

Type 8436



Installation and User's Guide

Version 1.0

Type 8436



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Version 1.0

Note

Before you use this information and the product it supports, read the information in “Safety” on page v and, if necessary, the language-specific information for your locale in *IBM Systems: Safety Notices*, G229-9054.

Before you use this information and the product it supports, read the information in “Notices” on page 61.

Fourth Edition (March 2016)

This edition applies to type 8436 appliances until otherwise indicated in new editions.

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Safety

Before you install this product, read the Safety Information.

Arabic

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Brazilian Portuguese

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

Chinese (simplified)

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

Chinese (traditional)

安裝本產品之前，請先閱讀「安全資訊」。

Croatian

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Czech

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Danish

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Dutch

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Finnish

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

French

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

German

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Greek

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

Hebrew

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

Hungarian

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Italian

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

Japanese

製品の設置の前に、安全情報をお読みください。

Korean

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Macedonian

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

Norwegian

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

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

Portuguese

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

Russian

Перед установкой продукта прочтите инструкции по технике безопасности.

Slovak

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Slovenian

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Spanish

Antes de instalar este producto, lea la información seguridad.

Swedish

Läs säkerhetsinformationen innan du installerar den här produkten.

Guidelines for servicing electrical equipment

You must observe the guidelines when you service electrical equipment.

For your safety, the following guidelines must be observed:

- 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 conduct 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 is disconnected from a circuit. Check the circuit to make sure that power is disconnected.
- If you must work on equipment with 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 might cause an electrical shock.
- When you use a circuit tester, set the controls correctly and use the approved probe leads and accessories for the device.
- Stand on a suitable rubber mat to insulate you from grounds such as metal floor strips and equipment frames.
- Use extreme care when you measure 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

How to identify potentially unsafe conditions in an IBM® product that you are working on.

About this task

Each IBM product, as it was designed and manufactured, possesses safety requirements to protect users and service technicians from injury. Use good judgment to identify potentially unsafe conditions that might be caused by attachment of non-IBM features or options that are not addressed in the documentation. 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.

Procedure

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 inspect for any sharp edges.
3. Check the power cords:
 - a. 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.
 - b. Make sure that the power cords are the correct type.
 - c. Make sure that the insulation is not frayed or worn.
4. Check for pinched cables.

Safety statements

Safety statements are available on the included CD-ROM.

The *IBM Systems: Safety Notices* document is provided on the CD-ROM provided with the system.

Safety notices

These notices apply to this product.

DANGER notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous.

ATTENTION notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

Danger notices

The following **DANGER** notices apply to this product.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand when possible to connect or disconnect signal cables. (D001)

DANGER

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device or the power rating label for electrical specifications. (D002)

DANGER

If the receptacle has a metal shell, do not touch the shell until you complete the voltage and grounding checks. Improper wiring or grounding might place dangerous voltage on the metal shell. If any of the conditions are not as described, *stop*. Ensure that the proper voltage or impedance conditions are corrected before proceeding. (D003)

DANGER

An electrical outlet that is not correctly wired might place hazardous voltage on the metal parts of the system or devices that attach to the system. The customer is responsible to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER

When you work 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 install, maintain, or reconfigure 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 is 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 you install, move, or open 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 signal cables from the connectors.
4. Remove all cables from devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Caution notices

The following caution notices apply to this product.

CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperature exceeds what the manufacturer recommends for each of your rack-mounted devices.
- Do not install devices 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 component that is used for air flow through the unit.
- Pay attention 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 on each piece of equipment in the rack and 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.
- Fixed drawers 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)

CAUTION:

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

Do not:

- Drop or immerse into water
- Heat to more than 100° C (212° F)
- Repair or disassemble

Exchange only with the part approved by IBM. 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)

Laser safety information

CAUTION:

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product can result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments, or performance of procedures other than what the instructions specify, can result in hazardous radiation exposure. (C026)

CAUTION:

Data processing environments can contain equipment that transmits or receives data with laser modules that operate at greater than Class 1 power levels. To prevent permanent injury, never look into the end of an optical fiber cable or open receptacle. (C027)

Product handling information

CAUTION:



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

Labels

One or more of the following safety labels may apply to this product.



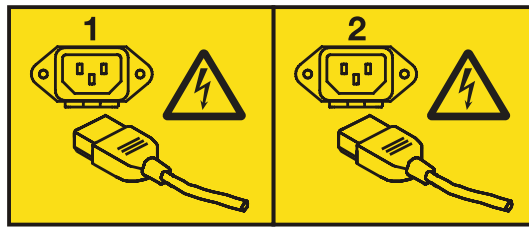
DANGER

Hazardous voltage, current, or energy levels are present inside. Do not open any cover or barrier. (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)

Preface

This publication includes installation, configuration, and maintenance information for the 8436 appliance. The appliance is a 2U rack-mountable appliance.

Who should read this guide

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

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

Appliance packaging

The appliance is shipped in a single package. The carton contains:

- One appliance.
- Two power cords.
- Two console serial cables: a USB serial console cable (USB to RJ45) and a DE-9 serial console cable (DE9 to RJ45).
- Rack-mount kit that includes two rack power cords, rails, and associated hardware.
- *Installation and User's Guide* (English version). English and translated PDF versions on the Resource Kit.
- *Quick Start Guide* (English version). English and translated PDF versions on the Resource Kit.
- *Statement of Limited Warranty*.
- *Safety Notices* (paper documents and CD-ROM).
- Resource Kit, a CD-ROM that contains additional materials.

Resource Kit

The Resource Kit contains the following documents for your appliance as Portable Document Format (PDF) files.

- *Quick Start Guides* (of the appliance, modules, and optional features)
- *Installation and User's Guide*.
- *IBM Statement of Limited Warranty*.
- *IBM Software Maintenance Agreement*.

The *Quick Start Guides* and *Installation and User's Guide* are available in English and translated languages under \docs\.

For Internet access to information that this document references, see the IBM Knowledge Center.

Warranty information

The *Statement of Limited Warranty* is on the Resource Kit. The general statement (without product-specific terms) is available in 29 languages from the IBM support website at http://www.ibm.com/servers/support/machine_warranties/.

Notices conventions

The caution and danger statements in this information are also in the multilingual document *IBM Systems: Safety Notices*, found as hardcopy documents in the carton.

The following notices and statements are used in this information:

Note This notice provides important tips, guidance, or advice.

Best Practice

This notice provides guidance about best practices.

Attention

This notice 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 notice 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 notice 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 this guide.

bold Identifies commands, programming keywords, and GUI controls.

italics Identifies citations and user-supplied variables.

monospaced

Identifies user-supplied input, computer output, and file names.

Related information:

IBM Knowledge Center: IBM DataPower Gateway (<http://www.ibm.com/support/knowledgecenter/SS9H2Y>)

Who should read this guide

This guide is intended for personnel who install, configure, diagnose, and service type 8436 appliances.

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.
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- Ordering and replacing customer replaceable parts.

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- *Installation and User's Guide*.
- *Quick Start Guide*.
- *Statement of Limited Warranty*.
- *Safety Notices* (paper documents and CD-ROM).
- *Resource Kit*, a CD-ROM that contains additional materials.

The Resource Kit

Some documents are provided on a CD included in the appliance carton.

The *Resource Kit* contains the following documents for your appliance as Portable Document Format (PDF) files.

- *Quick Start Guide* for the appliance and modules
- *Installation and User's Guide*.
- *IBM Statement of Limited Warranty*.
- *IBM Software Maintenance Agreement*.

The *Quick Start Guide* and *Installation and User's Guide* PDF documents are available in English and translated languages under \docs.

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Note This notice provides important tips, guidance, or advice.

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This notice provides guidance about best practices.

Attention

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Caution

This statement 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.

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This statement 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 documentation uses different typeface conventions.

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italics Identifies citations and user-supplied variables.

monospaced

Identifies user-supplied input, computer output, and file names.

Chapter 1. Type 8436 appliances

Type 8436 appliances are network devices that communicate with other nodes on an IP network.

Type 8436 appliances are easy-to-deploy network devices that provide flexible security and integration gateway capabilities for your API, B2B, cloud, mobile, and web workloads.

Specifications and features

Information about the specifications and hardware features of appliances.

Specifications

The following table summarizes the specifications for the chassis.

Table 1. Hardware specifications

Dimensions:	
Height	3.5 in. (89 mm)
Width	17.25 in. (438 mm)
Depth	23 in. (584 mm)
Appliance weight	44 lb. (20 kg)
Shipping weight	66 lb. (30 kg)
Electrical input:	
Power Supply	Two, 720 Watt power supply modules
Sine-wave	50/60 Hz (single-phase) required
110 Voltage AC	100 to 127 Volt (nominal) at 10.0 Amperes
220 Voltage AC	200 to 240 Volt (nominal) at 5.0 Amperes
Heat output	
Idle	214 watts (730 Btu/hour)
Maximum	462 watts (1575 Btu/hour)
Environment	
Shipping	-40° to 140° F (-40° to 60° C)
Power off	50° to 109.4° F (10° to 43° C)
Power on	0 to 3000 ft. (0 to 914.4 m) 50° to 95° F (10° to 35° C) 3000 ft. to 7000 ft. (914.4 m to 2133.6 m): 50° to 89.6° F (10° to 32° C)
Maximum altitude	7000 ft. (2133.6 m)
Humidity	8% to 80% (noncondensing)

Hardware features

The following table describes the CPU, hard disk space, and memory of the appliance. Hard disk drive (HDD) modules are serial-attached SCSI (SAS) drives.

Table 2. 8436 hardware features

CPU	Hard disk space	Memory
Two 10-core 2.80 GHz Intel Xeon E5-2680V2 processors	Two 1200 GB HDDs configured as RAID 1	192 GB (Twelve 1600 MHz DDR3 DIMMs)

The hardware security module (HSM) is an additional feature. The machine type model (MTM) of an appliance without HSM is 8436-52X, and the MTM of an appliance with HSM is 8436-53X.

The system disk contains 16 GB space for system file storage.

The RAID array for user storage contains 1200 GB of space. Allocation of storage is set during appliance initialization.

- When B2B storage is enabled, the RAID array is formatted as two 600 GB partitions. One partition is available for use. The second partition is reserved for B2B document storage.
- When B2B storage is not enabled, the RAID array is formatted as a single 1200 GB partition.

Intrusion detection

The appliance has an internal intrusion detection switch.

The intrusion switch and intrusion detection are enabled by default. An administrator can configure the appliance to ignore signals from the intrusion detection switch or to reset intrusion detection.

If intrusion detection is enabled and the appliance detects an intrusion during normal operation, a warning message is displayed in the WebGUI for newly connected sessions and the appliance restarts in failsafe mode. An administrator can reset the intrusion detection with the **clear intrusion-detected** command.

Identifying components

The following figure shows the controls, connectors, and status indicators on the front of the appliance.

Components on the front

The following figure shows the controls, connectors, and status indicators on the front of the appliance.

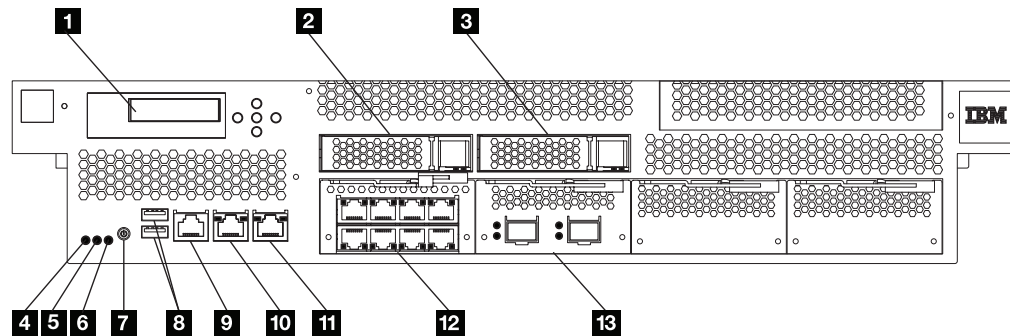


Figure 1. Controls, connectors, and status indicators on the front of the appliance.

