

Power Systems

*Hardware Management Console  
7042-CR4, 7042-CR5, 7042-CR6,  
7042-CR7, 7042-C06, 7042-C07, and  
7042-C08 service*

**IBM**



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7042-C08 service*

**IBM**

**Note**

Before using this information and the product it supports, read the information in “Safety notices” on page v, “Notices” on page 73, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM Power Systems™ servers that contain the POWER7 processor and to all associated models.

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## Safety notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

### World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

### German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

### Laser safety information

IBM® servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

### Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.

## DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

## DANGER

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

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



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

#### CAUTION

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

(R001)

**CAUTION:**

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

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

(R002)

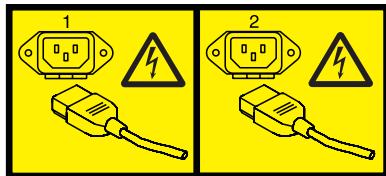
(L001)



(L002)



(L003)



or



All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval 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 could 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 those specified herein might result in hazardous radiation exposure.

(C026)

**CAUTION:**

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

**CAUTION:**

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

**CAUTION:**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

**CAUTION:**

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

*Do Not:*

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

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

## **Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE**

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metalically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metalically to OSP wiring.

**Note:** All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

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# Hardware Management Console 7042-CR4, 7042-CR5, 7042-CR6, 7042-CR7, 7042-C06, 7042-C07, and 7042-C08 service

You can use the Hardware management console (HMC) to perform problem isolation and to repair consoles that are attached to IBM servers.

---

## Hardware Management Console operations

Learn about maintaining and servicing the Hardware Management Console (HMC).

The HMC connects to one or more managed systems to perform various functions. The HMC's primary functions include:

- Providing a console for system administrators and service providers to manage server hardware.
- Creating and maintaining a multiple partitioned environment on a managed system.
- Detecting, reporting, and storing changes in hardware conditions.
- Acting as a service focal point for service providers to determine an appropriate service strategy.
- Displaying operating system session terminals for each partition.

The HMC is delivered with its machine code preinstalled on the disk drive. After the system is installed and connected to a managed system, you can perform system management tasks.

The HMC machine code does not have provisions for loading or running additional applications that are not related to hardware management or service. All the tasks you need to maintain the managed system, the underlying operating system, and the HMC machine code are available by using the HMC management interface.

## Identifying your HMC

This information supports HMC machine types 7042-CR4, 7042-CR5, 7042-CR6, 7042-CR7, 7042-C06, 7042-C07, and 7042-C08.

The following illustrations identify each of the machine type 7042 models and show the cable connections located on the back of each HMC model.

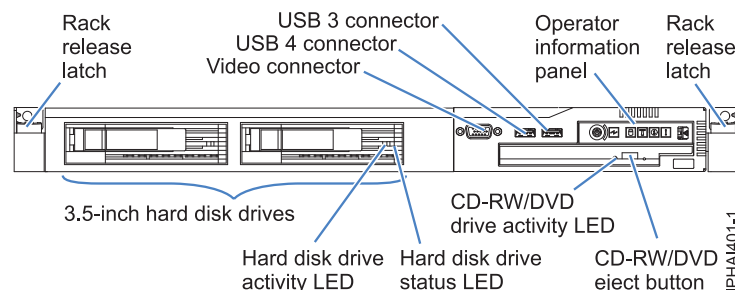


Figure 1. Model 7042-CR4 (Front view)

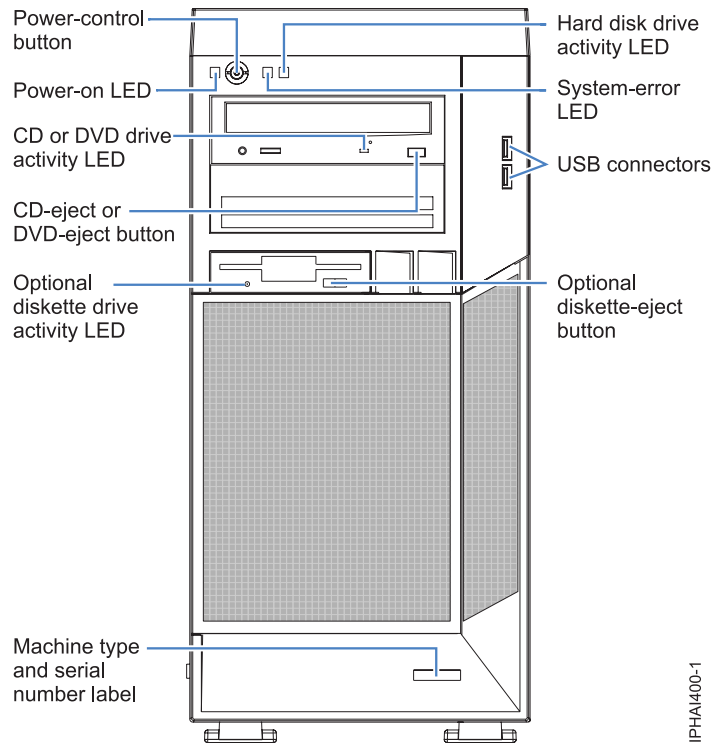


Figure 2. Model 7042-C06, 7042-C07, and 7042-C08 (Front view)

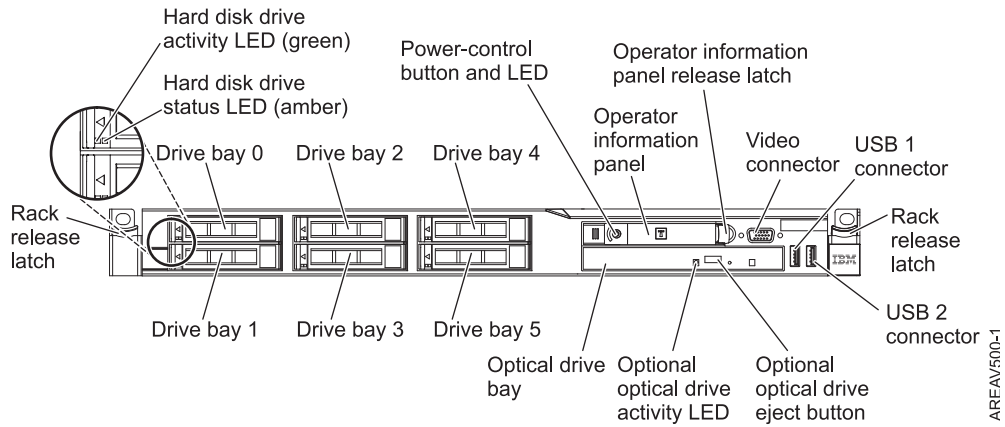


Figure 3. Model 7042-CR5 (Front view)

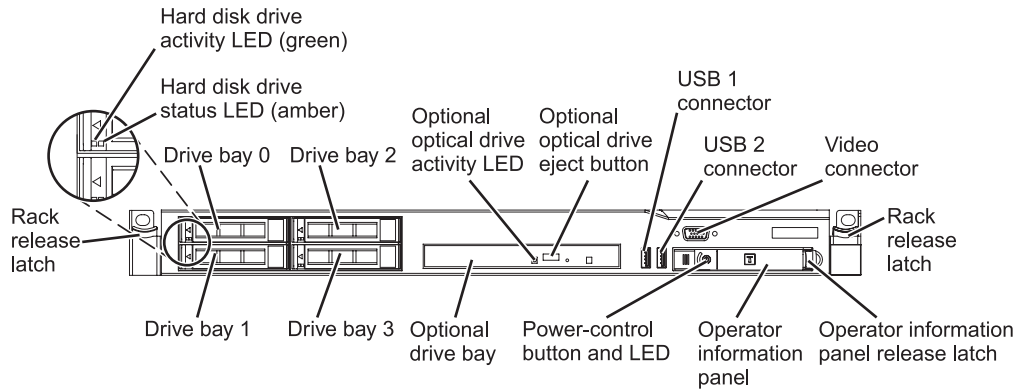


Figure 4. Model 7042-CR6 (Front view)

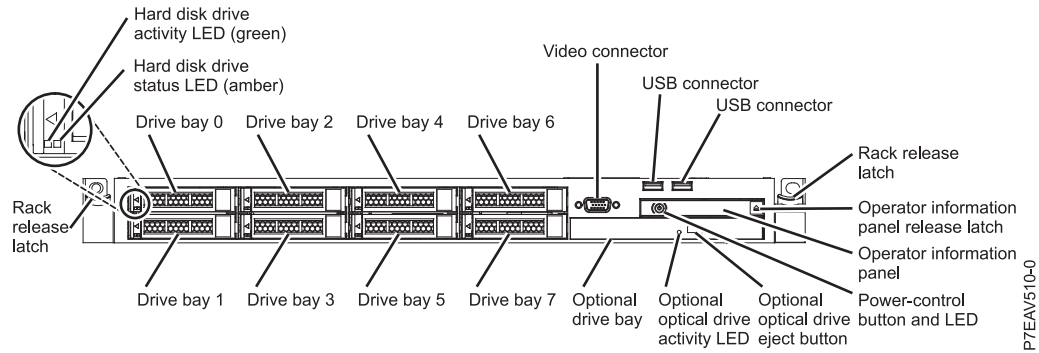


Figure 5. Model 7042-CR7 (Front view of the server model with a 2.5-inch hard disk drive)

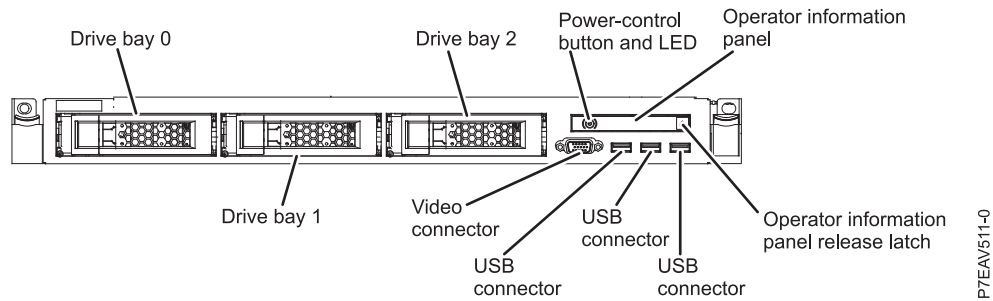


Figure 6. Model 7042-CR7 (Front view of the server model with a 3.5-inch hard disk drive)

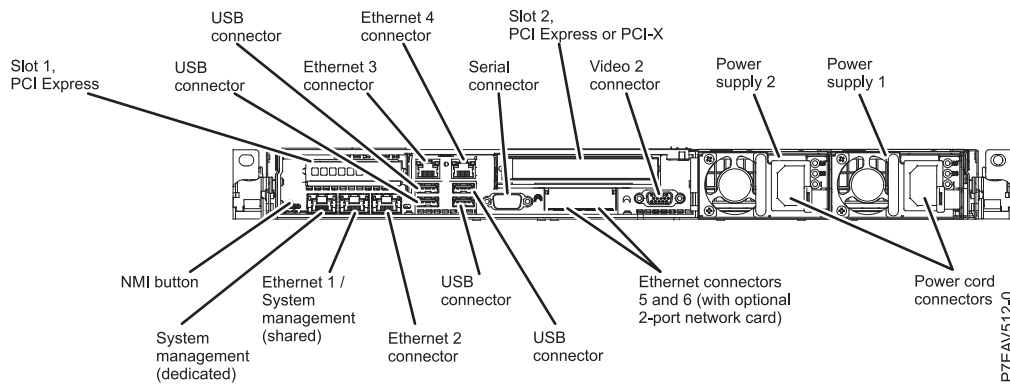


Figure 7. Model 7042-CR7 (Rear view)

## Managed system operation

The HMC graphical interface provides the functions needed to create and maintain a partitioned environment on a managed system. Using the interface allows for direct manipulation of HMC-defined objects and increased information regarding detected changes in hardware conditions.

The managed system can be run as a partitioned system, sometimes referred to as *logically partitioned*. This means that the managed system can run multiple operating systems simultaneously. The system can also run as a large single partition, which is known as the *manufacturing default configuration* when the system is delivered. If the system has been partitioned, then the single partition that uses all the system resources is referred to as a *full system partition*.

Partitioning provides users with the ability to divide a single managed system into several systems. Each of these systems, running in a partition, can run applications in multiple, independent environments simultaneously. Logical partitioning makes it possible for a user to run a single application using different sets of data on separate partitions, as if that application were running independently on separate physical systems. By creating partitions, for example, a company can test its programs in one partition while developing the same program in another, at the same time, all using the same system. This same system partitioning method is more cost-effective, potentially eliminating the need for a separate test system.

The full system partition is no different from the traditional way of using a system. The single server uses all of its resources as one system.

## HMC system diagnostics

Your HMC system also provides a set of diagnostic procedures to be used when troubleshooting HMC problems. For details on accessing the HMC diagnostics, see “HMC diagnostics” on page 5.

## Power on the HMC

For HMC power-on procedures, see “Power on the HMC” on page 48.

## Power off the HMC

For HMC power-off procedures, see “Power off the HMC” on page 48.

## Power-on self-test

To perform power-on self-test procedures, see “Power-on self-test” on page 48.

## Specifications and system unit locations

Your HMC system is based on a model of personal computer. For information about system specifications and system unit locations, use the appropriate personal computer hardware maintenance manuals. See “Equivalent maintenance information for the HMC personal computer hardware” on page 6.

### Cable the HMC

For HMC power off procedures, see “Cabling the HMC” on page 38.

### External ac power cable for the HMC

To avoid electrical shock, a power cable with a grounded attachment plug is provided. Use only properly grounded outlets.

