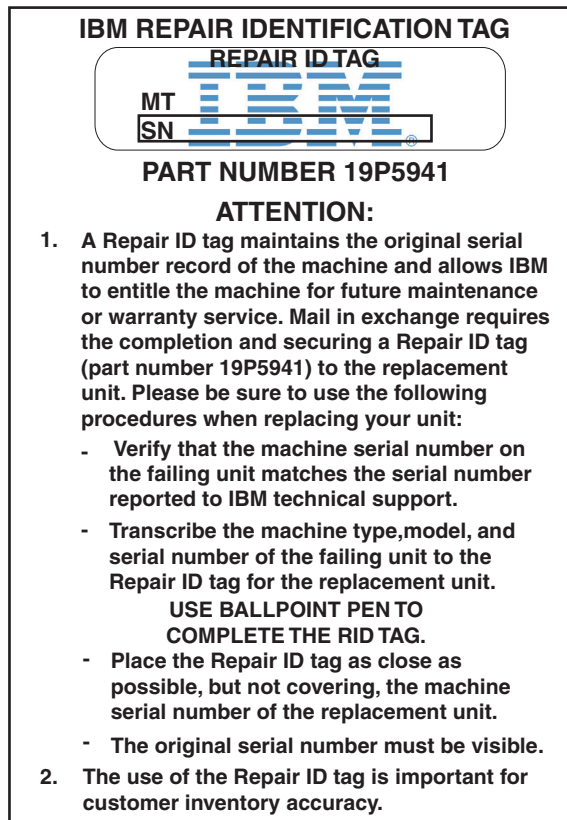
IBM REPAIR IDENTIFICATION TAG

REPAIR ID TAG

MT
SN

IBM

PART NUMBER 19P5941

ATTENTION:

1. **A Repair ID tag maintains the original serial number record of the machine and allows IBM to entitle the machine for future maintenance or warranty service. Mail in exchange requires the completion and securing a Repair ID tag (part number 19P5941) to the replacement unit. Please be sure to use the following procedures when replacing your unit:**

   - **Verify that the machine serial number on the failing unit matches the serial number reported to IBM technical support.**

   - **Transcribe the machine type, model, and serial number of the failing unit to the Repair ID tag for the replacement unit.**
     USE BALLPOINT PEN TO COMPLETE THE RID TAG.

   - **Place the Repair ID tag as close as possible, but not covering, the machine serial number of the replacement unit.**

   - **The original serial number must be visible.**

2. **The use of the Repair ID tag is important for customer inventory accuracy.**

Figure 24. Example of the RID tag

Appendix. 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 IBM WebSphere DataPower XC10 Appliance Information Center provides extensive product documentation. See the IBM WebSphere DataPower XC10 Appliance Information Center at http://publib.boulder.ibm.com/infocenter/wdpxc/v2r0/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 WebSphere DataPower 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.

For additional information on contacting IBM support, refer to the IBM WebSphere DataPower SOA Appliance Support website at http://www-01.ibm.com/support/docview.wss?rs=2362&uid=swg21236322.

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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 á 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

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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.

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求採取某些適當的對策。

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声　　明
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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。

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Part Number: 46N5660

Printed in USA