The labels in this figure correspond to the following components on the front of the appliance:

- 1** LCD display.
- 2** Hard disk drive 1.
- 3** Hard disk drive 2.
- 4** Fault LED.
- 5** Locate LED.
- 6** Power LED.
- 7** Power button.
- 8** Two USB ports.
- 9** Console connector.
- 10** mgt0 management port.
- 11** mgt1 management port.
- 12** 1 Gb Ethernet module.
- 13** 10 Gb Ethernet module.

Components on the rear

Fan and power supply modules are at the rear of the appliance.

The following figure shows the components at the rear of the appliance.

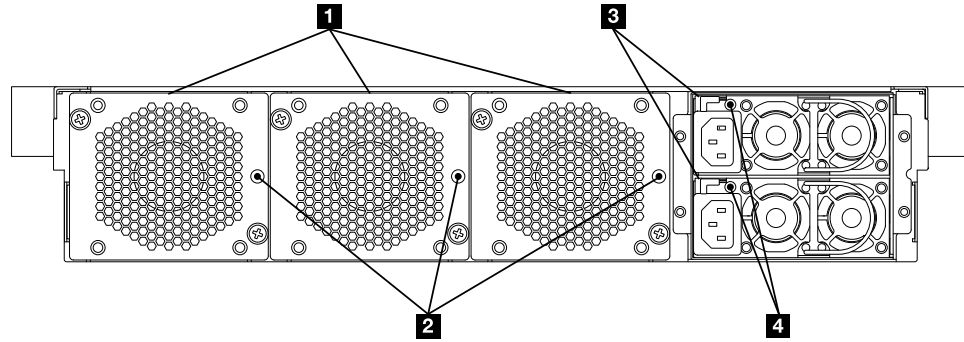


Figure 2. Rear view.

- 1** Fan modules.
- 2** Fan LEDs.
- 3** Power supply modules.
- 4** Power supply module LEDs.

LCD module

The front panel has an LCD module that includes an LCD and five menu buttons.

The LCD displays the product name and the installed firmware version. The menu buttons adjacent to the LCD is not functional.

Locate LED

The front has a locate LED to help you identify the intended appliance.

The locate LED shows a steady blue light when activated. The LED remains on until deactivated to help you identify the intended appliance.

From the WebGUI

1. In the search field, enter **System**.
2. From the results, click **System Control**.
3. Locate the **Control Locate LED** section.
 - To activate, click **on**.
 - To deactivate, click **off**.
4. Click **Control Locate LED**.

From the CLI

Use the **locate-device** command in Global configuration mode.

- To activate, enter `locate-device on`.
- To deactivate, enter `locate-device off`.

Power button

The front of the appliance has a power button.

When the appliance is powered off, press the button to turn on the appliance.

When the appliance is powered on, press the button to start a graceful hardware shutdown.

Related tasks:

“Turning off the appliance” on page 41

When a procedure requires that the appliance is turned off, turn off power to the appliance.

Console port

The front has a console port for serial communications.

The console port receives an RJ45 jack from either of the supplied serial console cables.

For initial configuration, use one of the supplied serial cables to connect from an ASCII terminal¹ to the appliance or to connect from a PC that is running terminal emulation software to the appliance.

USB ports

The front panel has two USB interface that conforms to USB 2.0 devices.

These USB ports are not active. Therefore, they do not provide any network connection.

Network ports

The network ports transmit and receive data communications between the appliance and external sources.

The network ports are grouped and located by function. Two management Ethernet ports (mgt0 and mgt1) are part of the appliance. All other network ports are removable Ethernet modules.

The 1 Gb Ethernet module contains eight ports for the RJ45 interface.

The 10 Gb Ethernet module has two small-form-factor pluggable (SFP+) ports.

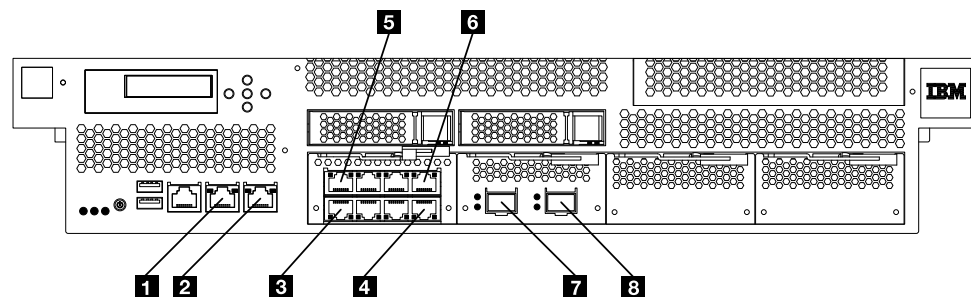


Figure 3. Network ports

- 1** mgt0
- 2** mgt1
- 3** eth10

1. A simple device that transmits and receives ASCII data.

- 4** eth13
- 5** eth14
- 6** eth17
- 7** eth20
- 8** eth21

Management Ethernet ports

The mgt0 and mgt1 management Ethernet ports provide access to the management interfaces of the appliance.

These ports provide remote management access to the appliance and are not to be used as data ports. mgt0 supports IPMI over LAN (including serial over LAN).

Consider DataPower® management traffic in the overall availability, network, and management plan for the deployment. Management traffic, with the exception of IPMI, is not fundamentally different than any other kind of traffic the appliance processes. The same techniques that separate network zones apply equally to management traffic.

Ethernet modules

The appliance contains two Ethernet modules for network connectivity. The left module contains eight 1 Gb Ethernet ports, and the right module contains two 10 Gb Ethernet ports.

1 Gb Ethernet module

The 1 Gb Ethernet module contains eight ports for the RJ45 interface. The Ethernet ports are placed in two rows and are numbered sequentially from lower left to upper right. The lower row is numbered eth10 to eth13 and the upper row is numbered eth14 to eth17. Each port has speed and activity indicator LEDs.

Notice that the speed and activity LEDs on the lower and upper rows have opposite orientation.

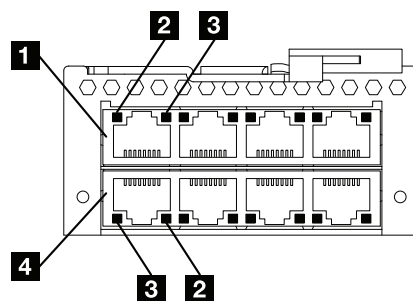


Figure 4. 1 Gb Ethernet module with eight ports for RJ45 interface

- 1** eth14
- 2** 1 Gb Ethernet port speed LED
- 3** 1 Gb Ethernet port activity LED
- 4** eth10

10 Gb Ethernet module

The 10 Gb Ethernet module has two small-form-factor pluggable (SFP+) ports. The port designators are eth20 and eth21. SFP+ ports support optical or electrical interfaces with the appropriate transceiver.

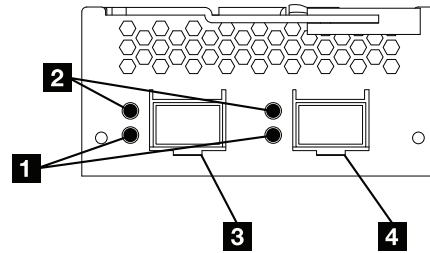


Figure 5. 10 Gb Ethernet module with two ports for SFP+ interface

- 1** 10 Gb Ethernet port speed LED
- 2** 10 Gb Ethernet port activity LED
- 3** eth20
- 4** eth21

Hard disk drive modules

The 8436 appliance has two hard disk drive modules.

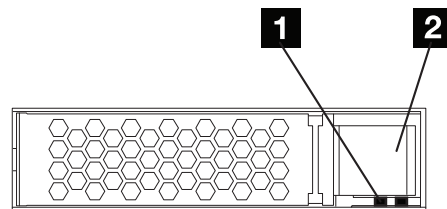


Figure 6. Hard disk drive module.

- 1** Hard disk drive activity LED.
- 2** Locking arm release latch.

Fan modules

The appliance has three fan modules.

Each fan module contains a cooling fan with an LED that indicates the status of the module.

- Amber single flash shows when power is first applied to the fan module.
- Amber steady light indicates that the fan is operating at less than 1200 RPM or there is a fault in the module.
- No illumination when there is no power present or there is no problem.

The speed of the fans is responsive to the temperature of the appliance as measured by internal temperature sensors near the front and rear of the appliance. As the temperature changes, the fan speed changes to compensate.

Power supply modules

The appliance is powered by two redundant power supply modules.

A single power supply module can supply the power to support appliance operations. Each power supply module contains an LED that indicates the status of the module.

DANGER

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

- Green steady light indicates that the module is connected to a power source.
- Red steady light indicates that the module is not functioning within design specifications.
- If not illuminated, there is no power to the module.

Related tasks:

“Turning off the appliance” on page 41

When a procedure requires that the appliance is turned off, turn off power to the appliance.

Chapter 2. Installation preparation

The information that you need to prepare for installation. This information is about the rack, the required tools, and an installation overview.

Rack requirements

Observe the rack requirements when you plan for installation. The appliance can fit in a standard 19 in (48.26 cm) rack with a minimum of 28 in. (71.1 cm) of depth. When you plan for installation, observe the following requirements for the rack:

- The appliance rails require four mounting points in the rack.
- 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 you work 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 install, maintain, or reconfigure 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 is 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 you install, move, or open 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 signal cables from the connectors.
4. Remove all cables from devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperature exceeds what the manufacturer recommends for each of your rack-mounted devices.
- Do not install devices 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 component that is used for air flow through the unit.
- Pay attention 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 on each piece of equipment in the rack and 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.
- Fixed drawers 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)

Tool requirements

You need the following tools and hardware to install the appliance rack-mounting kit.

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

You need at least two (2) and up to 12 network cables to connect the appliance to your network.

Chapter 3. Installation of the appliance in a rack

The information that you need before you install the appliance in a rack.

The rails are for a 19 in. (48.26 cm) rack. A complete rail kit is required to install the appliance.

The rail kit contains the following parts:

- Left slide rail, marked L.
- Right slide rail, marked R.
- Two (2) screws (size 10-32) to secure the slide rails to the rack.

If any item is missing, contact IBM Support.

Installing rails in the rack frame

How to install rails in the rack cabinet.

Before you begin

If the rails in the kit came with thumbscrews, remove them.

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

Procedure

1. Open the front rail latches, as shown in the following figure.

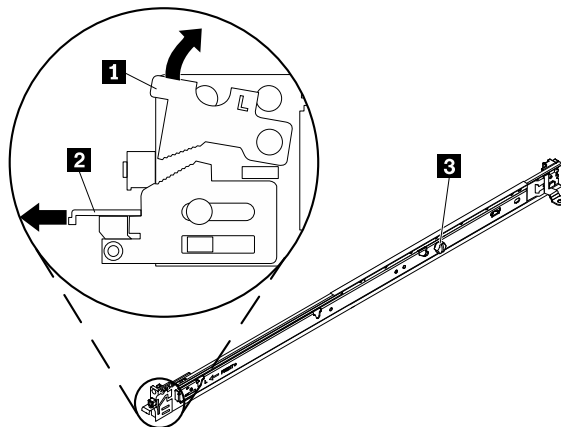


Figure 7. View of the left slide rail.

Notice that each slide rail is marked with an R (right) or an L (left) to indicate on which side of the rack it will be installed. R and L are determined as you face the rack opening with the front portion nearest you.

- a. Select one of the slide rails and push up on the front moveable tab **1**; then, pull out the front latch **2**.