Power cables used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). These power cords consist of the following parts:

- Electrical cables, type ST
- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) L6-30P
- Appliance couplers complying with International Electrotechnical Commission (IEC) Standard 320, Sheet C13 and C14

Power cables used in other countries consist of the following parts:

- Electrical cables, type HD21 or HD22
- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used
- Appliance couplers complying with the International Electrotechnical Commission (IEC) Standard 320, Sheet C13 and C14

For a listing of power cables used by the HMC, see “Power cords” on page 36.

For a more complete listing of power cords, see Planning for power.

---

## HMC diagnostics

Learn to use the HMC diagnostics when determining the state of or capability of a component found in the HMC to perform its functions.

If a problem is determined to be in your HMC, read, understand, and then perform the procedures found in this topic.

The HMC problem analysis procedure will guide you to the appropriate repair action. Occasionally, you will be directed to the maintenance documentation for the HMC base personal computer. When this occurs, the maintenance documentation for the personal computer is used to complete the repair action.

### HMC system reference code

System reference codes (SRCs) are the foundation of the Hardware Management Console diagnostics.

All SRCs, also known as error codes, that pertain to the function of the HMC can be found in System reference codes (Cxxx-Hxxx).

HMC connection error codes are 6 digits in length and begin with a 0, all other HMC error codes are 8 digits in length and begin with the alphabetic characters HSC. The HMC error codes are organized in the following categories:

- 0xxxxx connection error codes
- HSCExxxx console events error codes
- HSCFxxxx Licensed Internal Code error codes
- HSCIxxxx Inventory Scout Services error codes
- HSCLxxxx error codes
- HSCPxxxx platform management error codes
- HSCSxxxx Service Focal Point error codes

## Equivalent maintenance information for the HMC personal computer hardware

Use the information provided to help cross-reference your HMC equivalent machine type and model number for the base personal computer. You can use the entries in this table to link directly to the base PC maintenance documentation.

*Table 1. Equivalent maintenance information for the HMC's personal computer hardware*

HMC machine type and model number (available on the serial number plate of your HMC)	Equivalent PC server machine type and model number	Hardware maintenance manuals (HMM)
7310-CR4, 7042-CR4	7978 Model 42U or 7978 Model PBT	See Problem determination and service guide
7042-CR5	7946 Model 52U or 7946 Model PAL	See Problem determination and service guide
7042-CR6	7944 Model PCH	See Problem determination and service guide
7042-CR7	7914 Model PCH	See Problem determination and service guide
7310-C06 and 7042-C06	4362 Model 52U or 4362 Model PAT	See Problem determination and service guide
7042-C07	4367 Model 32U, 4367 Model PAM or 4367 Model PAR	See Problem determination and service guide
7042-C08	7946 Model 52U	See Problem determination and service guide

For the latest information regarding maintenance of your HMC PC, system board specifications, and parts, see PC hardware maintenance manuals. To obtain the latest versions of these publications through the IBM website, follow this procedure:

1. Go to the IBM website (<http://www.ibm.com>).
2. Select **Support & downloads**.
3. Go to **Select product or service type for support** and expand the Choose support type box.
4. Select **System x** from the menu listing, and then select the **Go** icon.
5. On the right side of the menu, locate the Quick path box and type in the Equivalent PC Server machine type that corresponds to your HMC machine type, and then select **Go**.
6. Select the **Troubleshooting** tab, located on the support menu.
7. In the Available topics box select **Service/Support guide**. Then click the **Go** icon.
8. Click on the link that appears below Service/Support guide.
9. Click on the file link number listed below File link. The file for the hardware maintenance manual will open.

## Diagnostics, test, and recovery

Describes some of the diagnostic tools available for use on your HMC hardware related problems.

Choose from one of the following procedures to help in diagnosing a hardware related problem.

- Power-on self-test (POST)
  - POST beep codes
  - Error code format
- Sector disk drive scanning procedure

To do a scan of your HMC disk drive, do the following:

  1. Power off the HMC.
  2. Power on the HMC.
  3. As the HMC is rebooting, watch the HMC display. After the second BroadCom Ethernet driver screen is displayed, press CTRL + A.
  4. From the list of options, select **Disk Utilities**.
  5. Select **Verify Disk Media** The HMC will perform a scan of your disk drive.
- PC-Doctor

**Note:** For additional information about items in the previous list, see the appropriate personal computer hardware maintenance manual. To access the personal computer hardware maintenance documentation, see “Equivalent maintenance information for the HMC personal computer hardware” on page 6.

### PC-Doctor

PC-Doctor is a set of diagnostic and system information tools included with the HMC. In rack-mounted HMC models, PC-Doctor is preinstalled on the system. PC-Doctor is included on the HMC Recovery CDs for Version 3.0 Release 3 (or later) for HMC models that are not rack-mounted.

#### Note:

- ISO image support is available on CD-ROM for the PC models 8485, 4362 and the HMC models 7xxx-C05 and 7xxx-C06 or at the <http://www.ibm.com> website.
- ISO image support is available on diskettes or CD-ROM for the PC models 8305, 8187, 8141 and the HMC models 7xxx-C03 and 7xxx-C04 HMCs or at the <http://www.lenovo.com> website.

### Running PC-Doctor on an HMC that is not rack-mounted

Before accessing the PC-Doctor application on the HMC, create a bootable diskette (referred to as the PC-Doctor diskette in this topic).

To create the diskette:

1. Insert volume 2 of HMC Recovery CD into the CD drive.
2. Select **Start > My Computer**.
3. Open the CD and go to the pc\_diag directory.
4. Open the readme file and follow the instructions for creating the PC-Doctor diskette using the pc\_diag.exe tool.

To run PC-Doctor:

1. Power off the HMC.
2. Insert the PC-Doctor diskette that you created.
3. Power on the HMC.

If the HMC does not read the PC-Doctor diskette upon startup, the problem might be due to the startup sequence. To make the PC-Doctor diskette the primary startup media, do the following:

1. Power off the HMC.
2. Power on the HMC and when the Setup Utility prompts during startup, press F1.
3. Select the **Startup** tab.
4. Highlight **Startup Sequence** and press Enter.
5. Under **Primary Startup Sequence**, make sure the first startup device is set to **Removable**. Then follow the remainder of the instructions on the screen to complete the procedure.

## Running PC-Doctor on a rack-mounted HMC

Teaches you how to run PC-Doctor from your rack-mounted HMC.

### Note:

- A rack-mounted HMC has PC-Doctor preinstalled in read-only memory (ROM). The diagnostics are run from ROM, there is no boot media required.
- If you are directed by a your service provider, you can obtain and install updated versions of PC-Doctor.
  - The updates for PC model 7978 and HMC 7xxx-CR4 can be obtained from diskette, CD-ROM, or at the <http://www.ibm.com> website.
  - The updates for PC models 8837, 8676 and HMC models 7xxx-CR3, and 7xxx-CR2 can be obtained from diskettes, or at the <http://www.ibm.com> website.

To run PC-Doctor on a rack-mounted HMC:

1. Turn off the power to the HMC.
2. Turn on the power to the HMC and press F2 when the message F2 for Diagnostics is displayed, press F2.
3. If prompted, type the appropriate password, then press Enter.
4. Select either **Extended** or **Basic** from the top of the screen.
5. From the diagnostic screen, select the test you want to run from the list and then follow all instructions.

**Note:** For additional information about HMC diagnostics, go to the diagnostics section in the appropriate personal computer hardware maintenance manual. To access the personal computer hardware maintenance documentation, see “Equivalent maintenance information for the HMC personal computer hardware” on page 6.

## Connector and hard disk drive restrictions for the HMC

Identifies the connector and disk drive restriction found on your HMC.

Models 7310-C05, 7042-CR4, 7042-CR5, 7042-C06, and 7042-C07 have the following two hard disk drive restrictions:

- Use of the parallel port

**Note:** The HMC is a closed system and as such, the hardware is used in a limited manner. No device drivers or code support any peripheral devices that use a parallel port.

- Use of more than one hard disk drive

To view the location of each HMC connector, see “Cabling the HMC” on page 38

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## Removal and replacement procedures

Select and then perform the part removal and replacement procedures for the personal computer on which your Hardware Management Console (HMC) is based.

Depending on the system configuration, when you are directed to exchange parts, run tests, or change configuration data, the interface to the managed systems will be unavailable. If possible, before starting any of these tasks, ensure that all system management tasks are completed and all critical data is backed up.

**Attention:**

- Removing power from an HMC might cause loss of data on the disk drives. If power must be removed, select Power Off from the HMC user interface. This action shuts down the operating system and turns off the power to the HMC. See “HMC and system power-on and power-off procedures” on page 48 before proceeding with any of the removal procedures.
- The system board, adapters, memory modules, and processor modules can be damaged by electrostatic discharge. If you are directed to exchange FRUs in an HMC, see “Handling Electro-Static Discharge (ESD) Sensitive Devices ” in the appropriate PC maintenance information manuals.

When you are referred to the hardware maintenance manual for the personal computer, use the hardware maintenance manual for the appropriate personal computer machine type. To find documentation about the base HMC personal computer and its components, see “Equivalent maintenance information for the HMC personal computer hardware.”

## Equivalent maintenance information for the HMC personal computer hardware

Use the information provided to help cross-reference your HMC equivalent machine type and model number for the base personal computer. You can use the entries in this table to link directly to the base PC maintenance documentation.

*Table 2. Equivalent maintenance information for the HMC's personal computer hardware*

HMC machine type and model number (available on the serial number plate of your HMC)	Equivalent PC server machine type and model number	Hardware maintenance manuals (HMM)
7310-CR4, 7042-CR4	7978 Model 42U or 7978 Model PBT	See Problem determination and service guide
7042-CR5	7946 Model 52U or 7946 Model PAL	See Problem determination and service guide
7042-CR6	7944 Model PCH	See Problem determination and service guide
7042-CR7	7914 Model PCH	See Problem determination and service guide
7310-C06 and 7042-C06	4362 Model 52U or 4362 Model PAT	See Problem determination and service guide
7042-C07	4367 Model 32U, 4367 Model PAM or 4367 Model PAR	See Problem determination and service guide
7042-C08	7946 Model 52U	See Problem determination and service guide

For the latest information regarding maintenance of your HMC PC, system board specifications, and parts, see PC hardware maintenance manuals. To obtain the latest versions of these publications through the IBM website, follow this procedure:

1. Go to the IBM website (<http://www.ibm.com>).
2. Select **Support & downloads**.
3. Go to **Select product or service type for support** and expand the Choose support type box.
4. Select **System x** from the menu listing, and then select the **Go** icon.
5. On the right side of the menu, locate the Quick path box and type in the Equivalent PC Server machine type that corresponds to your HMC machine type, and then select **Go**.

6. Select the **Troubleshooting** tab, located on the support menu.
7. In the Available topics box select **Service/Support guide**. Then click the **Go** icon.
8. Click on the link that appears below Service/Support guide.
9. Click on the file link number listed below File link. The file for the hardware maintenance manual will open.

## Recovering the HMC

If the HMC has had a problem and you need to recover the HMC, see “Reinstalling the HMC machine code” on page 49.

**Attention:** This procedure will restore the HMC image onto the disk drive in the HMC personal computer. Before performing this procedure, contact HMC support and also ensure that there are backups for all critical console data.

## Backing up partition profiles

Ensure that critical data that is stored on the HMC is also regularly maintained on backup media.

To back up partition profiles, see “Backing up partition profiles” on page 50.

## HMC machine code updates

For information about updates or upgrades for the HMC machine code, see “Upgrading the machine code on an HMC from Version 6 to Version 7” on page 53.

## Recovering an HMC after replacing a disk drive

If you have to replace a disk drive, you must recover the HMC image and restore your stored profile data. For more information, see “Reinstalling the HMC machine code” on page 49.

## Rebuilding a Redundant Array of Independent Disks (RAID) 1 array

For information about how to rebuild a RAID 1 array on your HMC that has a failed disk drive or solid-state drive, see Rebuilding a RAID 1 array.

## Performing the firmware (BIOS/VPD) update procedure (after replacing the system board)

When you replace the system board, perform the firmware update procedure for your HMC personal computer.

**Attention:** Refer to the information label located inside the system unit cover for any model-specific information.

To perform the firmware (BIOS/VPD) update procedure, perform the following steps:

1. To find documentation about the base HMC personal computer and its components, see “Equivalent maintenance information for the HMC personal computer hardware” on page 9.
2. Review the section in your HMC personal computer information for “Updating the firmware.”
3. Perform the procedures to update the new system board with the latest BIOS firmware.
4. Perform the procedures to update the vital product data (VPD) information with the machine type, model, and serial number for the HMC.
5. Return the HMC to normal operations.

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## Hardware Management Console parts

Contains illustrations, part descriptions and part numbers that are used when ordering replacement parts for your Hardware Management Console (HMC).

### Personal computer parts

Contains part number information for parts used in assembling your HMC.


**Note:** FRU parts and part numbers are subject to update due to our parts system substitution-update policy. With our parts system substitution-update policy we make every effort to supply you with the latest components available for your model HMC.

The following table contains a cross-reference equivalent of the HMC machine type and model number to the personal computer machine type and model number. For personal computer parts information not listed in the following tables, see hardware maintenance manual for your personal computer.

*Table 3. Equivalent maintenance information for the HMC's personal computer hardware*

HMC machine type and model number (available on the serial number plate of your HMC)	Equivalent PC server machine type and model number	Hardware maintenance manuals (HMM)
7310-CR4, 7042-CR4	7978 Model 42U or 7978 Model PBT	See Problem determination and service guide
7042-CR5	7946 Model 52U or 7946 Model PAL	See Problem determination and service guide
7042-CR6	7944 Model PCH	See Problem determination and service guide
7042-CR7	7914 Model PCH	See Problem determination and service guide
7310-C06 and 7042-C06	4362 Model 52U or 4362 Model PAT	See Problem determination and service guide
7042-C07	4367 Model 32U, 4367 Model PAM or 4367 Model PAR	See Problem determination and service guide
7042-C08	7946 Model 52U	See Problem determination and service guide

For the latest information regarding maintenance of your HMC PC, system board specifications, and parts, see PC hardware maintenance manuals. To obtain the latest versions of these publications through the IBM website, follow this procedure:

1. Go to the IBM  website at <http://www.ibm.com>.
2. Select **Support & downloads**.
3. Go to **Select product or service type for support** and expand the **Choose support type** box.
4. Select **System x** from the menu listing, and then select the **Go** icon.
5. On the right side of the menu, locate the **Quick path** box, and type the PC model that corresponds to your HMC, and then select **Go**.
6. Select the **Troubleshooting** tab, located on the support menu.
7. In the Available topics box, select **Service/Support guide**. Then click the **Go** icon.
8. Click the link that appears under **Service/Support guide**.
9. Click the file link number listed under **File link**. The file for the hardware maintenance manual will open.

## 7310-CR4, 7042-CR4, and 7042-CR5 parts

Models 7310-CR4 and 7042-CR4 use a personal computer machine type of 7978 Model 42U, and Model 7042-CR5 use a personal computer machine type of 7946 Model 52U for its base configuration. To access the personal computer hardware maintenance manuals, see “Personal computer parts” on page 11.

**Note:** Each PC hardware maintenance manual may reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, make sure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up the Models 7310-CR4 and 7042-CR4.

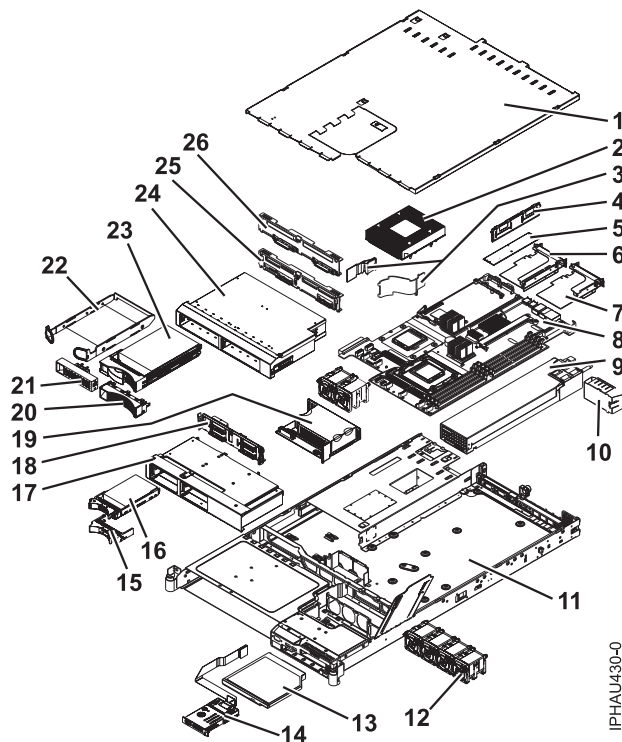


Figure 8. Models 7310-CR4 and 7042-CR4 parts illustration

### Notes:

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.
2. Customer replaceable units (CRUs) can be replaced by the customer. The CRUs are defined as either Tier 1 or Tier 2 as follows:

#### Tier 1 CRU

Procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

#### Tier 2 CRU

Procedure that a customer can perform, but may require support from a service provider. The procedure used to service this component is usually not required to be done by the customer.

3. If the part you are replacing is not identified as being either Tier 1 or Tier 2, call your service provider to service the FRU.

Table 4. 7310-CR4 and 7042-CR4 Parts listing

Index	Description	Tier 1 CRUs	Tier 2 CRUs	Part number
1	Top cover assembly	*		43W0609
2	Heat sink assembly			39Y9423
3	Air baffles	*		39Y9420
4	Memory, 512 MB ECC DRR	*		39M5781
5	Not applicable to this model			
6	PCI-X riser card		*	39Y6975
7	Not applicable to this model			
8	Planar, SATA			60Y0861
8	Planar, SATA			60Y0865
9	Power supply, 670 W	*		39Y7189
10	Power supply filler panel	*		XXXXXXX
11	Chassis assembly			39Y9522
12	Fan assembly unit (dual fans)	*		26K8083
13	DVD-RAM Drive	*		42C0955
14	Operator information panel card assembly			39K6973
15	Not applicable to this model			
16	Not applicable to this model			
17	Not applicable to this model			
18	Not applicable to this model			
19	Power backplane		*	39Y6972

Table 5. 7310-CR4 and 7042-CR4 Parts listing (continued)

Index	Description	Units		Part number
20	Not applicable to this model			
21	Simple-swap filler panel, 3.5 inch	*		23K4990
22	Not applicable to this model			
23	Disk drive, 80 GB SATA	*		39M4503
23	Disk drive, 250 GB SATA	*		39M4511
24	Simple-swap SATA disk drive cage		*	32R2823
25	Not applicable for this model			
26	Power cable, SATA, with backplate	*		26K8060
	Microprocessor, 2.0 GHz with heat sink (Used on 60Y0861 Planar)			42C4229
	Microprocessor, 2.5 GHz 4 core (Used on 60Y0865 Planar)			44R5646
	Media bezel assembly	*		39Y9419
	Rack latch assembly, EIA		*	26K8080
	Service label, 3.5 inch, SATA	*		32R2820
	Service label, right fan door	*		39Y9418
	USB connector cable, front panel (field replaceable unit)		*	26K8058
	CD-RW/DVD drive interposer card		*	42C3983

Table 5. 7310-CR4 and 7042-CR4 Parts listing (continued) (continued)

Index	Description	Units		Part number
	Slides and hardware		*	52P8517
	Battery, system board, 3.0 V	*		33F8354
	Mouse, (Black)	*		03N6669
	Modem cable (see "HMC modem cable part numbers" on page 35)			

The following illustration and table identifies the major components that make up the Model 7042-CR5.

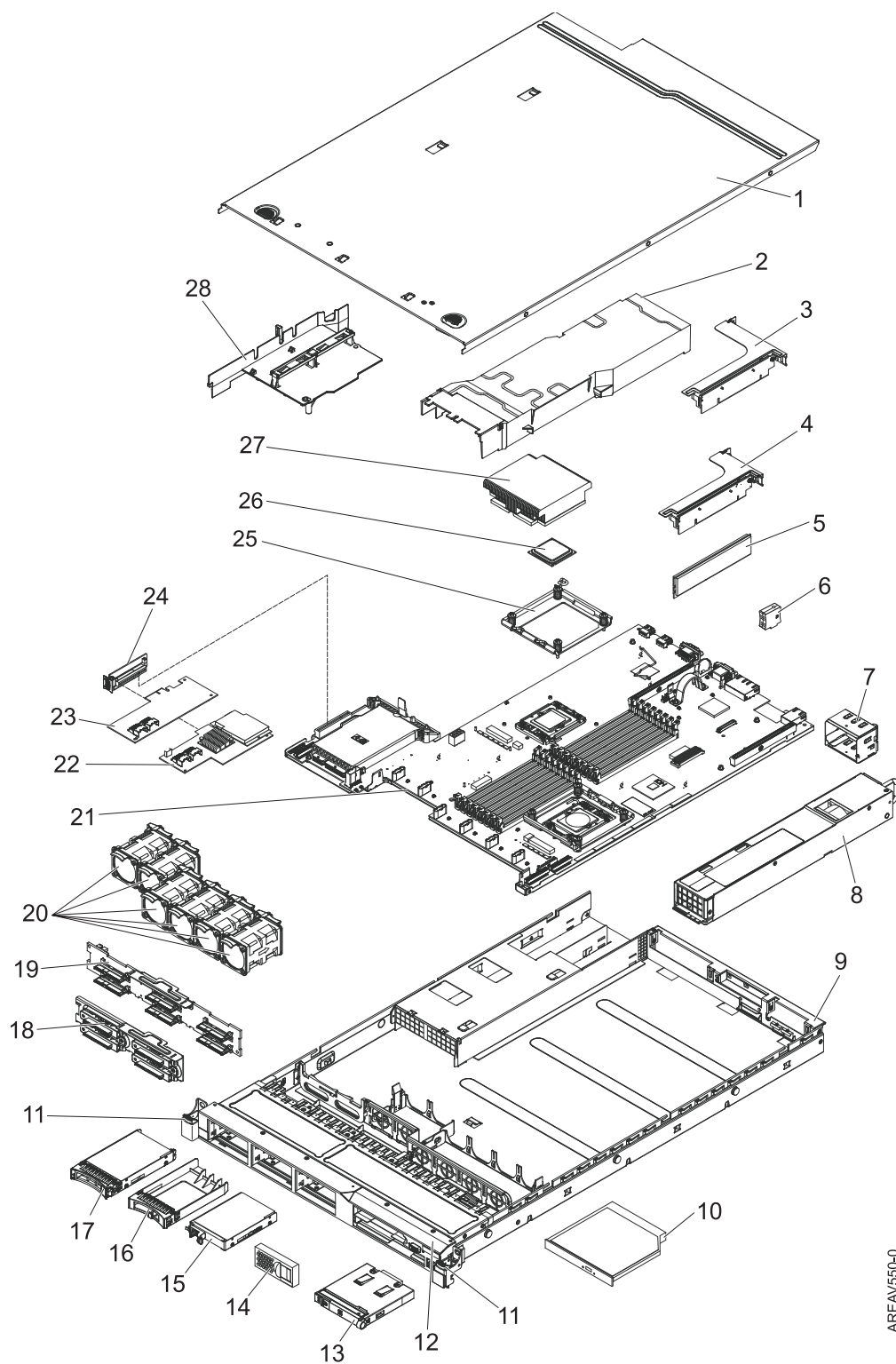


Figure 9. Models 7042-CR5 parts illustration

Table 6. 7042-CR5 Parts listing

Index	Description	Tier 1 CRUs	Tier 2 CRUs	FRU Part number
1	Top cover (All models)	43V6933		

Table 6. 7042-CR5 Parts listing (continued)

Index	Description	Tier 1 CRUs	Tier 2 CRUs	FRU Part number
2	DIMM air duct	43V7050		
3	PCI-X riser card assembly		43V7068	
4	PCI Express riser card, x16, assembly		43V7066	
5	Memory, 1 GB PC3-10600R-999 DDR3 ECC	44T1490		
5	Memory, 2 GB PC3-10600R-999 DDR3 ECC	44T1491		
5	Memory, 2 GB PC3-10600R-999 DDR3 ECC	44T1492		
5	Memory, 4 GB PC3-10600R-999 DDR3 ECC	44T1493		
5	Memory, 8 GB PC3-10600R-999 DDR3 ECC	46C7453		
6	Virtual media key	46C7528		
7	Power supply bay filler	49Y4821		
8	Power supply, 675 Watt	39Y7201		
9	Chassis assembly (without front bezel)			49Y4813
10	CD-RW/DVD drive	44W3255		
10	CD-RW/DVD-RW drive	44W3256		
11	Rack latch kit		49Y4815	
12	Bezel		49Y4818	
13	Operator information panel assembly		44E4372	
14	Blank filler	49Y4821		
15	Hard disk drive, 2.5-inch 50 GB simple-swap solid state		43W7733	
16	Filler, hot-swap hard disk drive	44T2248		
17	Hard disk drive, 2.5-inch, hot-swap 73GB 10K	43W7537		
17	Hard disk drive, 2.5-inch, hot-swap 73GB 15K	43W7546		
17	Hard disk drive, 2.5-inch, hot-swap 146GB 10K	43W7538		
17	Hard disk drive, 2.5-inch, hot-swap 146GB 15K	42D0678		
19	Backplane, SAS hard disk drive		43V7071	
20	Fan, hot-swap 40 mm	43V6929		
21	System board			43V7072
22	ServeRAID-MR10i adapter		43W4297	
23	ServeRAID-BR10i adapter	44E8690		
24	SAS/SATA riser card	43V7067		
25	Retention module, heat sink			49Y4822
26	Microprocessor, 1.86 GHz, 80W, (model 12x)			46D1272
26	Microprocessor, 2.00 GHz, 80W, (model 22x)			46D1271
26	Microprocessor, 2.13 GHz, 60W			46D1268
26	Microprocessor, 2.13 GHz, 80W, (model 3Ax)			46D1270
26	Microprocessor, 2.26 GHz, 60W, (models 42x and 4Lx)			46D1269

Table 7. 7042-CR5 Parts listing (continued)

Index	Description	Units		Part number
26	Microprocessor, 2.26 GHz, 80W, (model 32x)			46D1267
26	Microprocessor, 2.40 GHz, 60W			49Y6807
26	Microprocessor, 2.40 GHz, 80W, (models 52x and 54x)			46D1266
26	Microprocessor, 2.53 GHz, 80W, (models 62x and 64x)			46D1265
26	Microprocessor, 2.66 GHz, 95W, (models 74x and 76x)			46D1264
26	Microprocessor, 2.80 GHz, 95W, (model E3Y)			46D1263
26	Microprocessor, 2.93 GHz, 95W, (models 92x, 94x, and 96x)			46D1262
27	Heat sink assembly			49Y4820
28	Air baffle kit (Microprocessor air baffle, clamp, and DIMM air duct) (all models)	43V6931		
	Cable management arm	49Y4817		
	Cable, hard disk drive configuration		43V7023	
	Cable, operator panel		46c4139	
	Cable, SAS power		46C4148	
	Cable, SAS signal, 120 mm		43V7019	
	Cable, SAS signal, 200 mm		43V6922	
	Cable, SAS signal, 300 mm		49Y4850	
	Cable, SATA DVD	43V6914		
	Cable, USB/video		43V6920	
	Cable assembly, simple-swap		43V7042	
	Cable, line cord, 2.8 m	39M5377		
	Cover, safety 240VA			49Y4823
	DVD drive bay filler	49Y4868		
	EMC filler	44T2248		
	Ethernet card	43V7073		
	Labels, chassis	49Y4812		
	Labels, system service	46C6799		
	Low-profile adapter	varies		
	Miscellaneous parts kit		49Y4814	
	Riser-card bracket: full-height, half-length	43V6936		
	Riser-card bracket: low-profile	43V6939		
	Bracket assembly, rear I/O	43V6938		
	SAS adapter retainer	49Y4852		
	ServeRAID-M5010 adapter		46M0851	
	ServeRAID-MR10i battery carrier kit		44E8763	
	ServeRAID-MR10M battery carrier kit		44E8844	
	Video adapter, NVIDIA FX 1700	43V5765		
	Video adapter, NVIDIA FX 570	43V5782		

## 7042-CR6 parts

Machine type 7042-CR6 uses a personal computer machine type of 7944-PCH for its base configuration. To access the personal computer hardware maintenance manuals, see “Personal computer parts” on page 11.