- b. If a thumbscrew is installed in the slide rail **3**, remove it.
2. Install the rear end of the slide rails into the rack, as shown in the following figure.

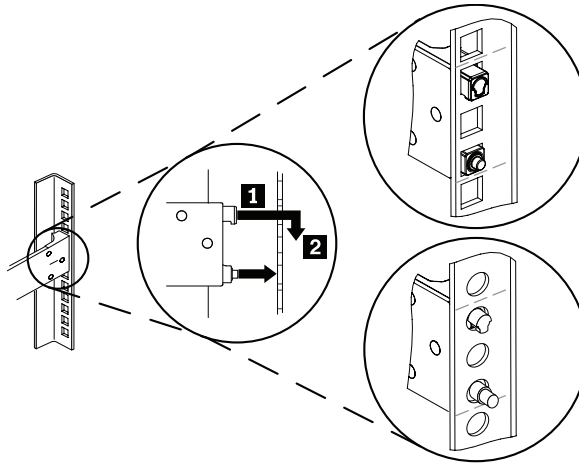


Figure 8. Install the rear end of the slide rails.

- a. From the front of the rack, line up the two pins on the rear of the slide rail with the corresponding holes at the selected location at the rear of the rack.
 - b. Push the rails so that the pins go through the holes **1**, and the top pin seats into place **2**.
3. Install the front end of the rails, as shown in the following figure.

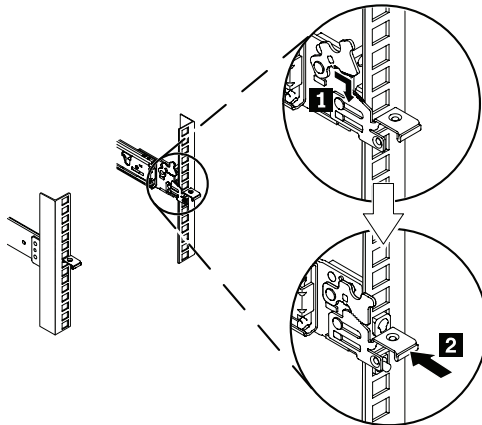


Figure 9. Install the front end of the slide rails.

- a. Guide the front latch around the appropriate hole and pull the slide rail forward to fit the pins through the front of the rack.
 - b. Rotate the front moveable tab **1** to the downward position so that the teeth engage with the front latch.
 - c. Push the front latch **2** in as far as it will go.
4. Repeat steps 1 through 3 to install the other rail into the rack. Make sure that each front latch is fully engaged.
5. Install a 10-32 screw in the rear of right rail, as shown in the following figure.

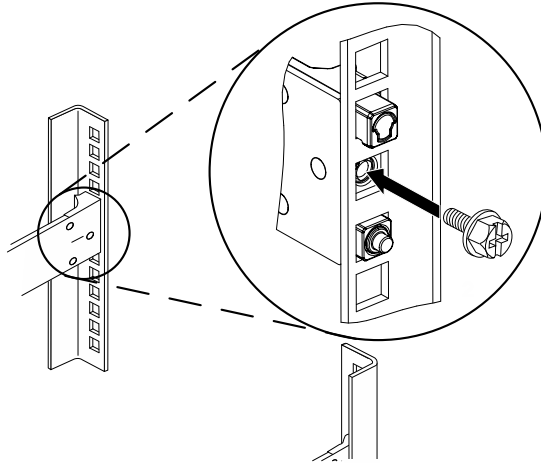


Figure 10. Securing the rails in the rack.

6. Repeat step 5 for the left rail.

Installing the appliance on the rails

How to install the appliance on the rails.

About this task

Secure the appliance to the rails. The following figure shows the numbered components that are mentioned in the steps.

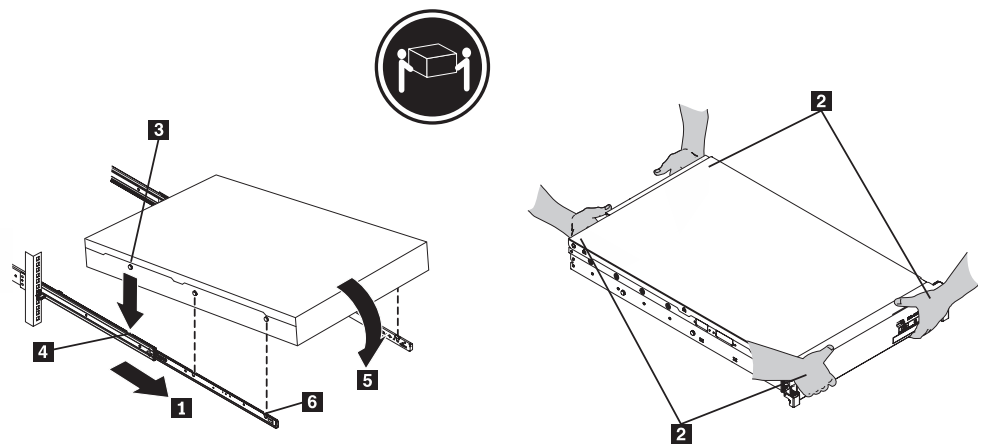


Figure 11. Securing the appliance in the rack

CAUTION:



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

DANGER

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

Procedure

1. Pull the slide rail forward **1**.
2. Use two people to carefully lift the appliance from the lifting points **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.
5. Next, slide the appliance into the rack.

Sliding the appliance into the rack

Before you begin

If the appliance is locked into place, slide the appliance toward you.

About this task

The following figure shows the numbered components that are mentioned in the steps.

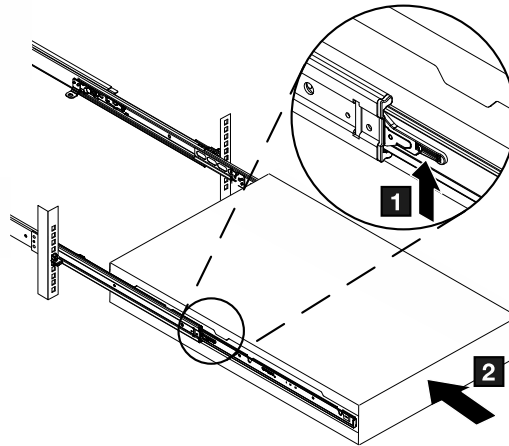


Figure 12. Sliding the appliance into the rack.

Procedure

1. Secure the brackets to the appliance with the captive screws **1**.
2. Slide the appliance into the rack **2**.

Considerations to connect the appliance to AC power sources

Read the considerations before you connect the appliance to an AC power source.

DANGER

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device or the power rating label for electrical specifications. (D002)

DANGER

If the receptacle has a metal shell, do not touch the shell until you complete the voltage and grounding checks. Improper wiring or grounding might place dangerous voltage on the metal shell. If any of the conditions are not as described, *stop*. Ensure that the proper voltage or impedance conditions are corrected before proceeding. (D003)

DANGER

An electrical outlet that is not correctly wired might place hazardous voltage on the metal parts of the system or devices that attach to the system. The customer is responsible to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

Use the provided power cords to connect both power supply modules to AC power sources. You must connect each power supply module, or the system considers the unconnected module to be in a failed state.

Each power supply can come from different power sources or from different circuits. The two sources must be properly grounded.

Connect the appliance to a network

Considerations for when you connect the appliance to a network.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand when possible to connect or disconnect signal cables. (D001)

CAUTION:

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product can result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments, or performance of procedures other than what the instructions specify, can result in hazardous radiation exposure. (C026)

CAUTION:

Data processing environments can contain equipment that transmits or receives data with laser modules that operate at greater than Class 1 power levels. To prevent permanent injury, never look into the end of an optical fiber cable or open receptacle. (C027)

Attention: Never connect the appliance to telephone or other telecommunication circuits.

The appliance Ethernet ports 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 GbE) connection

Four pairs of Category 5 wiring or better.

10GBASE (10 Gbps) connection:

Short-reach (300 meters) SFP+ modules with LC connector (multi-mode 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 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

How to perform the initial, base firmware configuration.

About this task

This configuration is the minimal configuration to add an appliance to your environment. Defining the full configuration for your appliance is beyond the scope of this document.

Procedure

1. Read the hardware and information requirements, and read the considerations for the operation modes and the password for the admin account.
2. Connect the serial cable to the appliance.
3. Initialize the appliance by changing the password for the admin account and interactively defining the base configuration.
4. Accept the license agreement and verify the base configuration.

Configuration requirements

You must meet both hardware and information requirements to perform the initial firmware configuration.

Before you begin the initial firmware configuration, make sure that you meet the following requirements:

- Review and comply with the hardware requirements.
The package contains a USB serial console cable (USB to RJ45) and a DE-9 serial console cable (DE-9 to RJ45). For initial configuration, use a supplied cable to connect from an ASCII terminal to the appliance or to connect from a PC that is running terminal emulation software to the appliance.
- Obtain the required network data.
 - The IP addresses for the Ethernet interfaces for appliance management ports `mgt0` and `mgt1`.
 - The IP addresses for the Ethernet interfaces for service access.
 - Default gateways (routers) that support the subnets for the Ethernet interfaces.
 - The IP addresses and ports for the web management interface and SSH service.
 - Optional: The IP address and port for Telnet service.

Tip:

- The WebGUI is required to accept the license agreement.
- If you want to use an IPMI connection, including serial over LAN, it must be configured on `mgt0`.

Installation considerations

During the initial firmware configuration, the script prompts you for supported operational modes and the password for the admin account.

Operational modes

The script prompts you to enable or disable operational modes.

Attention: Use care when you make the selections for operational modes. If you select an incorrect mode for your environment, the only way to change an operational mode is to reinitialize the appliance.

Secure backup mode

With secure backup mode, you can create a secure backup that you can use to restore all settings for an appliance. A secure backup creates a set of files that you can use to recover the configuration of a lost appliance. A secure backup contains private data on the appliance (certificates, keys, and user data). An administrator cannot see this data in the backup. The appliance encrypts this data with the DataPower key.

The backup-restore process must be used among appliances that are at the same firmware level and have the same compatible configuration (auxiliary storage, iSCSI, and so forth). You can use the disaster recovery process during the end-of-life migration to move configuration details from one appliance to another.

Common criteria compatibility mode

Common Criteria compatibility mode (CC mode) puts the appliance in a mode that enforces a set of policies that are defined by the CC certification. If you are unsure about whether to use this mode, then you most likely should not. In general, this mode is only used when required by a specific authority. If your environment does not have this specific requirement for the appliance, use normal mode. CC mode is not more secure than normal mode.

CC mode forces several settings to specific values. The appliance enforces these values at restart, if changed. These affect audit log policies and include a group of default rules and actions.

Password for the admin account

The first time that you start the DataPower appliance from a serial connection is different from any subsequent restart.

- On the first start, you must initialize the appliance. The initialization routine prompts you to accept the license agreement and change the password for the admin account. After initialization, create a user with a group-defined account type with the appropriate access policy or the privileged account type as a backup for the admin account. A privileged user or a group-defined user with the appropriate access policy can log in and reset the password for the admin account.
- On subsequent restarts, you are prompted for the credentials of the admin account or another local account. If that account has an expired password, you are prompted to change the password.

Attention: Do not forget or misplace the password for the admin account. If you forget or misplace this password, you must return the appliance to IBM Support to reset the password. However, when another account can log in and has the appropriate access permission, that user can reset the password for the admin account.

When you receive the appliance after a password-reset, you must initialize the appliance again with an initial firmware setup. Therefore, none of your configuration data is on the appliance.

License agreement

During initialization, you must configure the web management service to prepare for accepting the license agreement through the WebGUI. When the admin account logs in to the WebGUI for the first time to verify the appliance configuration, the WebGUI displays the license agreement.

1 of 3: Connecting the serial cable to the appliance

How to make the serial connection to the appliance.