**Note:** Each PC hardware maintenance manual might reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, make sure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up model 7042-CR6.

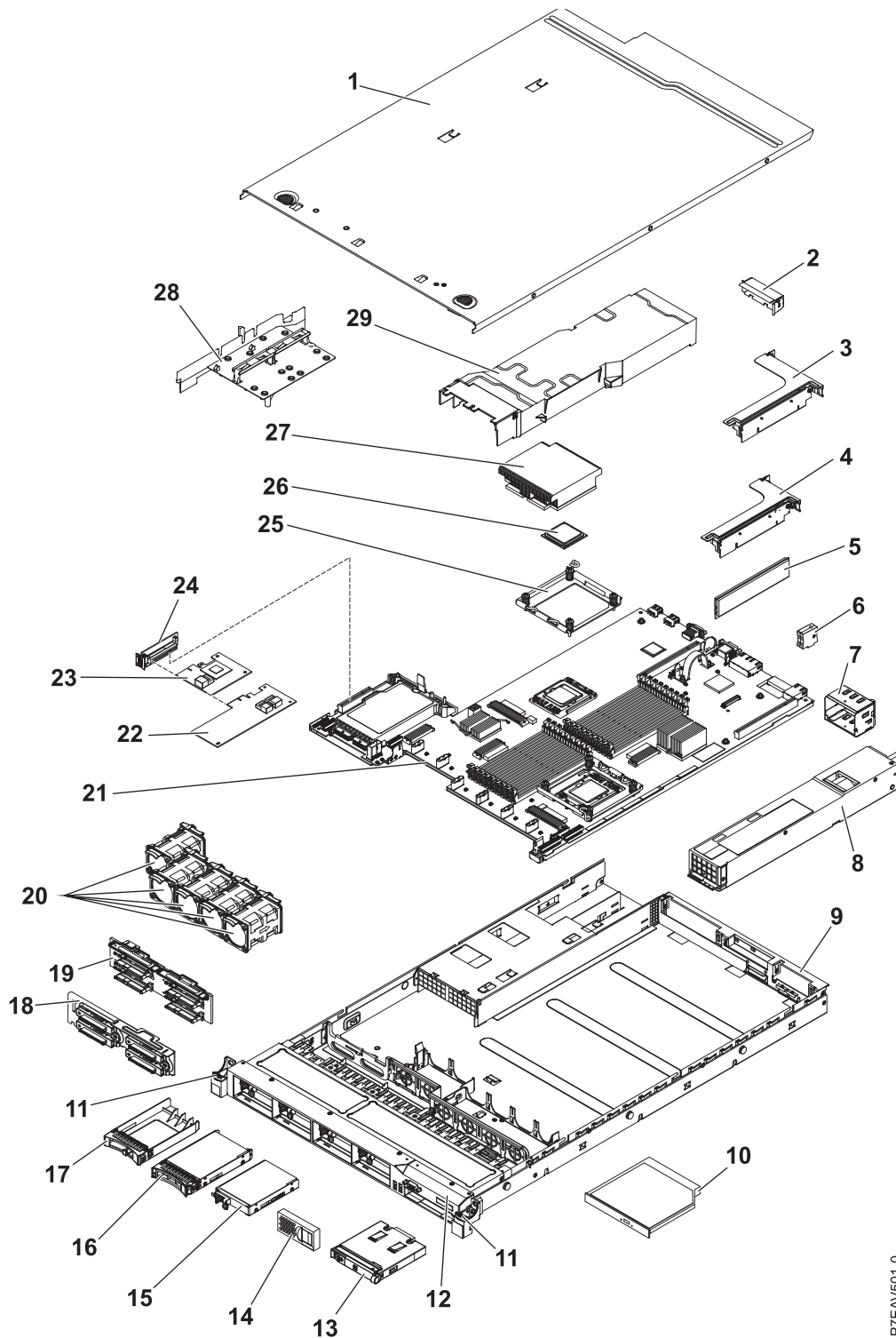


Figure 10. Model 7042-CR6 parts

**Notes:**

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.
2. Customer replaceable units (CRUs) can be replaced by the customer. Definitions of tier 1 and tier 2 CRUs for this model HMC follow:

### Tier 1 CRU

A procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

### Tier 2 CRU

A procedure that a customer can perform, but might require support from a service provider. The procedure used to service this component is not usually required to be done by the customer.

3. If the part you are replacing is not identified as being either tier 1 or tier 2, call your service provider to service the FRU.

Table 8. 7042-CR6 parts listing

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
1	Top cover	59Y3927		
2	Filler, PCI	59Y3969		
3	PCI-X riser card assembly		43V7068	
4	PCI Express riser card, x16, assembly		43V7066	
5	Memory, 2 GB single-rank DDR3-1333 RDIMM	49Y1444		
6	Virtual media key	46C7528		
7	Power supply bay filler (models A2x, B2x, C2x, D2x, G2x, H2x, J2x, M2x, and N2x)	49Y4821		
8	Power supply, 675 Watt, ac	39Y7201		
9	Chassis assembly (without front bezel)			59Y3931
10	DVD-RW drive	44W3256		
11	Rack latch kit		49Y4815	
12	Bezel, 8 hard disk bays		59Y3916	
12	Bezel, 4 hard disk and 1 optical drive bays		59Y3917	
13	Operator information panel assembly		44E4372	
14	Filler, hard disk drive bay	59Y3925		
15	Not applicable to this model			
16	Filler, EMC	44T2248		
17	Hard disk drive, 2.5-inch hot-swap, 500 GB, 10 K	42D0753		
18	Backplate assembly, simple-swap		59Y3919	
19	Backplane, SAS		59Y3915	
20	Fan	43V6929		
21	System board			59Y3793
22	ServeRAID-M1015 adapter (models B2x, C2x, D2x, H2x, and N2x)	46M0861		
23	ServeRAID-BR10il v2 adapter (model A2x)	49Y4737		
24	SAS/SATA riser card	43V7067		
25	Retention module, heat sink			49Y4822
26	Microprocessor, 2.53 GHz 80W (model F2x)			49Y7052
27	Heat sink assembly (models A2x, B2x, C2x, D2x, F2x, G2x, H2x, J2x, and M2x)			49Y4820
28	Air baffle kit (Microprocessor air baffle, clamp, and DIMM air duct) (all models)	59Y3914		

Table 8. 7042-CR6 parts listing (continued)

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
29	DIMM air duct	43V7050		

The 7042-CR6 parts that are listed in the following table are not illustrated.

Table 9. 7042-CR6 parts listing (continued)

Description	Tier 1 CRU	Tier 2 CRU	Part number
Cable, hard disk drive configuration		59Y3918	
Cable, operator panel		46C4139	
Cable, SAS power		59Y3920	
Cable, SAS signal, 300 mm		49Y4850	
Cable, SATA DVD		59Y3922	
Cable, USB/video		59Y3923	
Cable, line cord (models A2x, B2x, C2x, D2x, F2x, G2x, H2x, J2x, M2x, and N2x)	39M5377		
Cage, hard disk drive		59Y3968	
Cage, optical drive		59Y3924	
Safety cover			49Y4823
Filler, DVD drive bay	49Y4868		
2-port 1 Gb Ethernet card	69Y4509		
2-port 1 Gb Ethernet card, mechanical kit	69Y4586		
Labels, chassis	59Y3998		
Labels, system service	59Y3926		
Miscellaneous parts kit		69Y4506	
Riser-card bracket: full-height, half-length		43V6936	
Riser-card bracket: low-profile (models J2x and M2x)		43V6939	
Bracket assembly, rear I/O			43V6938
SAS adapter retainer		49Y4852	
Slide rail kit		59Y3792	
CMA kit	49Y4817		
Slide rail kit, Gen-II		69Y4391	
CMA kit, Gen-II	69Y4392		
Screw kit	59Y4922		
Thermal grease kit		41Y9292	
Hypervisor, embedded USB flash device	42D0545		
Alcohol wipes		59P4739	

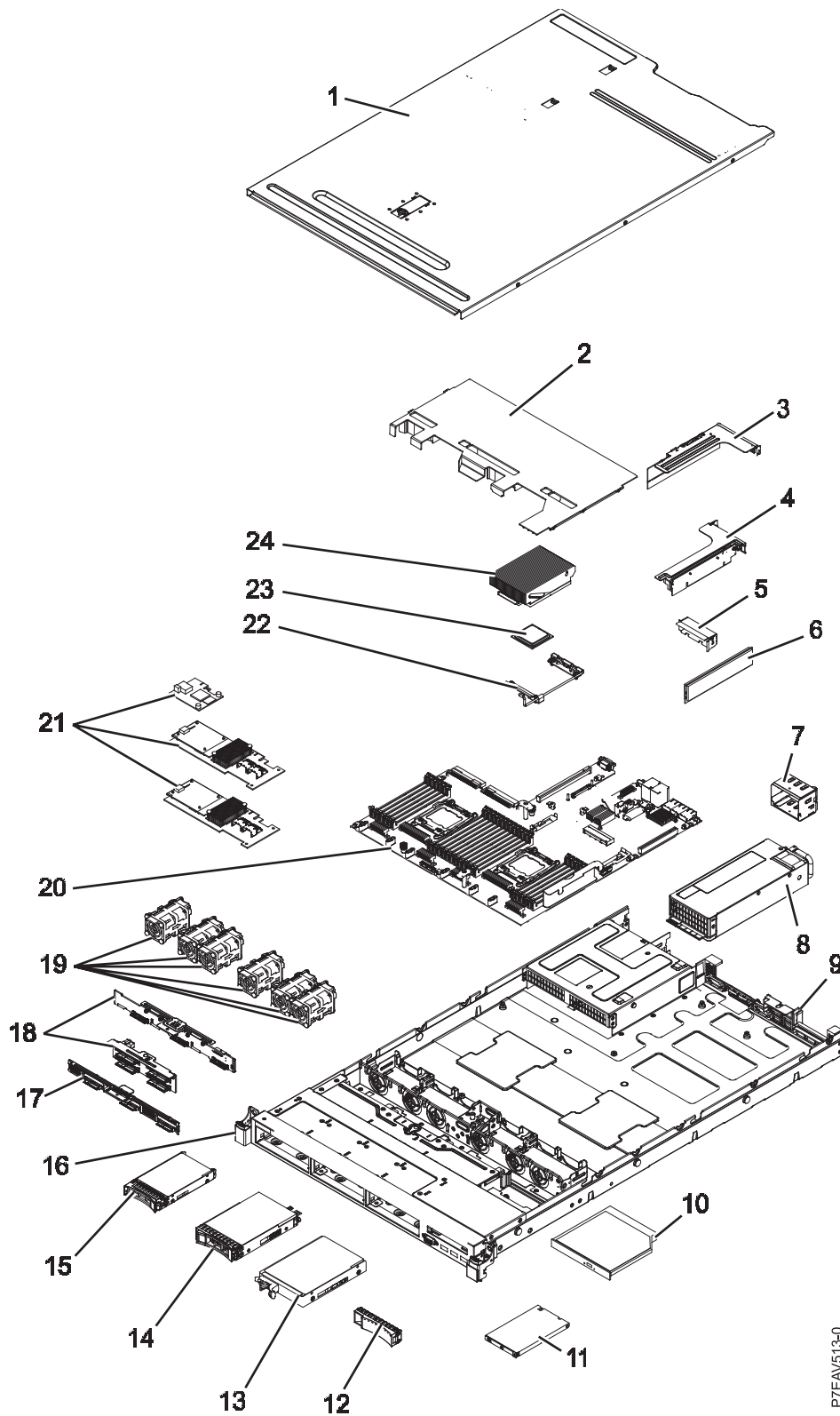
For a more complete listing of power cords for the HMC, see Planning for power.

## 7042-CR7

Machine type 7042-CR7 uses a personal computer machine type of 7914-PCH for its base configuration. To access the personal computer hardware maintenance manuals, see “Personal computer parts” on page 11.

**Note:** Each PC hardware maintenance manual might reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, ensure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up model 7042-CR7.



P7EAV513-0

Figure 11. Model 7042-CR7 parts

**Notes:**

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.

- Customer replaceable units (CRUs) can be replaced by the customer. Definitions of tier 1 and tier 2 CRUs for this model HMC follow:

#### **Tier 1 CRU**

A procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

#### **Tier 2 CRU**

A procedure that a customer can perform, but might require support from a service provider. The procedure used to service this component is not usually required to be done by the customer.

- If the part you are replacing is not identified as being either tier 1 or tier 2, call your service provider to service the FRU.

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	Part number
1	Top cover			94Y7569
2	Air baffle			94Y7568
3	PCI bracket 2	94Y7566		
3	PCI-X riser card	94Y7590		
4	PCI Express riser card, Gen3 x16	94Y7588		
5	Filler, PCI			94Y7608
6	Memory, 8 GB dual-rank 1.35 V, DDR3, 1333 MHz, RDIMM	49Y1415		
7	Power supply bay filler			94Y7610
8	Power supply, 550 W, ac	43X3312		
9	Chassis assembly, 2.5-inch hard disk drive (HDD) (without front bezel)			94Y7573
10	DVD-RW drive	44W3256		
11	Operator information panel assembly	90Y5821		
11	Operator information panel assembly, advanced	90Y5822		
	USB assembly, front	94Y7621		
	USB assembly, front dual-port	00D3338		
12	Not applicable to this model			
13	Not applicable to this model			
14	Not applicable to this model			
15	HDD, 2.5-inch hot-swap, 500 GB, 7.2 K	81Y9727		
16	EIA bracket			94Y7570
17	Not applicable to this model			
18	Backplane, 2.5-inch hot-swap HDD	94Y7587		
19	Fan module, hot-swap	94Y7564		
20	System board	00Y8375		
21	ServeRAID M5110 SAS/SATA adapter	81Y4482		
21	ServeRAID M5100 series 512 MB flash (RAID 5 upgrade)	81Y4488		
21	ServeRAID M5110 series battery Kit	81Y4491		
22	Retention module, heat sink	94Y7739		

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	Part number
23	Microprocessor installation tool	94Y9955		
23	Microprocessor, Intel Xeon E5-2640, 2.50 GHz, 15 MB, 1333 MHz, 95 W (6-core)	81Y5166		
24	Heat sink assembly, 95 W	94Y7602		

The 7042-CR7 parts that are listed in the following table are not illustrated.

Description	CRU part number (Tier 1)	CRU part number (Tier 2)	Part number
Battery, 3.0 V	33F8354		
Battery, ServeRAID	81Y4579		
Cable, power cord	39M5377		
Cable, mini SAS 1 meter (3.3 feet)	39R6530		
Cable, USB	81Y6659		
Cable, USB conversion	39M2909		
Cable, serial conversion	46M4027		
Cable, virtual media Gen 2	46M4028		
Cable, power, 2.5-inch HDD	81Y6663		
Cable, backplane, 2.5-inch hot-swap HDD	81Y6667		
Cable, operator information panel	81Y6669		
Cable, SATA DVD	81Y6671		
Cable, video	81Y6673		
Cable, adapter power	81Y6676		
Cable, ServeRAID battery	90Y7309		
Cable, ServeRAID power module	90Y7310		
Cable, SPECpower	00D3334		
Panel, light path diagnostics	00D3863		
Labels, chassis	94Y7604		
Labels, system service	94Y7605		
Bezel, 2.5-inch hard disk bays, and 1 optical drive bay	94Y7606		
Thermal grease kit		41Y9292	
Alcohol wipes		59P4739	
Miscellaneous parts kit			94Y7571
Filler, EMC			44T2248
Filler, DVD drive bay			49Y4868
Filler, HDD bay			59Y3925
Filler, fan			94Y7572
Remote RAID battery tray			94Y7609
CMA kit			49Y4817
Slide rail kit, Gen-III			94Y6625

Description	CRU part number (Tier 1)	CRU part number (Tier 2)	Part number
CMA kit, Gen-III			94Y6626
Slide rail kit, universal			94Y6719

For a complete listing of power cords for the HMC, see Planning for power.

## 7310-C06 and 7042-C06 parts

Machine types 7310-C06 and 7042-C06 use a personal computer machine type of 4362-52U for its base configuration. To access the personal computer hardware maintenance manuals, see “Personal computer parts” on page 11.

**Note:** Each PC hardware maintenance manual may reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, make sure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up the Models 7310-C06 and 7042-C06.

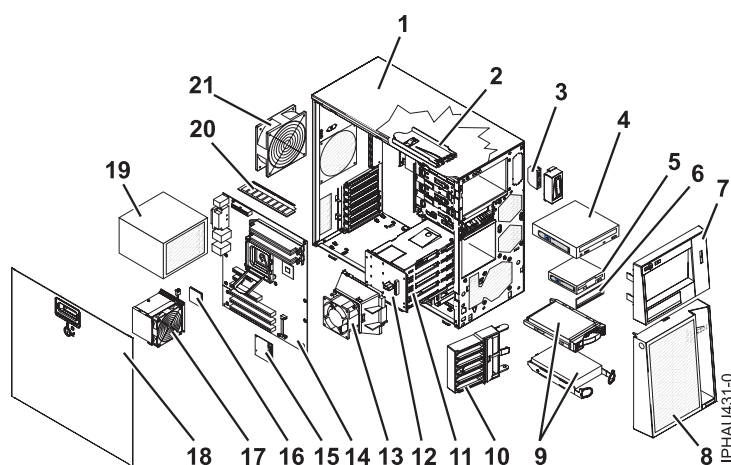


Figure 12. Models 7310-C06 and 7042-C06 parts illustration

### Notes:

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.
2. Customer replaceable units (CRUs) can be replaced by the customer. A definition of Tier 1 and Tier 2 CRUs for this model HMC is:

#### Tier 1 CRU

Uses a procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

#### Tier 2 CRU

Uses a procedure that a customer can perform, but may require support from a service provider. The procedure used to service this component is usually not required to be done by the customer.

- If the part you are replacing is not identified as being either Tier 1 or Tier 2, call your service provider to service the FRU.

*Table 10. 7310-C06 and 7042-C06 parts listing*

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
1	Chassis assembly, non-redundant power supply			42C8916
2	Front-panel assembly		*	25R8865
3	Front USB connector assembly (cable)		*	26K7340
4	DVD-RAM drive	*		43W4577
5	Diskette drive	*		33P3343
6	Diskette drive bezel	*		25R8857
7	Bezel, upper	*		42C8912
8	Bezel, lower	*		42C8913
9	Hard disk drive, SATA, 80 GB simple swap	*		39M3701
	Disk drive tray	*		25R8864
	Half -Height disk drive, slim bare Rambo-5	*		42C0957
10	Retention bracket, PCI		*	13N2993
11	Hard disk drive cage, 3.5-inch	*		42C8910
12	Disk drive backplane (for 3.5 inch simple-swap SATA disk drives)		*	25R8842
13	3.5 inch disk drive air-duct assembly		*	39Y9860
14	System board assembly			43W4982
15	SAS/SATA controller		*	42C1279
16	Microprocessor, 2.13 GHz			41Y3849
17	Fan-sync			43W0401
18	Side cover with lock	*		25R8859
19	Power supply, 400 watt			39Y7297
20	Memory, 512MB	*		41Y2725
21	System fan, rear		*	25R8829
	PSU adapter bracket (not shown)		*	42C7509

7310-C06 parts listed in the following table are not illustrated.

*Table 11. 7310-C06 and 7042-C06 parts listing (continued)*

Description	Tier 1 CRU	Tier 2 CRU	Part number
3.0 V battery		*	33F8354
Bezel kit	*		13N2450
Cable, 24-inch SATA signal		*	25R5635
Cable, 400 watt DAS		*	25R8849
Shield kit	*		13N2997
Service label			43W0417
Cable, panel mount		*	13N2413
Cable, diskette drive		*	39R8112

Table 11. 7310-C06 and 7042-C06 parts listing (continued) (continued)

Description	Tier 1 CRU	Tier 2 CRU	Part number
Cable, IDE signal		*	13N2466
Cable, serial port 2	*		42C1053
EMC I/O shield	*		43W4986
EMC shield kit	*		13N2997
Mouse, 2-button	*		03N6669
Kit, shield	*		13N2997
Kit, bezel	*		13N2450
Retainer kit (for optical and diskette drives)	*		39R9369
Retention module, fan sync			25R8873
Stabilizing feet	*		13N2985
C2 switch		*	39Y9783
Miscellaneous Kit (clip, insulator, retainer)	*		39Y9773
Modem cable (see "HMC modem cable part numbers" on page 35)			

## 7042-C07 parts

Machine type 7042-C07 uses a personal computer machine type of 4367-32U for its base configuration. To access the personal computer hardware maintenance manuals, see "Personal computer parts" on page 11.

**Note:** Each PC hardware maintenance manual may reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, make sure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up the Model 7042-C07.

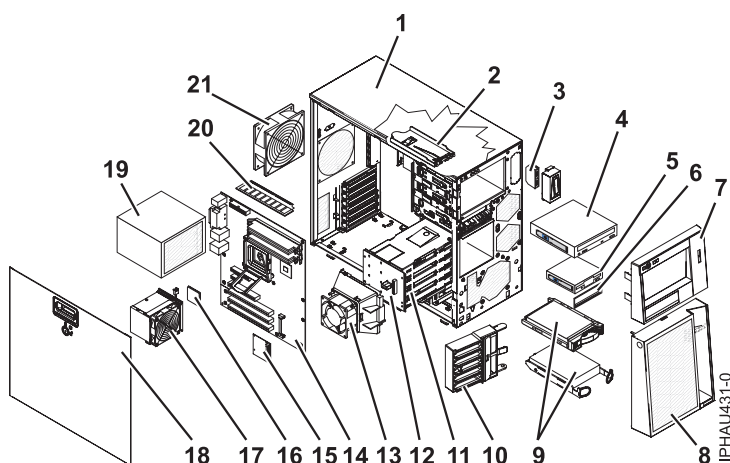


Figure 13. Model 7042-C07 parts illustration

### Notes:

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.
2. Customer replaceable units (CRUs) can be replaced by the customer. A definition of Tier 1 and Tier 2 CRUs for this model HMC is:

**Tier 1 CRU**

Uses a procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

**Tier 2 CRU**

Uses a procedure that a customer can perform, but may require support from a service provider. The procedure used to service this component is usually not required to be done by the customer.

3. If the part you are replacing is not identified as being either Tier 1 or Tier 2, call your service provider to service the FRU.

Table 12. 7042-C07 parts listing.

7042-C07 parts listing

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
1	Chassis assembly, non-redundant power supply, (without diskette drive)			44X0386
2	Control panel assembly		*	44E7571
3	Dual USB connector assembly (cable)		*	26K7340
4	Half Height DVD-RAM drive	*		43W8467
5	Diskette drive (Shown in drawing but not available on the 7042-C07)	*		N/A
6	Diskette drive bezel (Shown in drawing but not available on the 7042-C07)	*		N/A
7	Bezel assembly, upper front	*		42C7290
8	Bezel assembly, lower front	*		42C7293
9	Hard disk drive, 250 GB SATA, simple swap with tray	*		39M4511
	Simple Swap disk drive tray	*		25R8864
10	Retention bracket, PCI, (front)		*	13N2993
	EMI shield bracket assembly			44E7337
11	Hard disk drive cage, 3.5-inch	*		42C8910
	Hard disk drive shield for HDD cage			44X0388
12	Disk drive backplane (for 3.5 inch simple-swap SATA disk drives)		*	25R8842
	EULER 2.5 Hard disk drive backplane (SATA simple swap)			25R8842
	Hard disk drive carrier assembly	*		42C7495
13	3.5 inch disk drive air-duct assembly		*	39Y9860
14	System board assembly			43W7312
15	SAS/SATA controller		*	43V7415
16	Microprocessor, 3.0 GHz dual core, 1333 MHz			44E7588
17	Fan-sink (heatsink)			43W0401
18	Side cover	*		25R8836
	Side cover with lock	*		25R8859
19	Power supply, 401 watt			39Y7330
20	Memory, 512MB	*		41Y2725
21	System fan, rear		*	25R8829
	PSU adapter bracket (not shown)		*	42C7509

7042-C07 parts listed in the following table are not illustrated.

*Table 13. 7042-C07 parts listing (continued)*

Description	Tier 1 CRU	Tier 2 CRU	Part number
3.0 V battery		*	33F8354
Bezel kit	*		13N2450
Cable, 18-inch SATA signal		*	39Y9810
Cable, 401 watt DAS		*	25R8849
EMC shield kit	*		13N2997
EMC I/O shield	*		25R8843
System service label	*		44E7281
Keylock, keyed-random		*	26K7364
Cable, panel mount assembly, SATA		*	13N2413
Cable, IDE signal		*	13N2466
Cable, serial port 2	*		42C1053
EMC shield kit	*		13N2997
PCI-X SCSI Enablement Card	*		44E4851
Mouse, 2-button	*		03N6669
Kit, bezel	*		13N2450
Support and hold down brackets	*		41Y9086
Retainer kit (for optical and diskette drives)	*		39R9369
Retention module, fan sync			25R8873
Stabilizing feet	*		13N2985
C2 switch		*	39Y9783
Miscellaneous tray kit (clip, insulator, retainer)	*		39Y9773
Modem cable (see "HMC modem cable part numbers" on page 35)			

For a more complete listing of power cords for the HMC, see Planning for power .

## 7042-C08 parts

Machine type 7042-C08 uses a personal computer machine type of 7946-52U for its base configuration. To access the personal computer hardware maintenance manuals, see "Personal computer parts" on page 11.

**Note:** Each PC hardware maintenance manual might reference more than one machine type in its title. If necessary, to cross-reference to the original PC hardware maintenance manual, make sure that you find the hardware maintenance manual for the PC machine type and model for the HMC that you are servicing.