Before you begin

Read the hardware and information requirements in “Configuration requirements” on page 21, and read the operation modes and password considerations for the admin account in “Installation considerations” on page 21.

About this task

For initial configuration, you must connect to the appliance console port from an ASCII terminal, or a computer that is running terminal emulation software.

The DE-9 (sometimes called DB-9) serial console cable connects a 9-pin socket to an 8-position modular plug (RJ45). The cable conforms to the EIA/TIA-574 standard as data circuit-terminating equipment (DCE).

If your PC does not recognize the USB serial console cable, you might need to install a device driver. Standard drivers with installation instructions are on the *Resource Kit* in an archive file.

- The driver for Windows systems is in the driver/win/ directory.
- The drivers for Mac OS systems are in the driver/mac/ directory.

Notes:

- Do not connect an Ethernet network cable to the appliance serial console port.
- Do not connect a digital or analog Telephone network cable to the appliance serial console port.

DANGER

To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand when possible to connect or disconnect signal cables. (D001)

Procedure

1. Use the appropriate cable to connect from an ASCII terminal or PC that is running terminal emulation software to the appliance.

2. Ensure that the terminal or PC software is configured for standard, 115200, 8N1², and no flow control data transfer.

What to do next

See “2 of 3: Initializing the appliance” to define the base configuration such as changing the password for the admin account, creating privileged users, and configuring the web management interface.

2 of 3: Initializing the appliance

Use this procedure to provide base configuration for the appliance.

Before you begin

Connect the appliance to an ASCII terminal or to a PC that is running terminal emulation software through a serial connection. See “1 of 3: Connecting the serial cable to the appliance” on page 23.

Procedure

1. Press the power button at the front of the appliance. The green power LED illuminates.
 - You might hear the fans start.
 - You might hear the fans change speed as the screen displays DPOS boot - press <ESC> within 7 seconds for boot options...

Wait for the appliance to boot.

2. At the Login: prompt, enter admin as the account name.³
3. At the Password: prompt, enter admin as the account password.⁴ The script prompts you later to change this password.
4. Follow the prompts to enable the appropriate operational modes.

During this process, do the following things:

- Read the general cautions that apply to operational modes.
- Read the information about each supported operational mode.
- Enable or disable each operational mode.
- Confirm each operational mode.

Attention: Use care when you select the operational modes. If you select an incorrect mode, the only way to change an operational mode is to reinitialize the appliance, which deletes all configuration settings on the appliance.

Secure Backup mode

Enable this mode when you want to create a secure backup for the appliance.

Common Criteria Compatibility mode

Enable this mode when a specific authority requires your appliance to be EAL4 certified.

5. At the Please enter new password: prompt, enter a new password.

2. 8N1 is a notation for a serial configuration in asynchronous mode, where there are eight data bits, no (N) parity bit, and one stop bit.

3. admin is the name of a local user account. The owner of this account can perform all tasks on the appliance.

4. admin is the default password for the admin account.

- Ensure that your keyboard does not have Caps Lock or Number Lock engaged.
 - Type the password from the keyboard. Do not copy and paste the password. If you copy and paste, you might copy extra spaces or characters.
6. At the Please re-enter new password to confirm: prompt, enter the new password again.
 7. At the Do you want to run the Installation Wizard? prompt, enter y to start the installation wizard.

Note: If you inadvertently enter n at the prompt, you can start the installation wizard by entering the following commands:

```
configure terminal
startup
```

8. Follow the prompts to complete the base firmware configuration.

Note:

- If you plan to use the B2B feature in the future, enable the RAID array for B2B storage. If you do not enable the B2B storage in the initial firmware configuration, you must reinitialize the RAID array to use the B2B feature.
- Initializing the RAID array for the appliance can take a while.
- To prepare for accepting the license agreement, you must configure the web management interface when prompted, or from the CLI with the **web-mgmt** command.

After you define the base firmware configuration, the screen displays information that is similar to the following example. The screen shows information specific to your appliance.

```
Welcome to DataPower Gateway console configuration.
Copyright IBM Corporation 1999-2014

Version: IDG.7.1.0.0 build 000000 on 2014/12/08 12:24:18
Serial number: DPTP004

You must read and agree to the terms of the license agreement using the WebGUI.
If you did not configure the Web Management Interface, you must do it now with
the following command:
  configure terminal;web-mgmt;admin-state enabled;local-address 0 9090;exit

dp#
```

The previous sample shows the following information:

- The appliance is an IBM DataPower Gateway.
- The firmware version that is running on the appliance is 7.1.0.0 at the 000000 build level.
- The date and time that build 000000 was created is December 8, 2014 at 12:24:18.
- The serial number of this appliance is DPTP004.
- Instructions to access the license agreement.

What to do next

Access the WebGUI and accept the license agreement. See “3 of 3: Accepting the license agreement” on page 26.

3 of 3: Accepting the license agreement

You must access the WebGUI and accept the license agreement.

Before you begin

Define the base configuration for the appliance. See “2 of 3: Initializing the appliance” on page 24.

About this task

This procedure makes the following assumptions:

- The IP address for the Ethernet interface that is used to access the WebGUI is 10.10.13.35
- The specialized HTTP server to support WebGUI access listens on port 9090

Procedure

1. Open a web browser.
2. In the **Address** field, enter `https://10.10.13.35:9090`. If the web page is displayed successfully, the base firmware configuration is successful.
3. Log in to the appliance with the local administrator account and password.
4. Click **Login**. The WebGUI displays the license agreement.
 - Click **I agree** to accept the terms of the license agreement and non-IBM terms. The appliance reloads the firmware. In a few minutes, you can log in again after the appliance restarts.
 - If you do not agree, click **I do not agree**. The initialization of the appliance stops. You need to either power off the appliance or review and accept the license agreement.
5. Log in again to verify that the admin account and other administrators can access the appliance with their credentials.

What to do next

Configuration beyond the base configuration, such as creating application domains and user groups for service development. See “Completing the configuration”

Completing the configuration

Configuration beyond the base configuration is outside of the scope of this documentation.

- Use the administration documentation to complete the configuration of your appliance.
- Use the development documentation to create the services in the application domains of your appliance.

To access the information about configuration beyond the base configuration, see the IBM Knowledge Center.

Related information:

IBM Knowledge Center: IBM DataPower Gateway (<http://www.ibm.com/support/knowledgecenter/SS9H2Y>)

Chapter 5. Diagnostics and the appliance

How to diagnose problems with your appliance.

LEDs help you diagnose possible problems with the hardware components of an appliance.

LEDs on the front panel

The following figure describes LEDs on the front panel of the appliance.

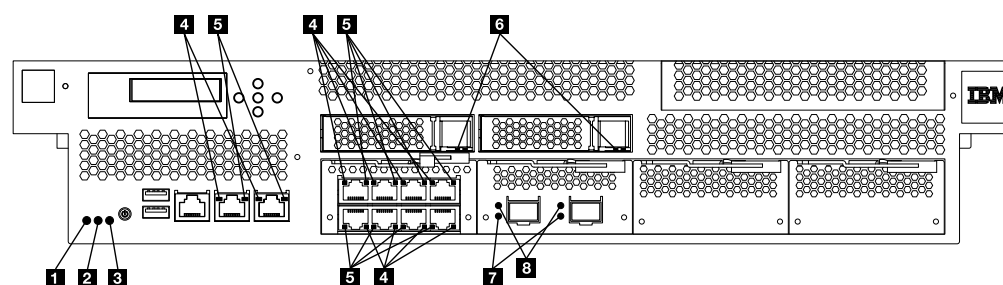


Figure 13. LEDs on the front of the appliance

The labels in this figure correspond to the following LEDs on the front of the appliance:

- 1** Fault LED.
This indicator shows steady amber light when the appliance detects a critical hardware event.
- 2** Locate LED.
This indicator shows steady blue light when activated.
- 3** Power LED.
This indicator shows green steady light when the power is connected and the appliance is turned on.
- 4** 1 Gb Ethernet port speed LED
Green steady light indicates a 1 Gb Ethernet connection.
Amber steady light indicates a 10 or 100 Mbps connection.
- 5** 1 Gb Ethernet port activity LED
Green steady light indicates when the port is connected.
Green flashing light corresponds to port activity.
- 6** Hard disk drive activity LED
Green steady light is present when the module is inserted fully.
Green flashing light corresponds to the reading or writing of data on the disk.
- 7** 10 Gb Ethernet port speed LED
Green steady light indicates a 1 Gb Ethernet connection.
Amber steady light indicates a 10 Gb Ethernet connection.

8 10 Gb Ethernet port activity LED

Green steady light indicates when the Ethernet port is connected.

Green flashing light corresponds to port activity.

LEDs on the rear panel

The LEDs on the rear panel of the appliance provide diagnostic information about power supply and fan modules.

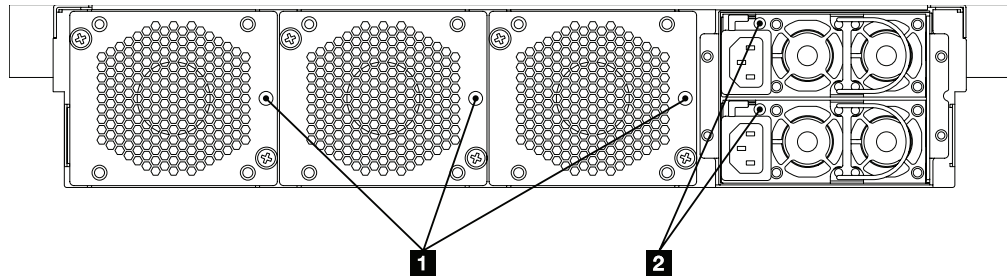


Figure 14. LEDs on the rear of the appliance

The labels in this figure correspond to the following LEDs on the rear of the appliance:

- 1** Fan LEDs.
 - Amber single flash shows when power is first applied to the fan module.
 - Amber steady light indicates that the fan is operating at less than 1200 RPM or there is a fault in the module.
 - No illumination when there is no power present or there is no problem.
- 2** Power module LEDs.
 - Green steady light indicates that the module is connected to a power source.
 - Red steady light indicates that the module is not functioning within design specifications.
 - If not illuminated, there is no power to the module.

Testing the hardware from the CLI

You can use the Global **test hardware** command to test the hardware from the CLI.

To use this command:

- You must establish an SSH connection to the appliance.
- You are in Global configuration mode (set with the **configure terminal** command).

To test the hardware from the configuration, enter the following commands:

```
# configure terminal
(config)# test hardware
```

Depending on the state of the hardware, the command produces output that shows the status of each component.

- success
- warning
- failure

The components are broken down into the following categories.

- Backtrace availability
- Interface diagnostics
- Fan diagnostics
- Cryptographic card diagnostics
- RAID volume diagnostics
- Sensors diagnostics
- CPU/memory diagnostics

Samples of success statements are as follows.

- [success] Status of voltage reading 'Voltage PU +12' : ok.
- [success] Status of voltage reading 'Voltage PU +3.3' : ok.
- [success] Status of voltage reading 'Voltage PU +5' : ok.
- [success] CPUs OK
- [success] Memory all present

DIMM_A1	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676D47
DIMM_A2	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676D62
DIMM_B1	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676C08
DIMM_B2	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676B80
DIMM_C1	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676C91
DIMM_C2	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676C59
DIMM_D1	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676BCD
DIMM_D2	0x0015	16384	MB	Micron	36KSF2G72PZ-1	0C676C71
DIMM_E1	0x001F	16384	MB	Micron	36KSF2G72PZ-1	0C676D68
DIMM_F1	0x001F	16384	MB	Micron	36KSF2G72PZ-1	0C676B99
DIMM_G1	0x001F	16384	MB	Micron	36KSF2G72PZ-1	0C676C68
DIMM_H1	0x001F	16384	MB	Micron	36KSF2G72PZ-1	0C676CE1
- [success] Statistics for interface 'eth10' show no errors
- [success] fan 1 operating within expected range
- [success] Status of crypto 'hardware2' : fully operational.