The following illustration and table identifies the major components that make up model 7042-C08.

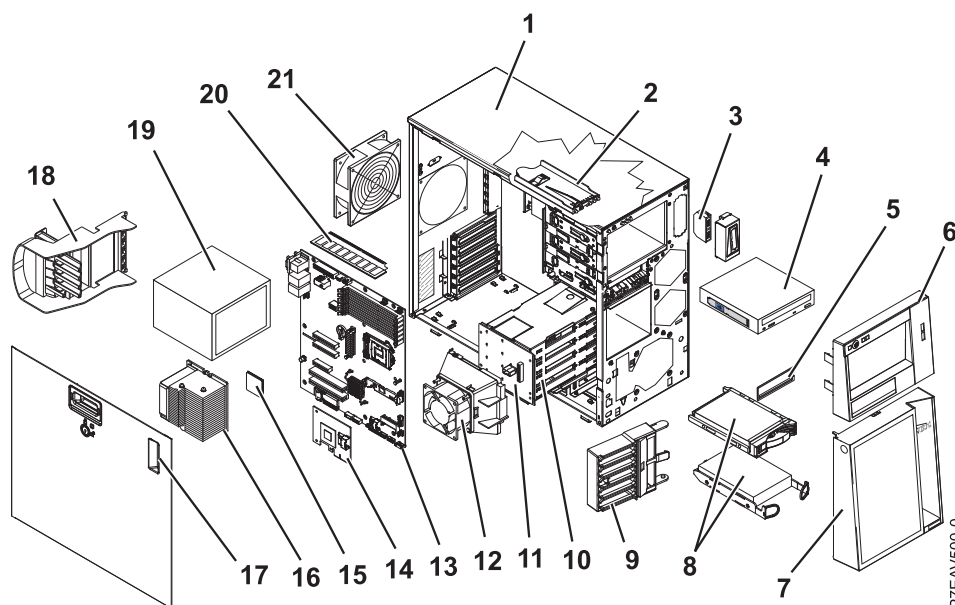


Figure 14. Model 7042-C08 parts

**Notes:**

1. Field replaceable units (FRUs) must be serviced only by an authorized service provider.
2. Customer replaceable units (CRUs) can be replaced by the customer. Definitions of tier 1 and tier 2 CRUs for this model HMC follow:

**Tier 1 CRU**

A procedure that a customer can perform without input from a service provider. The procedure used to service this type of component is usually required to be done by the customer.

**Tier 2 CRU**

A procedure that a customer can perform, but might require support from a service provider. The procedure used to service this component is not usually required to be done by the customer.

3. If the part you are replacing is not identified as being either tier 1 or tier 2, call your service provider to service the FRU.

Table 14. 7042-C08 parts listing.

7042-C08 parts listing

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
1	Chassis assembly			49Y8457
2	Operator Information panel assembly		49Y8456	
3	Front USB connector assembly		49Y8449	
4	DVD-RAM Drive, SATA	43W8467		
4	DVD-ROM Drive, SATA	43W8466		
5	Bezel Kit	13N2450		
6	Bezel, upper	49Y8453		
7	Bezel, lower	49Y8454		

Table 14. 7042-C08 parts listing (continued).

7042-C08 parts listing

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
8	Hard disk drive, SATA, 3.5- inch 250 GB, fixed/simple-swap, with tray (optional)	39M4511		
8	Hard disk drive, SATA, 3.5-inch 500 GB, fixed/simple-swap, with tray (optional)	39M4517		
8	Hard disk drive, 160 GB (optional)	39M4525		
8	Hard disk drive, 250 GB SATA (optional)	39M4529		
8	Hard disk drive, SATA, 3.5- inch 750 GB, fixed/simple-swap, with tray (optional)	43W7575		
8	Hard disk drive, SATA, 3.5-inch 500 GB, 10K, hot-swap, with tray (optional)	39M4533		
8	Hard disk drive, SATA, 3.5-inch 750 GB, 10K, hot-swap, with tray (optional)	43W7579		
8	Hard disk drive, SAS, 3.5-inch 146 GB, 15K, hot-swap, with tray (optional)	39R7350		
9	Retention bracket (front), adapter		13N2993	
10	Hard disk drive cage, 3.5-inch drives	49Y8451		
10	Hard disk drive cage, 2.5-inch drives			49Y8460
11	SAS/SATA hard disk drive backplane (for 3.5-inch drive cage)		49Y4462	
	SATA backplate, simple-swap	25R8842		
12	Hard disk drive fan assembly (for 3.5-inch drive cage)		39Y9860	
13	System board assembly			69Y1013
14	ServeRAID-BR10iL v2 SAS/SATA controller			49Y4737
15	Microprocessor, Xeon 2.93 GHz, 1333MHz-9MB Processor			46C6775
	Microprocessor, Xeon 2.4 GHz, 1333MHz-8MB, 4C, (models C2x and C2Y)			49Y4647
	Microprocessor, Xeon 2.53 GHz, 1333MHz-8MB, 4C, (models 42x and 42Y)			49Y4648
	Microprocessor, Xeon 2.67 GHz, 1333MHz-8MB, 4C, (models 52x and 52Y)			49Y4649
	Microprocessor, Xeon 2.8 GHz, 1333MHz-8MB, 4C, (models 62x and 62Y)			49Y4668
16	Fan sink			49Y8390
17	Side cover with lock	49Y8447		
18	Retention bracket (rear), adapter		49Y8450	
19	Power supply, non-redundant 401 watt			46M6678

Table 14. 7042-C08 parts listing (continued).

7042-C08 parts listing

Index	Description	Tier 1 CRU	Tier 2 CRU	Part number
20	Memory, 1 GB single-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1490		
	Memory, 2 GB single-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1582		
	Memory, 2 GB dual-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1491		
	Memory, 4 GB dual-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1598		
	Memory, 1 GB dual-rank PC3-10600R-999 DDR3 ECC UDIMM	44T1572		
	Memory, 2 GB dual-rank PC3-10600R-999 DDR3 ECC UDIMM	44T1573		
	Memory, 2 GB single-rank PC3-10600R-999 DDR3 ECC UDIMM	44T1574		
	Memory, 4 GB quad-rank 1 Gbit DDR3-1066 RDIMM	46C7452		
21	System fan, rear		49Y8445	

The 7042-C08 parts that are listed in the following table are not illustrated.

Table 15. 7042-C08 parts listing (continued)

Description	Tier 1 CRU	Tier 2 CRU	Part number
ServeRAID-MR10i adapter	43W4296		
ServeRAID-MR10is VAULT adapter	44E8695		
NetXtreme II 1000 Express Ethernet Adapter	39Y6070		
Cable, backplane configuration (3.5-inch hot-swap hard disk drive)		49Y8448	
Cable, SAS signal (3.5-inch hot-swap hard disk drive)		46M6498	
Cable, SATA signal (3.5-inch simple-swap hard disk drive)		49Y8444	
Cable 1Mx4 SAS-Mini		39R6530	
Cable 3Mx4 SAS-Mini		39R6532	
Cable, optical disk drive/tape drive		25R5635	
EMC shield	49Y8455		
EMC shield kit, optical disk drive/tape drive	13N2997		
Feet, chassis	13N2985		
Hard disk drive carrier, 3.5-inch simple-swap	42C7495		
Hard disk drive shield	44X0388		
Keyboard, US	42C0060		
Keylock, keyed-alike		26K7363	
Keylock, keyed-random		26K7364	
Kit, Retainer (for optical and diskette drives)	39R9369		
Power supply unit adapter	42C7509		
Miscellaneous parts kit	39Y9773		
Mouse, 2-button	39Y9875		
Mouse, optical, 3-button (optional)	40K9203		
Power supply cage, 430 watt			49Y8459
Retention module (for fan sink)			49Y8458

Table 15. 7042-C08 parts listing (continued) (continued)

Description	Tier 1 CRU	Tier 2 CRU	Part number
Side/top cover	49Y8446		
System service label	49Y8452		
USB hypervisor key	44M2234		
Virtual media key	46C7532		
Modem cable (see “HMC modem cable part numbers” on page 35)			

For a more complete listing of power cords for the HMC, see Planning for power.

## HMC keyboard CRUs

The keyboards identified in the following table can be attached to any HMC.

### Notes:

1. All keyboards are considered a Tier 1 CRU.
2. You must have the specific character set designed for each language installed on your HMC.

Keyboard country code	FRU/CRU part number
US English	10N6956
Arabic	10N6984
Belgian/French	89P8302
Belgian/UK	10N6969
Bulgarian	10N6972
Brazilian Portuguese	10N6963
Chinese/US	10N6966
Czech	10N6981
Danish	10N6971
Dutch	10N6975
English/EMEA	10N6988
French	10N6957
French Canadian 445	10N6967
French Canadian 58	10N6968
German	10N6959
Greek	10N6977
Hebrew	10N6978
Hungarian	10N6964
Icelandic	89P8317
Italian 141	89P8318
Italian 142	10N6958
Japanese 194	10N6962
Korean	10N6965
LA Spanish	10N6983

Keyboard country code	FRU/CRU part number
Norwegian	10N6974
Polish	10N6979
Portuguese	10N6976
Romanian	89P8326
Russian	10N6986
Russian/Cyrillic	89P8328
Serbian/Cyrillic	89P8329
Slovak	10N6980
Spanish	10N6961
Swedish/Finnish	10N6870
Swiss/French/German	10N6973
Thailand	89P8334
Turkish 440	10N6982
Turkish 179	89P8336
UK English	10N6960
US	89P8338
Yugoslav/Latin	89P8339

## HMC modem cable part numbers

The following tables contain part number information for HMC modem cables, along with the name of the country or region where used, and a listing of countries along with the telephone cable name and part number where used.

If you are using a cable other than one of the cables listed in the following table, read the following caution statement.

**Note:** For a more complete listing of power cords for the HMC, see Planning for power.

### CAUTION:

**To reduce the risk of fire, use only No. 26 AWG or larger (for example, 24 AWG) UL-listed or CSA certified telecommunication line cord. (C035)**

Primary country or region	Cable name	Cable part number
Austria	AUS	21H4902
Australia	AUZ	75G3807
Belgium	BEL	21H4903
Denmark	DN	75G3812
Finland	FN	75G3809
France	FR	75G3803
Germany	GE	75G3804
Hong Kong S.A.R. of the PRC	HK	75G3808
Israel	ISR	21H4905
Italy	IT	75G3802

Primary country or region	Cable name	Cable part number
Netherlands	NL	75G3810
South Africa	SAF	21H4904
Sweden	SW	75G3806
Switzerland	SZ	75G3811
United Kingdom	UK	75G3805
United States	US	87G6236

## External modems

Contains a list of external modem part number along with the primary country or region where used.

Primary country or region	Modem part number
United States	03N7035
Australia	03N7036
Europe	03N7037
United Kingdom	03N7038
China	03N7039
Taiwan	03N7040
All geographies	03N7041

## Internal modem

When ordering a replacement internal modem for HMC models 7042-CR5, 7042-CR6, or 7042-CR7, use part number 45D3866. For other HMC models, use part number 80P4702.

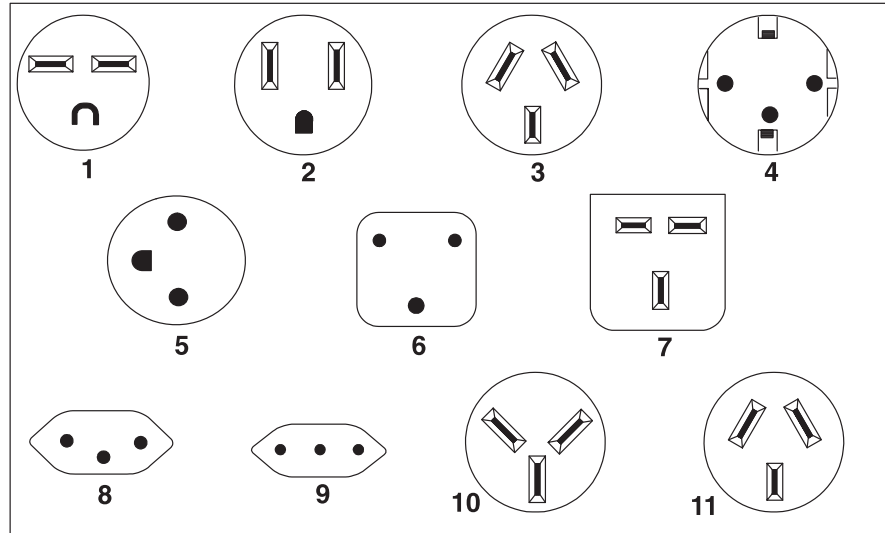
## Power cords

The manufacturer provides a power cord with a grounded attachment plug to use with this product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

Power cords used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

- For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.
- For units intended to be operated at 230 volts (within the US): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.
- For units intended to be operated at 230 volts (outside the US): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.
- The power cords listed in the following table are specifically designed for a country or region and are usually available only in that country or region.

**Note:** All power cords are considered a Tier 1 CRU.



Index	Power cord part number	Used in these countries and regions
1	1838574	Thailand, Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Trinidad (West Indies), Tobago, United States of America, Venezuela
2	6952301	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela
3	13F9940	Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa
4	13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macao S.A.R. of the PRC, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
5	13F9997	Denmark
6	14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
7	14F0033	Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong S.A.R. of the PRC, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
8	14F0051	Liechtenstein, Switzerland
9	14F0069	Chile, Ethiopia, Italy, Libya, Somalia
10	14F0087	Israel

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## Cabling the HMC

Connect the Hardware Management Console (HMC) cables, connect the Ethernet cable, and connect the HMC to a power source.