Samples of warning statements are as follows.

- [warning] No RAID Battery Backup Unit found.
- [warning] Physical link on interface 'eth10' is down.
- [warning] eth10 has invalid MAC (ff:ff:ff:ff:ff:ff)

Samples of failure statements are as follows.

- [failure] Memory in error DIMM_H1, 0x001F
- [failure] fan 2 operating outside expected range (rpm too low)
- [failure] Status of crypto 'not detected' is unknown.

The output of the **test hardware** command is part of any generated error report.

Running the diagnostic self-test

The appliance provides diagnostic self-test to help you test hardware components.

About this task

- Use the diagnostic self-test only when directed by IBM Support to help confirm a potential hardware problem with the appliance.
- The diagnostics user interface can differ depending on firmware release.

Procedure

1. Connect the serial cable.
2. If the appliance is not turned on, press the power button to turn on the appliance. The green power LED illuminates. You should hear the fans start.
3. When you see DPOS boot - press <ESC> within 7 seconds for boot options, press ESC. You should see the DPOS prompt followed by the boot options menu.

```
DPOS boot - press <ESC> within 7 seconds for boot options. <ESC>
DPOS> ?
Available DataPower boot options:

Boot Option   Description
-----
system        Normal System Startup
diagnostics    Run Standalone Hardware Diagnostics

DPOS>
```

4. At the DPOS prompt, enter diagnostics to start the appliance and display the diagnostics main menu.

```
DataPower Hardware Diagnostics Tool Version 1.0
(C) Copyright 2011, 2014 - IBM Corporation

Main Menu:
  1. Inventory                n/a
  2. BMC/Sensors              n/a
  3. Network                  n/a
  4. Memory                   n/a
  5. Disks                    n/a
  0. Exit Diagnostics

Select action>
```

5. To select a test to run, enter its number at the Select action prompt.

Results

After a test completes, the diagnostic self-test produces one of the following results.

- PASS
- FAIL
- RUNNING
- SKIP
- n/a

Status providers for sensors

The status providers for sensors can help diagnose hardware problems.

The appliance provides the following sensors status providers:

Fan speed sensors

Provides the measured speed in RPM for the fans in each fan module.

In the WebGUI search field, enter sensors and click **Fan Sensors**.

From the CLI, enter show sensors-fans.

Temperature sensors

Provides the measured temperature in degrees Celsius for internal components.

- Temperature of each CPU and each DIMM of the CPU components
- Air temperature
 - The System 1 sensor reads the temperature at the front of the appliance.
 - The System 2 sensor reads the temperature at the rear of the appliance.

In the WebGUI search field, enter sensors and click **Temperature Sensors**.

From the CLI, enter show sensors-temperature.

Voltage sensors

Provides the measured voltage for internal components.

In the WebGUI search field, enter Sensors and click **Voltage Sensors**.

From the CLI, enter show sensors-voltage.

Current sensors

Provides the measured current for the internal components in milliamperes.

In the WebGUI search field, enter sensors and click **Current Sensors**.

From the CLI, enter show sensors-current.

RAID battery backup status

Monitors the power backup unit connected to the RAID controller.

In the WebGUI search field, enter RAID and click **RAID Battery Backup Status**.

From the CLI, enter show raid-battery-module.

Other sensors

Provides truth values for the status of intrusion switch and power supply modules.

- A value of true indicates that the condition exists.
- A value of false indicates that the conditions does not exist.

For the intrusion switch, the value indicates whether it was tripped.

For each power supply, the value indicates the condition.

- Output Failure: The power supply module failed.
- AC lost: The power cord is not attached.

For each hard disk in the array and the battery, the values indicates the state.

- Fault
- Present

In the WebGUI search field, enter sensors and click **Other Sensors**.

From the CLI, enter show sensors-other.

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.

About this task

To begin troubleshooting hardware problems, use this workflow to determine whether to contact IBM Support for assistance or to order a replacement part. The workflow guides you to the appropriate troubleshooting task.

Procedure

1. Did you receive a critical event through SNMP or SMTP notification? The following messages are examples of critical messages.
 - [system][critic] sensors: tid(*id*): System power supply *number* has failed.
 - [system][critic] sensors-fans: tid(*id*): Chassis cooling fan *number* operating too slowly.

Yes Continue to step 3.

No Continue to step 2.
2. Does the log file contain a critical message?

Yes Continue to step 3.

No Continue to step 4.
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.

 - For a fan module, see “Troubleshooting fan modules” on page 34.
 - For a power supply module, see “Troubleshooting power supply modules” on page 34
 - For a hard disk drive module, see “Troubleshooting hard disk drive modules” on page 35.
 - For a FRU, contact IBM Support.

No Continue to step 4.
4. Is the Fault LED illuminated on the front of the appliance?

Yes Continue with step 5.

No See “Troubleshooting the appliance” on page 35.
5. Are the LEDs lit for any modules?

Yes

For a fan module, see “Troubleshooting fan modules” on page 34.

For the power supply module, see “Troubleshooting power supply modules” on page 34

For the hard disk drive module, see “Troubleshooting hard disk drive modules” on page 35.

No See “Troubleshooting the appliance” on page 35.

Troubleshooting fan modules

How to troubleshoot the fan modules.

About this task

When one or more fans are not working, turn off the appliance as soon as possible to avoid overheating. The remaining fans might not be able to maintain the appropriate environmental temperature.

Procedure

1. View sensor status.
 - In the WebGUI search field, enter sensors and click **Fan Sensors**.
 - From the CLI, enter show sensors-fans.
 - 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 one or more fans are running at less than 1200 RPM, contact IBM Support.
2. View the fan module LED.
 - Amber single flash shows when power is first applied to the fan module.
 - Amber steady light indicates that the fan is operating at less than 1200 RPM or there is a fault in the module.
 - No illumination when there is no power present or there is no problem.

What to do next

If the module is not seated correctly, remove and reinsert the module.

If you believe that the module must be replaced, contact IBM Support.

Troubleshooting power supply modules

How to troubleshoot the power supply module.

Procedure

1. View sensor status.
 - From the CLI, run the show other-sensors command.
 - In the WebGUI search field, enter Sensors and click **Other Sensors**.
2. View the power supply model LED.
 - Green steady light indicates that the module is connected to a power source.
 - Red steady light indicates that the module is not functioning within design specifications.
 - If not illuminated, there is no power to the module.
3. Remove the power cord from the power supply module. The appliance can operate with a single power supply module.

What to do next

If the module is not seated correctly, generally it is not locked in place. To ensure that the module is seated, remove and reinsert the module.

If the module has no AC power, ensure that the power cords are connected to the power supply and to a working AC power outlet.

If you believe that the module must be replaced, contact IBM Support.

Troubleshooting hard disk drive modules

How to troubleshoot the hard disk drive module.

Procedure

1. View RAID status.
 - From the WebGUI search field, enter RAID and click **RAID physical drive**.
 - From the CLI, run the **show raid-physical-drive** command.

If the state shows Unconfigured Bad, the hard disk drive is damaged and must be replaced.

2. Contact IBM Support to replace the hard disk drive module.

Troubleshooting the appliance

You can use the **test hardware** command and the diagnostic self-test to troubleshoot your appliance.

When you can connect to the CLI, use the **test hardware** command to troubleshoot your appliance.

When you cannot connect to the CLI, use the diagnostic self-test to troubleshoot your appliance.

Related concepts:

“Testing the hardware from the CLI” on page 28

You can use the Global **test hardware** command to test the hardware from the CLI.

Related tasks:

“Running the diagnostic self-test” on page 29

The appliance provides diagnostic self-test to help you test hardware components.

Chapter 7. Removing or replacing the appliance or parts

Appliance parts can be removed or replaced under certain conditions.

The appliance includes two of three types of replacement parts: Tier 2 customer replaceable unit (CRU) and field replaceable unit (FRU). Replacement parts for other IBM products can be any of the following types.

Tier 1 CRU

Replacement of a Tier 1 CRU is your responsibility.

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 or service contract.

FRU Replacement of a FRU must be performed by an IBM representative only.

For information about the terms of warranty, see the *IBM Statement of Limited Warranty* document in the *Resource Kit*.

Installation guidelines

Read this information before you remove or replace a component.

- Review the guidelines for handling static-sensitive devices and the safety statements. This information helps you work safely.
- Observe good housekeeping in the area where you are working. Place removed parts in a safe place.
- You do not have to disconnect the appliance from the power supply to install or replace a hot-swap module if directed to do so.
- Ensure that enough properly grounded electrical outlets exist for the appliance.
- Have a medium Phillips screwdriver available.
- Orange on a component indicates that the component can be hot-swapped. You can remove or install the component while the appliance is running. Orange can also indicate touch points on hot-swap components. See the instructions for removing or installing a specific hot-swap component for other procedures that you might have to complete before you remove or install the component.
- Blue on a component indicates touch points. You can grip touch points to remove or install the appliance, open, or close a latch, or for other purposes.

Guidelines for handling static-sensitive devices

Read these guidelines before you handle static-sensitive devices.

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

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

- Limit your movement. Movement can cause static electricity to build up around you.

- The use of a grounding system improves safety. 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 bare circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the chassis or rack for at least 2 seconds. Touching the chassis 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 extra care when you handle devices during times of cold weather. Indoor heating reduces ambient humidity and increases the conditions that cause static electricity to accumulate.

Part lists

The 8436 appliance includes Tier 2 CRU parts and FRU parts.

For information about the terms of warranty, see the *IBM Statement of Limited Warranty* document on the Resource Kit.

CRU parts list

The Ethernet modules, hard disk drive modules, fan modules, power supply modules, and power cords are Tier 2 CRU parts.

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 or service contract.

The following figure shows the CRU parts on the front and rear of the appliance.

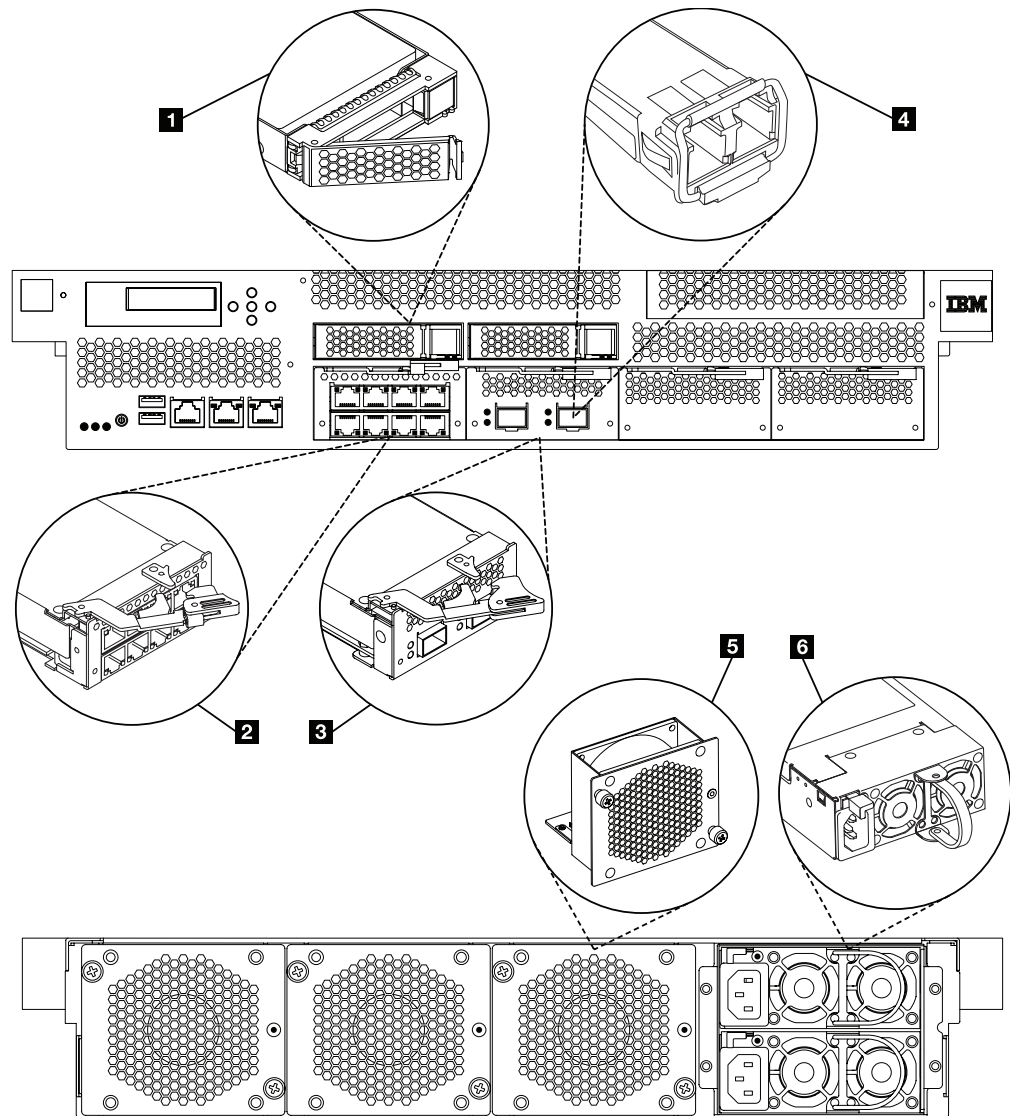


Figure 15. CRU part locations for the 8436 appliance.

The labels in this figure correspond to the following CRU components:

Table 3. Part numbers for the 8436 appliance.

Label	Description	Part number
1	Hard disk drive module assembly (complete)	00VM039
2	1 Gb Ethernet module with 8 ports for RJ45 interface	00VM052
3	10 Gb Ethernet module with 2 ports for SFP+ interface	00VM312
4	SFP+ SR transceiver	46N5592
5	Fan module	97Y1290
6	Power supply module	97Y0440
The following CRU parts are not shown in the figure.		
-	DE-9 to RJ45 serial console cable	46N5656
-	USB to RJ45 serial console cable	97Y0517
-	Rail kit to mount the appliance into the rack.	60Y0328

FRU parts list

The following table lists the FRU parts that are in the appliance.

Table 4. FRU part numbers for the appliance

Description	Part number
2U chassis without HSM - 8436-52X	00VM629
2U chassis with HSM - 8436-53X	00VM630
16 GB DDR3 DIMM	00VM040
16 GB eUSB flash drive	00VM049
Cavium crypto accelerator 200k PCIe card	00AN902
Cavium Hardware Security Module (HSM) FIPS card	00AN909
CMOS Button Cell battery	33F8354
CPU - Intel IvyBridge E5-2680-V2	00Y2786
RAID controller card with cache module	00VM235
RAID power backup capacitor and cable	00VM236

Power cords

When you receive your appliance, the shipping carton contains power cords for connection to country-specific outlets and for rack-mounted appliances.

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

Table 5. Power cord part numbers.

Country	Tier 2 CRU part number	Description
Argentina	39M5068	2.8m, 10A/220V, C13 to IRAM 2073
Australia / New Zealand	39M5102	2.8m, 10A/250V, C13 to AS/NZ 3112
Brazil	39M5240	2.8m, 10A/125V, C13 to NBR 14136
Chile	39M5165	2.8m, 10A/250V C13 to CEI 23-16
China	39M5206	2.8m, 10A/250V, C13 to GB2099.1
Denmark	39M5130	2.8m, 10A/250V, C13 to DK2-5a
Europe	39M5123	2.8m, 10A/250V, C13 to CEE 7/7
India	39M5226	2.8m, 10A/250V, C13 to IS 6538
Israel	39M5172	2.8m, 10A/250V, C13 to SI 32
Italy	39M5165	2.8m, 10A/240V, C13 to CEI 23-16
Japan	39M5186	2.8m, 12A/200V, C13 to JIS C-8303
	39M5199	2.8m, 12A/100V, C13 to JIS C-8303
Korea	39M5219	2.8m, 12A/250V, C13 to KSC 8305
South Africa	39M5144	2.8m, 10A/250V, C13 to SANS 164
Switzerland	39M5158	2.8m, 10A/250V, C13 to SEV 1011-S24507
Taiwan	39M5247	2.8m, 10A/125V, C13 to CNS 10917-3
	39M5254	2.8m, 10A/250V, C13 to CNS 10917-3

Table 5. Power cord part numbers. (continued)

Country	Tier 2 CRU part number	Description
United Kingdom	39M5151	2.8m, 10A/250V, C13 to BS 1363/A
United States	39M5081	2.8m, 10A/125V, C13 to NEMA 5-15P
	39M5095	2.8m, 10A/250V, C13 to NEMA 6-15P
Rack power cord (all countries)	39M5377	2.8m, 10A/125 - 250 VAC, IEC 320 C13 to IEC 320 C14

Turning off the appliance

When a procedure requires that the appliance is turned off, turn off power to the appliance.

Before you begin

Log in as an administrator or privileged role to save the running configuration to the persisted, startup configuration.

- From the GUI, click **Save configuration**.
- From the CLI, use the **write memory** command.

About this task

DANGER

Hazardous voltage, current, or energy levels are present inside. Do not open any cover or barrier. (L001)

Procedure

Initiate a graceful shutdown of the appliance.

From the GUI

1. In the Control Panel, click **System Control**.
2. Locate the **Shutdown** section.
3. From the **Mode** list, select **Power off System**.
4. In the **Delay** field, enter the amount of time to wait before the appliance starts the shutdown process.
5. Click **Shutdown**.

From the command line

Run the **shutdown poweroff** command.

From the appliance

Press the power button on the front of the chassis.

What to do next

Verify that the power LED at the front of the appliance is not illuminated.

Note: To remove all power from the system, the power cords must be unplugged from both power supply units.

Related concepts:

Chapter 5, “Diagnostics and the appliance,” on page 27

How to diagnose problems with your appliance.

“Power button” on page 4

The front of the appliance has a power button.

Replacing a fan module

How to replace a failed fan module.

Before you begin

You must have part 97Y1290 available.

You must turn off the appliance and replace a fan module when directed by IBM Support.

About this task

When one or more fan modules are not working, turn off the appliance as soon as possible to avoid overheating. The remaining fans might not be able to maintain the appropriate environmental temperature.

DANGER

Hazardous voltage, current, or energy levels are present inside. Do not open any cover or barrier. (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)

Procedure

1. If the appliance is not turned off, complete a graceful shutdown by pressing the power button at the front of the appliance. Wait until the power LED is no longer illuminated to indicate that the appliance power is turned off.
2. Unplug all network cables and power cords.
3. Remove the fan module.

The following figure shows the numbered components that are mentioned in the steps.

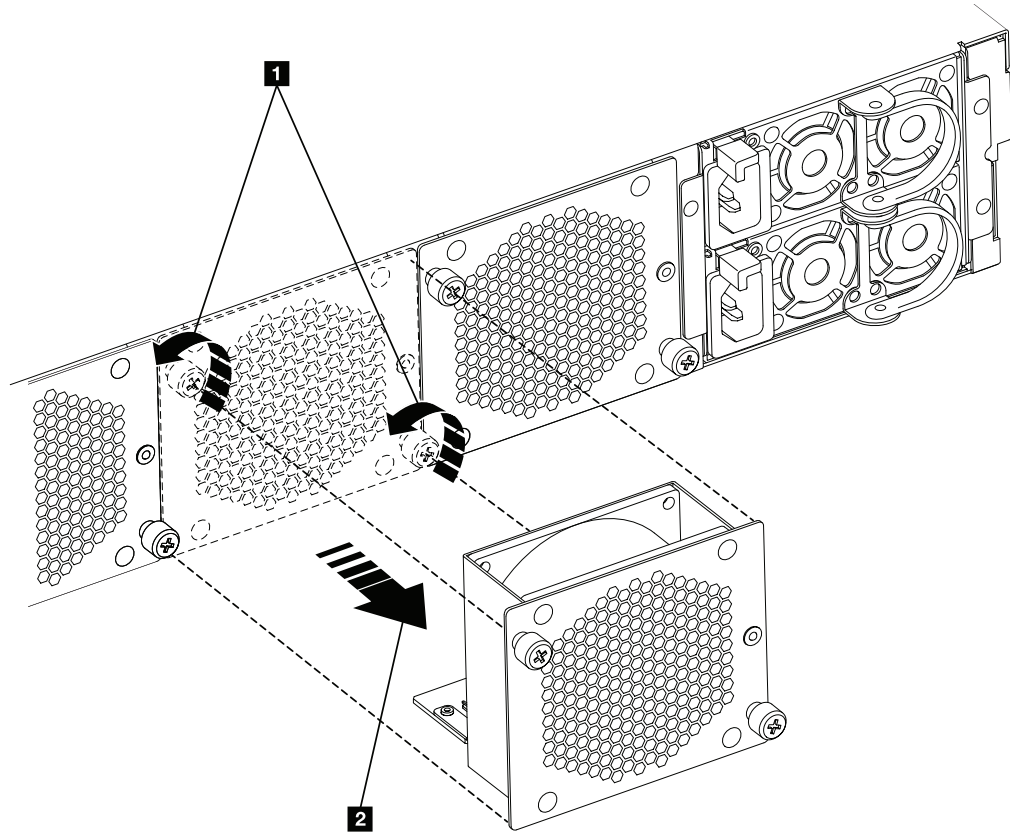


Figure 16. Removing a fan module

- a. Unscrew the two thumbscrews on the fan module until they twist without resistance **1**. The fan module thumbscrews are designed to remain attached to the fan module.
 - b. Pull the fan module to remove it from the appliance **2**.
4. Set the faulty module aside.

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 appliance as you insert the replacement module.
5. Unpack the replacement module.
6. Carefully align the replacement module, and insert until the module face is flush with the rear panel.
7. Tighten the thumbscrews on the fan module.
8. Plug in all power cords.
9. Turn on the appliance by pressing the power button.
10. After you replace the fan module, confirm that the new module is working by verifying that the following are true.
 - a. The fan module LED is not illuminated.
 - b. The fault LED at the front of the appliance is not illuminated.

What to do next

After you verify that the replacement module is working, return the failed part to IBM.

Related concepts:

“Fan modules” on page 7

The appliance has three fan modules.

“Returning an appliance or part” on page 54

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

Replacing a power supply module

Use this procedure to replace a power supply module.

Before you begin

You must have part 97Y0440 available.

About this task

There are two hot-swap power supplies in the rear of the appliance. You must replace a power supply module as soon as possible when directed by IBM Support or if any of the following situations occur.

- When the appliance generates a critical or warning message to indicate which power supply module is in a failure state.
- When the LED on one of the power supply modules is illuminated red.
- The amber fault LED at the front of the appliance is illuminated when a hardware fault is detected.

DANGER

Hazardous voltage, current, or energy levels are present inside. Do not open any cover or barrier. (L001)

DANGER

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

Procedure

1. Unplug the power cord of the failed module.
2. Remove the power supply module.

The following figure shows the numbered components that are mentioned in the steps.