If the physical HMC is not located within 8 meters (25 feet) away from the managed system, you must supply a separate system that can access the Internet using a browser. This system must be within 8 meters (25 feet) of the managed system. This setup allows service personnel remote access to the HMC. The HMC must also be configured to allow for this remote access.

### DANGER

**Electrical voltage and current from power, telephone, and communication cables are hazardous.**

**To avoid a shock hazard:**

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

**To Disconnect:**

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

**To Connect:**

1. Turn everything OFF (unless instructed otherwise)
2. Attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

(D005)

Use the following instructions to help you cable your rack-mounted or stand-alone HMC.

**Attention:** *Do not* plug the power cords into the electrical outlet until you are instructed to do so.

1. Ensure that you position the HMC in the correct location.
2. Choose from the following options:
  - If you are installing a rack-mounted HMC, continue with step 3.
  - If you are installing a stand-alone HMC, continue with step 4 on page 39.
3. Perform the following steps to install the cables on a rack-mounted HMC:

- a. Use the following illustration to identify the location of the connectors described in these instructions:

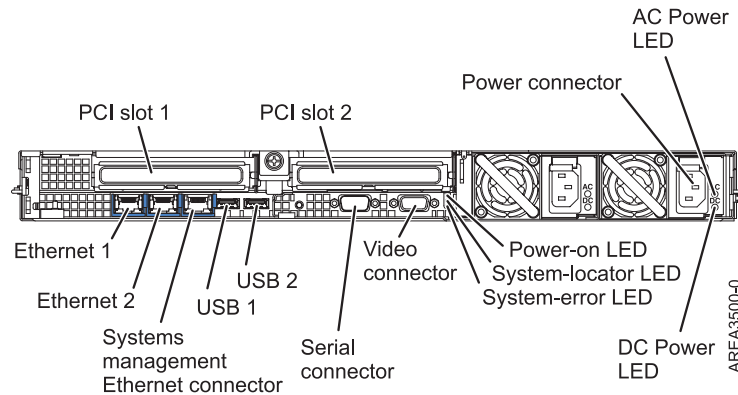


Figure 15. Back view of a typical rack-mounted HMC

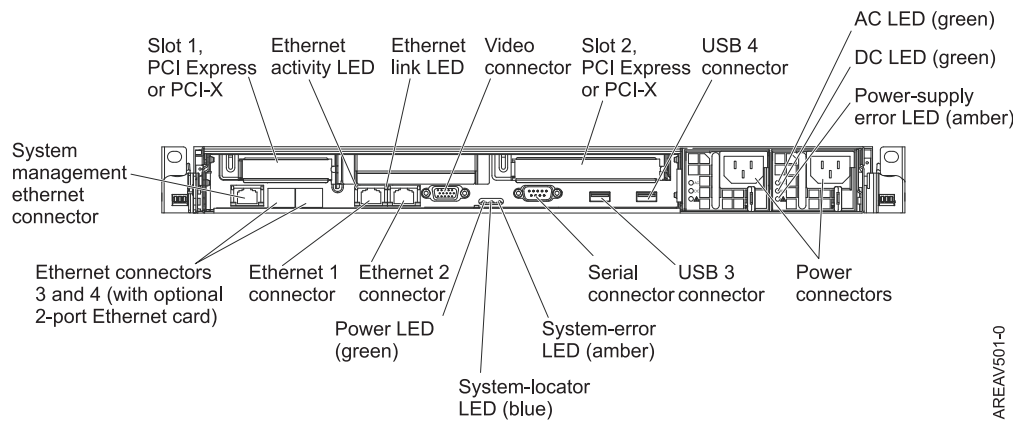


Figure 16. Back view of 7042-CR5 model

- b. If you are installing your HMC into a rack, see Installing and configuring the Hardware Management Console. When you have finished installing the HMC into a rack, continue with the next step.
- c. Connect the keyboard, display, and mouse using the USB conversion option cable.
- d. Continue with step 5 on page 40.
4. If you are installing a stand-alone HMC, perform the following steps:
  - a. Use the following illustration to identify the location of the connectors described in these instructions:

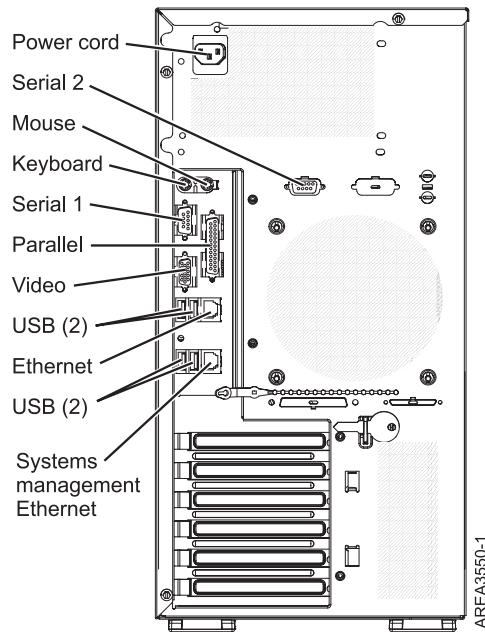


Figure 17. Back view of a typical stand-alone (tower) HMC

Table 16. Supported HMC ports

Port	Description
Video	The Video port is used as monitor connection.
PS/2 Keyboard/Mouse	A PS/2 keyboard or mouse is not included with the HMC, but you can attach either.
Serial 1	Serial 1 is supported for an external modem.
USB	These ports are supported for a USB keyboard, mouse, flash memory, or USB diskette drive.
Ethernet	The Ethernet port is used as the HMC's primary network connection.

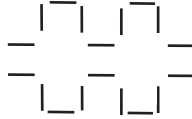
The HMC does not support the use of parallel, Serial 2, or systems management Ethernet ports.

- b. Attach the monitor cable to the monitor connector, and tighten the screws.
  - c. Attach the power cord to the monitor.
  - d. Ensure that the voltage selection switch on the HMC is set to the voltage used in your world region. The voltage selection switch is red and is located near the power connector. Move the switch so that the voltage used in your world region is displayed.
  - e. Plug the power cord into the HMC.
  - f. Connect the keyboard and mouse to the Universal Serial Bus (USB) ports on the HMC. You can connect the keyboard and mouse to the USB ports on the front or back panels.
5. Connect the modem:

**Note:** During the installation and configuration of the HMC, the modem might automatically dial out as the HMC follows routine call-out procedures. This is usual behavior.

*If you are connecting an external modem, do the following:*

- a. Optional: Install the external modem into a rack.
- b. If you have not already done so, connect the modem data cable to the external HMC modem.
- c. Connect the modem data cable to the system port on the HMC labeled with the following symbol:



IPHA1522-0

- d. Use the telephone cable to connect the line port of the external modem to the analog telephone jack on your wall.

*If you are connecting to an integrated modem, use the data cable to connect the integrated HMC modem to the appropriate data source. For example, use the telephone cable to connect the HMC modem line port to the analog jack on your wall.*

6. Connect the Ethernet (or crossover) cable from the HMC to the managed server.

**Note:**

- In general, connect your HMC to the managed server in a private service DHCP network. If you have not installed any additional Ethernet adapters in the PCI slots on your HMC, use the primary integrated Ethernet port. Use the previous illustrations to identify the location of the HMC ports.
- You can verify that the Ethernet cable connection is active by observing the green status lights at both the HMC and managed system Ethernet ports while your installation progresses.
- Connect the Ethernet port on the HMC to the Ethernet port that is labeled **HMC1** on the managed server.

If you are connecting a second HMC to your managed server, connect to the Ethernet port that is labeled **HMC2** on the managed server.

7. If you use an external modem, plug the modem power supply cord into the HMC modem.
8. Plug the power cords for the monitor, HMC, and HMC external modem into electrical outlets.

**Note:** Do not connect the managed system to a power source at this time.

9. If you are setting up the HMC to manage an existing server, continue with “Preparing for HMC configuration” on page 70.

**Note:** For a complete list of HMC supported external cables, see Serial attached SCSI cable planning topic.

---

## Troubleshooting the HMC

Learn how to correct a *No connection*, *Incomplete*, *Recovery*, or *Error* state on a system managed by an HMC.

### Correcting a *No connection* state for a managed system

The *No connection* state can occur when the HMC is not connected, or the connection with the managed system failed.

Use this procedure for a system that was previously connected to the same HMC and is now in *No connection* state. If you have a new system, a new HMC, or have moved your system to a different HMC, see “Correcting a connection problem between the HMC and a managed system” on page 45.

1. Obtain the IP address for the managed system's service processor by performing the following steps.
  - a. On the HMC, right-click the desktop and select **terminal** > **xterm**. The restricted shell command line interface opens.
  - b. At the terminal, issue the command: `lssysconn -r all`

Information similar to the following is displayed:

```
resource_type=sys,type_model_serial_num=9117-570*100729E,sp=unavailable,ipaddr=10.0.0.247,alt_ipaddr=unavailable,state=No Connection,connection_error_code=Connecting 0000-0000-00000000
```

- c. At the terminal, issue the ping command to the address of the failing system. In the previous example, you would type: ping 10.0.0.247.
2. Choose from the following options:
  - If the ping *is* successful, go to step 3.
  - If the ping *is not* successful, go to step 4.
3. If the ping test *is* successful, perform the following steps:
  - a. If your system is equipped with a control panel, ensure that there are no steady (nonscrolling) reference codes displayed on the panel.

**Note:** A steady reference code might indicate a hardware problem. Contact your next level of support or your hardware service provider.
  - b. Restart the HMC.
  - c. If restarting the HMC does not resolve the problem, contact your next level of support or your hardware service provider.
4. If the ping test *is not* successful, perform the following steps:
  - a. If your system is equipped with a control panel, ensure that there are no steady (nonscrolling) reference codes displayed on the panel.

**Note:** A steady reference code might indicate a hardware problem. Contact your next level of support or your hardware service provider.
  - b. If your system has a control panel, check to see if the power light is on.
  - c. Choose from the following options:
    - If there is power to the managed system, go to step 5.
    - If there is no power to the managed system, see “HMC and system power-on and power-off procedures” on page 48. After the power is restored, wait 5 minutes for the service processor to restart and the HMC to re-establish contact. If the system is equipped with redundant service processors, allow up to 20 minutes for this step.
5. Verify physical network connectivity by performing the following steps:
  - a. Verify that the HMC and the service processor are correctly connected to your Ethernet network.
  - b. Verify that Ethernet link status is good on all network segments which exist between the HMC and the managed system.
  - c. If you think the network might be the problem, connect a cable from the HMC to the service processor and try pinging the failing system. Then choose from the following options:
    - If the ping is successful, replace the cables the way they were and correct the network problem. After the network problem is resolved, repeat this entire procedure.
    - If the ping is not successful, replace the cables the way they were and continue with step 5d.
  - d. Reset the service processor. See “Resetting the service processor” on page 47.
6. If the problem is not resolved by any of the above steps, contact your next level of support or your hardware service provider.

## Correcting an *Incomplete* state for a managed system

The *Incomplete* state can occur when the HMC failed to get all of the necessary information from the managed system.

To correct an *Incomplete* state, perform the following steps:

1. From the navigation area, select Servers.
2. From the contents area, select the managed system.

3. **Select Tasks > Operations> Rebuild Managed System.**
4. Choose from the following options:
  - If the state remains as *Incomplete*, rebuild the managed system several more times.
  - If the state goes to *Recovery*, see “Correcting a *Recovery* state for a managed system.”
  - If the state does *not* remain as *Incomplete* or go to *Recovery*, continue with the next step.
5. Reset the connection from the HMC. See “Resetting the managed system connection from the HMC” on page 47. If the connection still fails, continue with the next step.
6. Restart the HMC. Then choose from the following options (This next step might take several minutes to complete):
  - If the state goes to *Recovery*, see “Correcting a *Recovery* state for a managed system.”
  - If the state remains *Incomplete*, perform the following steps:
    - a. Verify that there is a redundant HMC.
    - b. Verify that no one is entering commands from the alternate HMC.
    - c. Repeat step 1 on page 42 through 6. If the connection still fails, continue with the next step.
7. If the problem persists, contact your next level of support or your hardware service provider.

## Correcting a *Recovery* state for a managed system

The *Recovery* state can occur when the save area in the service processor assembly is not synchronized with the HMC database.

To recover from the *Recovery* state, perform the following steps:

1. Recover partition data. For details, see “Recovering partition data on a managed system.” If this resolves the problem, this ends the procedure.
2. If the problem is not resolved after recovering profile data, choose one of the following:
  - If the state remains in *Recovery*, retry recovering partition data. If it fails a second time, follow the problem determination procedure for any reference codes you receive.
  - If the state changed to *Incomplete*, see “Correcting an *Incomplete* state for a managed system” on page 42.
  - If the state changed to *No Connection*, see “Correcting a *No connection* state for a managed system” on page 41.
  - If the problem persists, contact your next level of support or your hardware service provider.

## Recovering partition data on a managed system

Learn how to recover the partition data on your managed system if the partition becomes corrupted.

Through the HMC interface, you can recover partition data on your managed system if the data becomes damaged. This partition data includes information about logical partitions, partition profiles, and system profiles. If the partition data on your managed system becomes damaged, the managed system is in *Recovery* state. You can either restore the partition data from a backup file that is saved automatically on your HMC, or clear all partition configuration.

This procedure recovers the partition data in the service processor of your server. To recover the partition data on your managed system, see “Restoring profile data” on page 44.