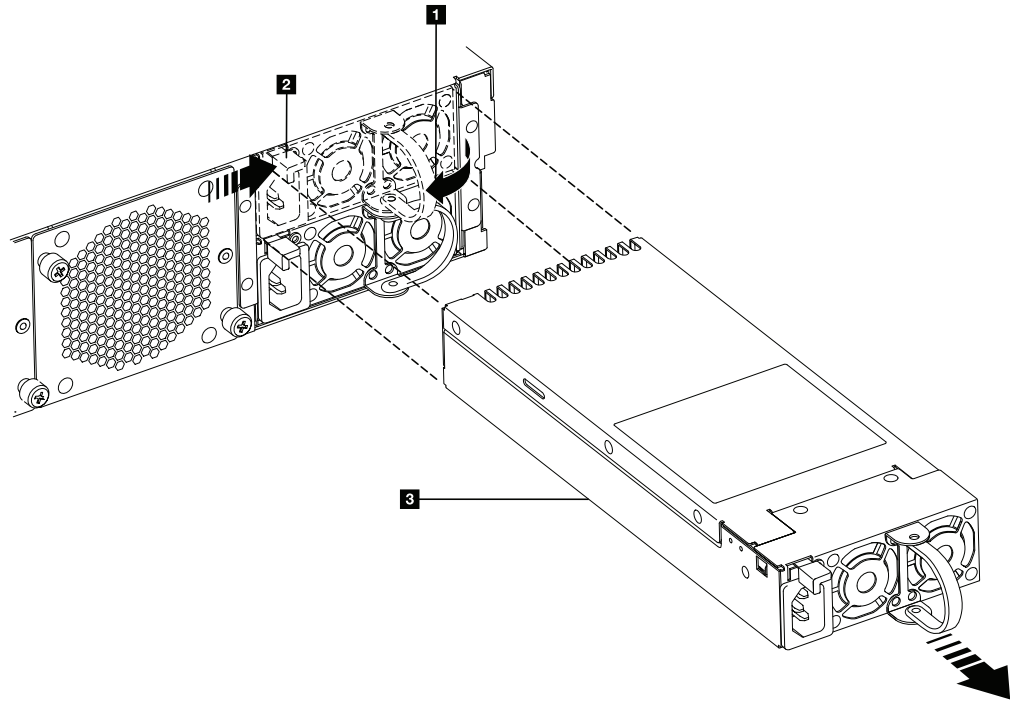


Figure 17. Removing a power supply module.

- a. Rotate, then firmly grip the handle **1** of the failed module.
- b. Push the orange release latch **2** toward the handle **1** and hold in this position.
- c. Pull the failed module from the appliance **3**.
3. When fully removed from 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 damage to the gold connectors as you insert the replacement module.
4. Unpack the replacement module.
5. Replace the module.
 - a. Carefully align the replacement module with the open space in the appliance.
 - b. Completely insert the module until the release latch clicks into place.
 - c. Pull the handle to ensure that the module is secure.
6. Plug in the power cord to the replaced module.
7. Verify that the new module is working.
 - a. The power supply LED is illuminated green.
 - b. The fault LED is not illuminated.

What to do next

After you verify that the replacement module is working, return the failed part to IBM.

Related concepts:

"Power supply modules" on page 8

The appliance is powered by two redundant power supply modules.

“Returning an appliance or part” on page 54

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

Replacing a hard disk drive module

How to replace the hard disk drive module.

Before you begin

You must have part 00VM039 available.

The hard disk drives are not hot-swap modules. Hot swapping the modules causes your system to crash, and might damage your appliance. You must turn off the appliance before you replace the hard disk drive module.

About this task

You need to replace a hard disk drive module when the hard disk state is Unconfigured Bad or if directed by IBM Support.

DANGER

When you work 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 install, maintain, or reconfigure 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 is 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 you install, move, or open 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 signal cables from the connectors.
4. Remove all cables from devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Procedure

1. If the appliance is not turned off, complete a graceful shutdown by pressing the power button at the front of the appliance. The green power LED turning off indicates that the appliance is powered off.

The following figure shows the numbered components that are mentioned in the steps.

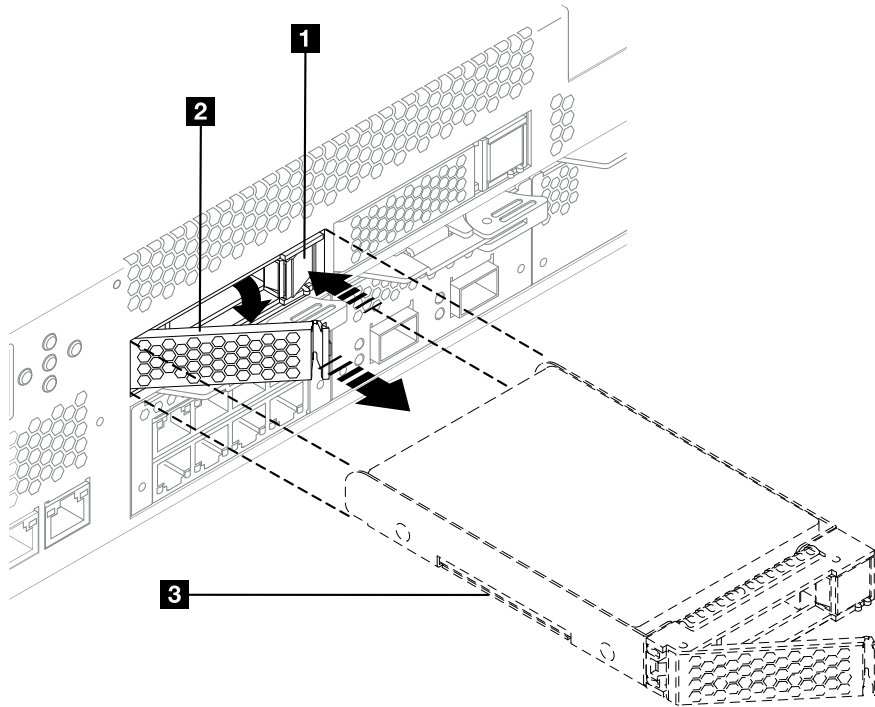


Figure 18. Removing a hard disk drive module.

2. Press the locking arm release latch **1** and the locking arm is released.
3. To unlock the module, rotate the locking arm approximately 40 degrees by pulling out **2**.
4. To remove the module, pull the module out of the appliance **3**.
5. 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 appliance as you insert the replacement module.

6. Unpack the replacement module.
7. Carefully align the module, and insert into the opening until the module is seated.
8. Push the locking arm towards the appliance until the release latch clicks into place.
9. Connect all network cables and power cords.
10. Turn on the appliance by pressing the power button that is on the front of the appliance.
11. Verify that the power LED is illuminated steady green.
12. Verify that the new module is working.
 - a. The hard disk drive activity LED illuminates steady green.
 - b. The hard disk state is not Unconfigured Bad.

What to do next

After you verify that the replacement module is working, return the failed part to IBM.

Related concepts:

“Hard disk drive modules” on page 7

The 8436 appliance has two hard disk drive modules.

“Returning an appliance or part” on page 54

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

Replacing an Ethernet module

The procedure to replace an Ethernet module.

Before you begin

You must have the Ethernet module available.

- The part number of the 1 GB Ethernet module is 00VM052.
- The part number of the 10 GB Ethernet module is 00VM312.

You must turn off the appliance before you replace the Ethernet module. When you disconnect network cables from the appliance, be sure to label each so that you can connect them in the proper location.

About this task

Removal instructions are the same for both modules.

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.
- If the output from the **test hardware** command includes Expected number of interfaces: x - found y.
- When you use listing, all the Ethernet ports in the module are not included in the list:
 - From the WebGUI search field, enter ethernet and click **Ethernet Interfaces**.
 - From the CLI, use the **show interface** command.

DANGER

When you work 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 install, maintain, or reconfigure 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 is 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 you install, move, or open 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 signal cables from the connectors.
4. Remove all cables from devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

DANGER

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

Procedure

1. If the appliance is not turned off, complete a graceful shutdown by pressing the power button at the front of the appliance. When the power LED is no longer illuminated, the appliance is powered off.

The following figure shows the numbered components that are mentioned in the steps.

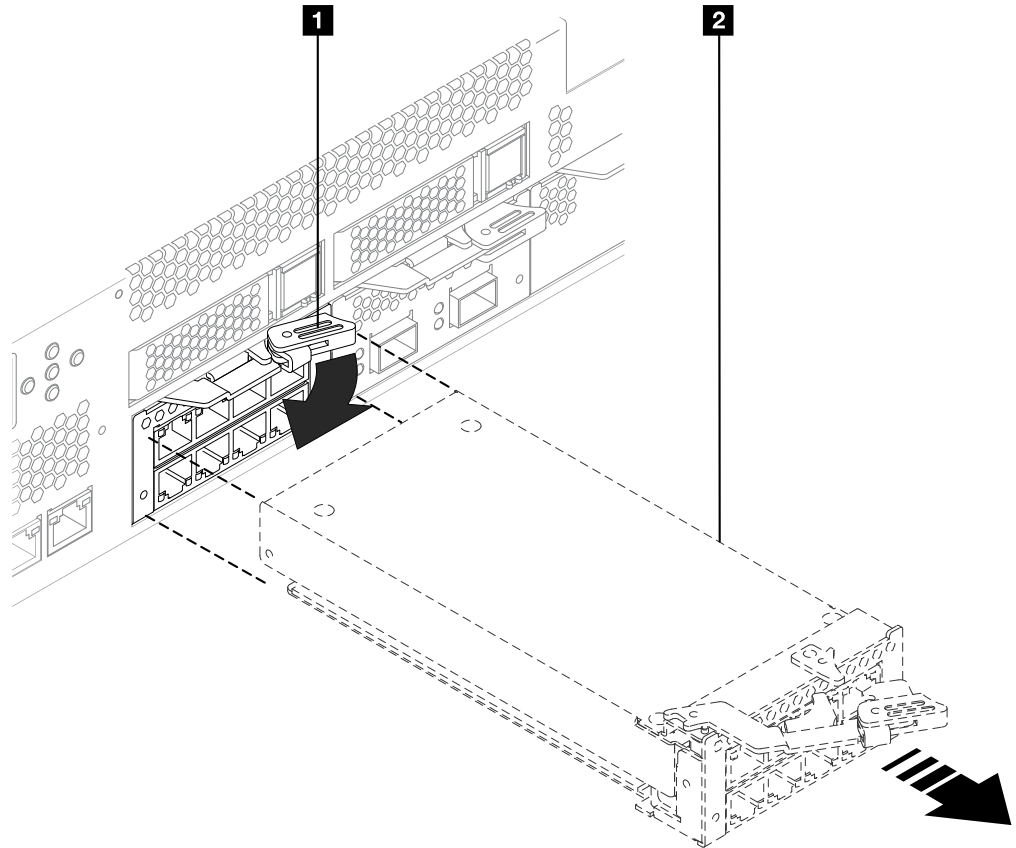


Figure 19. Removing the 1 Gb Ethernet module.

2. Grasp the blue latch **1** rotate slightly and pull outward.
3. Pull the module out of the appliance **2** with care to support the module weight as it exits.
4. 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.
5. Unpack the replacement module.
6. Carefully align the module, and insert into the appliance.
7. Push the Ethernet module forward until the module is securely in place.
8. Push the blue latch back in place to lock the module.
9. Turn on the appliance by pressing the power button at the front of the appliance and verify that the power LED is illuminated steady green.
10. After you replace the module, verify that the new module is working.
 - a. You can connect to the network after you plug in the cable and the activity LED is illuminated.
 - b. The fault LED light is not illuminated.

What to do next

After you verify that the replacement module is working, return the failed part to IBM.

Related concepts:

“Network ports” on page 5

The network ports transmit and receive data communications between the appliance and external sources.

“Returning an appliance or part” on page 54

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

Removing an SFP+ transceiver

How to remove a 10 Gb SFP+ transceiver.

Before you begin

The appliance has 2 short reach transceivers. You remove a short reach transceiver to replace with a long reach transceiver or to use an SFP+ Copper Direct Attach twinaxial cable.

You must have an SFP+ transceiver available.

- The part number of the short reach transceiver is 46N5592.

About this task

DANGER

When you work 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 install, maintain, or reconfigure 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 is 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 you install, move, or open 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 signal cables from the connectors.
4. Remove all cables from devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Procedure

1. If the appliance is not turned off, complete a graceful shutdown by pressing the power button at the front of the appliance. Wait until the power LED is no longer illuminated.
2. Unplug all power cords. The following figure shows the numbered components that are mentioned in the following steps.

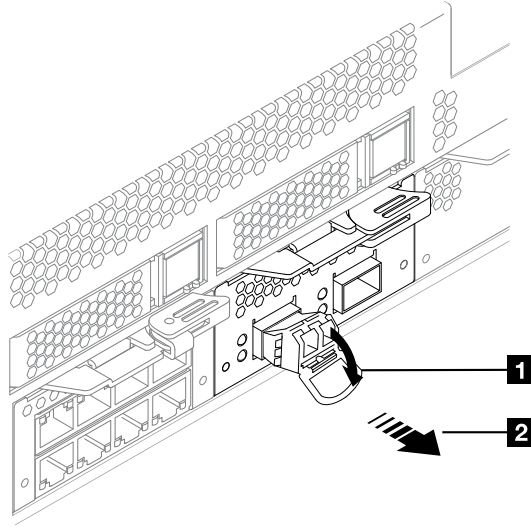


Figure 20. Removing the SFP transceiver

3. Pull downward on the latch at the front of the transceiver **1**.
4. Pull the transceiver out of the appliance by pulling forward on the release latch **2**.

Returning an appliance or part

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

Note: You might be charged for the replacement appliance or part if IBM does not receive the defective appliance or part within a reasonable amount of time. Contact IBM Support with any questions.

Removing the appliance from the rack

After you install the appliance in the rack, you generally remove it only to move it to another position in the rack.

About this task

DANGER

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

CAUTION:



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

Procedure

1. If the appliance is not turned off, press the power button on the front of the chassis. The power LED is no longer illuminated when the power is turned off.
2. Unplug all power cords from the appliance.

The following figure shows the numbered components that are mentioned in the steps.

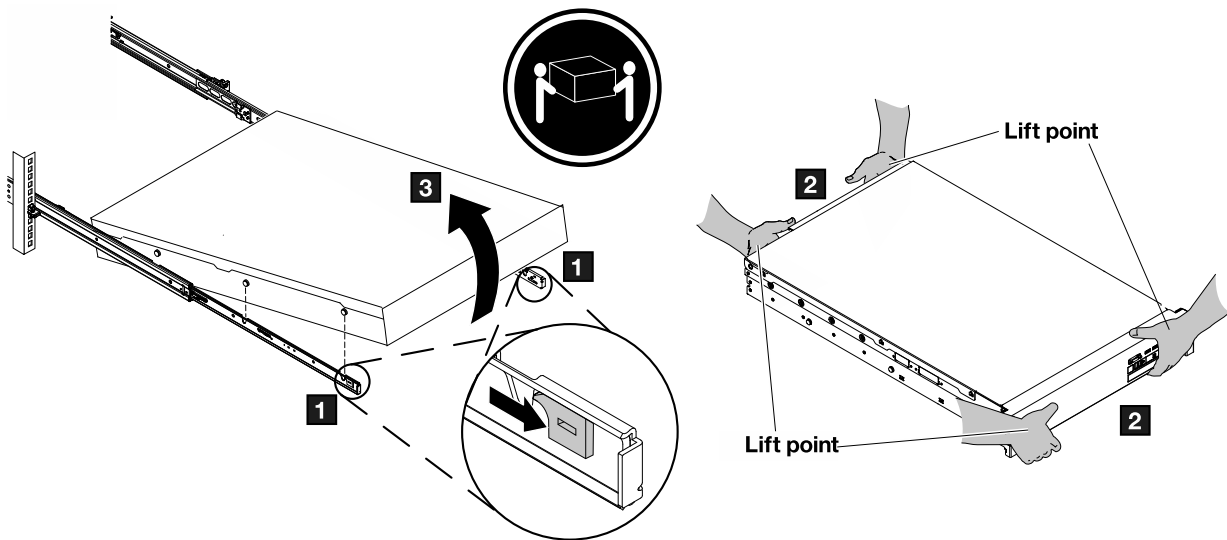


Figure 21. Unlatching and rotating the front of the appliance.

3. Separate the appliance from the rails.
 - a. Pull the locking levers **1** forward.
 - b. Make sure that two people support the front and the rear of the appliance at lifting points **2**.
 - c. Lift the front of the appliance up slightly **3** to clear the nailhead from the slot.
 - d. Unlatch and lift the front of the appliance.
 - e.
4. Lift the appliance directly from the rails.
 - a. After the front nailheads clear the latches, lift the rear of the appliance to make the appliance level.
 - b. Lift the appliance directly out of the rack from Lift points **1**, and **2**.

5. Place the appliance on a sturdy, clean surface.
6. Slide the rails back in the rack.

Related concepts:

“Returning an appliance or part” on page 54

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

Getting help and technical assistance

You can obtain help and technical assistance information from IBM.

IBM products provide various places where you can find help and get technical assistance.

Searchable 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 documented.

Documentation

The IBM DataPower documentation is in IBM Knowledge Center. When you select your specific product in IBM Knowledge Center, you are taken to the support area for that product.

IBM Support

If you cannot find an adequate resolution in the documentation, use the **Search** feature from the product-specific support page with descriptive keywords or phrases. In addition to a keyword search, you can search for the following IBM resources from the product-specific support page.

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

Related information:

IBM Knowledge Center: IBM DataPower Gateway (<http://www.ibm.com/support/knowledgecenter/SS9H2Y>)

Contacting IBM Support

How to contact IBM Support.

IBM Software Support provides support for this appliance. IBM Software Support can help debug problems with the appliance, including hardware problems.


Before you contact IBM Support, verify that you meet 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 a DataPower appliance in the following ways:

- Use the service request (SR) problem submission web page. You need to sign in with your IBM user ID and password.
- Contact IBM via the telephone.

Related information:

 IBM Software Support Handbook (<http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>)

Removing batteries

How to remove the battery and capacitor for end-of-life recycling.

About this task

DANGER

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

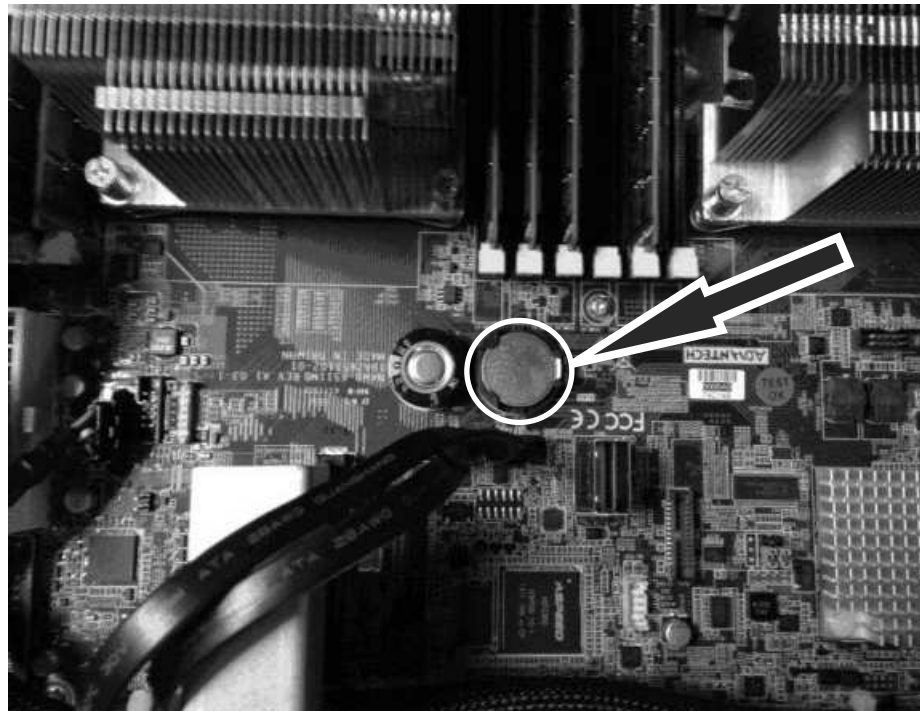
DANGER

Improper disposal or incineration of batteries or capacitors can cause life-threatening injury.

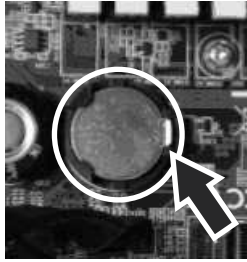
The 8436 appliance does not have any internal user serviceable parts. Any battery or capacitor is to be accessed and removed only by trained personnel. These instructions apply only to end-of-life recycling procedures.

Procedure

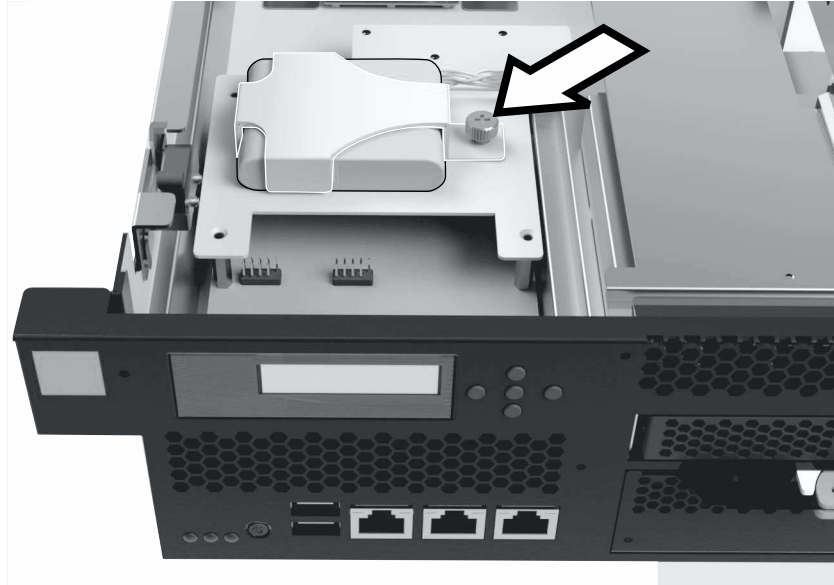
1. Turn off the appliance and disconnect all power cords and external cables from the appliance.
2. Remove the cover of the appliance.
3. Locate the CMOS battery on the system board next. The battery is next to the RAM slots.



4. Remove the battery with your fingers to release and lift the battery from the connector.



5. Locate the RAID capacitor inside the chassis.



6. Loosen the indicated capacitor cover retention screw to remove the capacitor cover.
7. Disconnect the RAID capacitor power connector and remove the capacitor from the appliance.

What to do next

Dispose of batteries and capacitors as required by your local ordinances or regulations.

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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 Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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 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.

Responsible manufacturer:

International Business Machines Corp.
New Orchard Road
Armonk, New York, 10504
914-499-1900

European Community contact:

IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Telephone: +49 (0) 800 225 5423
Email: lugi@de.ibm.com

Germany Class A statement

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:

International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:

IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Telephone: +49 (0) 800 225 5423
Email: lugi@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用する
と電波妨害を引き起こすことがあります。この場合には使用者が適切な対策
を講ずるよう要求されることがあります。 VCCI-A

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.

Japan Electronics and Information Technology Industries Association (JEITA) statement

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guideline (products less than or equal to 20 A per phase).

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적으로 합니다.

This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать
радиопомехи, для снижения которых необходимы
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People's Republic of China Class A electronic emission statement

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Part Number: 97Y1318

EC L68830



(1P) P/N: 97Y1318