**Note:** The HMC might not show *operating* state for the managed system after completing this recovery procedure. After a partition is activated, the managed system changes to an *operating* state and clears the A700 4091 or C700 4091 system reference code (SRC).

To recover the partition data on your managed system, you must be a member of one of the following roles:

- Super administrator
- Operator

To recover the partition data on your managed system, do the following:

1. In the Navigation Area, open **Server and Partition**.
2. Select **Server Management**.
3. In the contents area, left-click the context menu button (double right arrows) next to the managed system whose partition data you want to recover and select **Recover Partition Data**.
4. Select one of the following:
  - **Restore profile data from HMC backup data:** This option restores the partition data using the backup file that is saved automatically on the HMC.
  - **Initialize the managed system:** This option clears all partition configuration data, and can only be used if all partitions are in the *Not Activated* state.
5. Click **OK**.

## Restoring profile data

Learn how to read the profile data from the previously backed-up file on the HMC, and load this data to the managed system.

Selecting this menu item restores profile data to the HMC from a backup file stored on the HMC hard drive.

**Note:** This is not a concurrent procedure. When the data is restored, the managed system powers on to Partition Standby.

To restore stored profile data on the HMC hard drive, you must be a member of one of the following roles:

- Super administrator
- Service representative

To restore profile data, do the following:

1. In the contents area, select the managed system.
2. From the menu, select **Configuration > Manage Partition Data > Restore**.
3. From the list of backup files, select the profile information that you want to restore .
4. Select a restore option.
5. Click **OK**.

## Correcting an *Error* state for a managed system

The *Error* state automatically generates a call to the service support center if the automatic call support function is enabled.

If the automatic call support function is not enabled, contact your next level of support or your hardware service provider.

## Correcting a *Failed Authentication* state for a managed system

The *Failed Authentication* state can occur when the HMC access password for the managed system is not valid.

Perform the following procedure to correct a failed authentication state on your HMC.

1. Do you have an HMC password?

- **Yes:** Enter the HMC password and choose from the following options:
    - If the managed system goes to *Operating*, *Power Off*, or *Standby*, the authentication was successful. **This ends the procedure.**
    - If the managed system goes to *No connection*, *Incomplete*, *Recovery*, or *Error* state, see “Troubleshooting the HMC” on page 41.
  - **No:** Do you have an ASMI admin password?
    - **Yes:** Continue with step 2.
    - **No:** Contact your next level of support to request CE login. Then continue with step 2, using CE login instead of admin password for step 2a.
2. Perform the following steps:
    - a. Log in to the ASMI with admin authority.
    - b. Select **Login Profile**.
    - c. Select **Change Password**.
    - d. In the User ID to change field, select **HMC**.
    - e. Enter the ASMI's admin password in the **Current Password** for user ID admin field.

**Note:** Do not enter the HMC user password. Enter the ASMI's *admin* password.

    - f. Enter a new HMC access password twice and click **Continue**.
    - g. From the HMC Server Management window, select **Update the managed system password**.
    - h. Enter the new password that was set in step 2f. **This ends the procedure.**
  3. If the problem is not resolved, contact your next level of support or your hardware service provider.

## Correcting a connection problem between the HMC and a managed system

Learn how to correct a connection problem between the HMC and a managed system.

Use this procedure in the following situations:

- You have a new HMC
- You have a new system
- You are using a different HMC to manage your system.

If your system was previously connected to the same HMC and is now in *No connection* state, see “Correcting a *No connection* state for a managed system” on page 41.

1. Choose from the following options:
  - If the system uses DHCP addressing, go to step 2.
  - If the system uses static addressing, go to step 6 on page 46.

**Note:** To find out if your system uses DHCP or static addressing, perform one of the following:

  - Use the ASMI by selecting **Network Services > Network Configuration** and viewing whether the IP address field shows *Static* or *Dynamic*.
  - If you have a control panel, use function 30.
2. If your system uses DHCP addressing, add a system automatically by issuing the following command: `mksysconn -o auto`.  
Is the system displayed?
  - **Yes:** **This ends the procedure.**
  - **No:** Continue with step 3.
3. Check for network problems, cables, switches, link lights on the service processor, and so on.  
Was there a problem?

- **Yes:** Correct the problem and return to step 2 on page 45.
  - **No:** Continue with step 4.
4. Reset the service processor to force it to request a new IP address. Refer to “Resetting the service processor” on page 47.
  5. Did resetting the service processor resolve the problem?
    - **Yes: This ends the procedure.**
    - **No:** Contact your next level of support.
  6. If your system uses static IP addressing, add a system manually by performing the following steps:
    - a. From the HMC, select **Server Management**.
    - b. Select **Add Managed System**.
    - c. Click **Add a managed system**.
    - d. Enter the IP address/Hostname and password.
 Is the system displayed under system management?
    - **Yes: This ends the procedure.**
    - **No:** Contact your next level of support.

## Correcting a version mismatch state in a managed system

Learn how to correct a version mismatch problem in a managed system.

The version mismatch problem might occur in the following situations:

**The service processor firmware and Hardware Management Console (HMC) versions are incompatible.**

Use the reference code and update to the compatible service processor and HMC configurations.

**An HMC Version 7.7.8, or later is connected to a server that is managed by a newer version of HMC.**

If an HMC Version 7.7.8, or later is used to manage a server with a newer configuration, it might display a new connection error state Version Mismatch with the reference code as Save Area Version Mismatch. If you want to continue to use the lower version of HMC, initialize the managed system in the lower version of HMC and then run any operations.

**An HMC Version 7.7.8, or later is connected to a server that is managed by an older version of HMC that does not have enough service processor nonvolatile RAM (NVRAM) space to migrate the data to HMC Version 7.7.8, or later.**

HMC Version 7.8.0, or later performs regular checks for sufficient space in this storage area. If sufficient service processor NVRAM space is not available, the HMC stops the connection process and displays the error state Version Mismatch. For more information, see HMC Version 7 Release 7.8.0 Upgrade sizing.

## Creating a virtual drive on a 7042-CR7 installed with a single drive

Use this information to create a virtual drive on a 7042-CR7 installed with a single drive.

To create a virtual drive on a 7042-CR7 installed with a single drive, complete the following steps:

1. Power on or restart the system.
2. When the system prompt is displayed, press the F1 key to access **Setup Utility**.
3. In the System Configuration and Boot Management window, use the up or down arrow keys to highlight **System Settings** and then press Enter.
4. In the System Settings window, use the up or down arrow keys to highlight **Storage** and then press Enter.
5. In the Storage window, use the up or down arrow keys to highlight **LSI MegaRAID Configuration Utility** and then press Enter.

6. In the Configuration Options window, use the up or down arrow keys to highlight **Virtual Drive Management** and then press Enter.
7. In the Virtual Drive Management window, use the up or down arrow keys to highlight **Create Configuration** and then press Enter.
8. In the Create Configuration window, use the up or down arrow keys to highlight **Select Drives** and then press Enter.
9. In the Select Drives window, use the up or down arrow keys to highlight **Check All** and then press Enter.
10. Use the up or down arrow keys to highlight **Apply Changes** and then press Enter.  
The Success window is displayed with **OK** highlighted.
11. Press Enter.
12. In the Create Configuration window, use the up or down arrow keys to highlight **Save Configuration** and then press Enter.
13. In the Warning window, use the up or down arrow keys to highlight **Confirm** and then press Enter.
14. Use the up or down arrow keys to highlight **Yes** and then press Enter. The Success window is displayed with **OK** highlighted.
15. Press Enter.  
The Create Configuration window displays additional information.
16. Press Esc to exit the Create Configuration window.
17. Press Esc twice to go to the Configuration Options window.
18. In the Configuration Options window, use the up or down arrow keys to highlight **Virtual Drive Management** and then press Enter.
19. In the Virtual Drive Management window, use the up or down arrow keys to highlight **Select Virtual Drive Operation** and then press Enter.
20. In the Select Virtual Drive Operations window, use the up or down arrow keys to highlight **Start Operation** and then press Enter.
21. In the Warning window, use the up or down arrow keys to highlight **Confirm** and then press Enter.
22. Use the up or down arrow keys to highlight **Yes** and then press Enter.  
The Success window is displayed with **OK** highlighted.
23. Press Enter.
24. Press Esc until the exit Setup Utility prompt is displayed.
25. Press **Y** to save the changes and exit the **Setup Utility**. **This step ends the procedure.**

## Resetting the managed system connection from the HMC

Use this procedure to reset the managed system connection from the HMC.

Perform these steps to reset the managed system connection:

1. In the navigation area, open **Systems Management**.
2. Select **Servers**.
3. In the contents area, select the server on which you want to reset the connection.
4. In the **Tasks** area, open **Connections**.
5. Select **Reset or Remove Connection**.
6. Select **Reset Connection**.
7. Click **OK**.

## Resetting the service processor

Use this procedure to reset the service processor.

**Note:** Use this procedure only under the direction of your next level of support or your hardware service provider. During this procedure, you will be powering off the system, removing ac power and reapplying ac power.

1. Inform anyone using the server that it will be shut down.
2. Stop all applications that are running on the server.
3. Stop the operating system and server by choosing from the following options:
  - If you have an HMC, shut down all logical partitions and the server. For instructions, see “HMC and system power-on and power-off procedures.” Then continue with step 5.
  - If you do *not* have an HMC, continue with the next step.
4. Stop the system. For instructions, see Stopping a system that is not managed by an HMC or an SDMC.
5. Unplug the ac power cord and then plug it back in.
6. Start the server. The service processor is reset. **This ends the procedure.**

## HMC and system power-on and power-off procedures

Use one or more of the following procedures to power on or power off your HMC or system.

### Power on the HMC

During the process of powering on, the HMC checks to see which managed systems are available and communicating with the console. To ensure that each managed system is available before you power on the HMC, managed systems must be in standby mode or actively operating. Standby mode is indicated by the OK shown in the operator panel after the managed system has the power connected and the initial tests are complete.

**Note:** If the managed system is in an emergency power off (EPOW) condition, the managed system must be brought to standby mode before the HMC can be used to power on the system.

To power on the HMC, do the following:

1. Press the Power button once to turn on the power.
2. When the system has finished the power-on self-test (POST), log in to the HMC.

### Power off the HMC

**Attention:** If possible, shut down all applications and partitions before powering off the system. Using either the power-on button on the control panel or entering commands at the HMC to stop the system can cause unpredictable results in the data files. Also, the next time you start the system, it might take longer if all applications are not ended before stopping the system.

To power off the HMC, log in to the HMC and select Power off. The HMC shuts down any applications that are running, and then turns off the HMC.

### Power-on self-test

After power is turned on and before the operating system is loaded, the system does a power-on self-test (POST). This test performs checks to ensure that the hardware is functioning correctly before the operating system is loaded. During the POST, codes indicating the progress of the POST might be displayed. After the POST is complete, the HMC operating machine code loads and a login prompt is displayed.

## Power on a system by using an HMC

To power on a managed system, complete the following steps:

1. In the navigation area, expand the **Systems Management** icon.
2. Expand the **Servers** icon.
3. Select the check box next to the name of the desired server. The tasks available for that server will be enabled.
4. From the **Tasks** menu, choose **Operations -> Power on**. Follow any additional on-screen instructions.

## Power off a system by using an HMC

**Attention:** If possible, shut down the running logical partitions on the managed system before powering off the managed system. Powering off the managed system without shutting down the logical partitions first causes the logical partitions to shut down abnormally and can cause data loss.

1. In the navigation area, expand the **Systems Management** icon.
2. Expand the **Servers** icon.
3. Select the check box next to the name of the desired server. A selection of tasks available for that server will be displayed.
4. From the **Tasks** menu, select **Operations > Power off**. Follow any additional on-screen instructions.
5. Continue with "Remove the power cords."

## Install the power cords

Before powering on a system, ensure that the power cords have been plugged in to all of the power supplies on all of the processor enclosures.

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1

## Remove the power cords

The system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

1. Unplug any power cables that are attached to the unit from electrical outlets.
2. Remove all power cords from all of the processor enclosures starting with the primary processor enclosure (topmost) and then each secondary enclosure working from top to bottom.

## Reinstalling the HMC machine code

Explains how to reinstall the interface and HMC machine code prior to restoring critical backup data.

If the HMC is not responding, you can use the recovery CD to reinstall the HMC onto the HMC PC. After you reinstall the HMC machine code, you can restore the backup data that you created to recover your critical console information. For information about how to restore the HMC backup data, see "Restoring critical HMC data" on page 50.

To reinstall the HMC machine code, you must be a member of one of the following roles:

- Super administrator
- Operator

- Service representative

**Note:** If the F12 function key is not enabled, see “Setting up the network interface as a startup device” on page 52 to enable it.

To reinstall the HMC machine code, complete the following steps:

1. Shut down and power off the HMC. For more information, see “Shutting down, logging off, and disconnecting the HMC” on page 71.
2. If you are installing the HMC interface or machine code from the network, go to step 3. If you are installing the HMC interface or machine code from recovery media, do the following:
  - a. Install the recovery media.
  - b. Power on the HMC. The HMC powers on from the media and displays the Backup/Upgrade/Restore/Install window.
  - c. Select the Install option, and click **Next**.
  - d. Select **Install from media**. Click **Next**.
  - e. When prompted to install the additional media. Select **1 - Install additional software from media**.
  - f. Select **1 - Restore Critical Console Data** from the menu to restore data from a DVD. **This completes this procedure.**
3. Prior to reinstalling the HMC interface or machine code from a network ensure the following is in place:
  - a. The network boot server must be configured.
  - b. The network interface is one of the devices in your startup sequence. To view the list of startup devices, press F12 when the HMC powers on, and select the network interface from which you want to boot
4. To install the HMC interface or machine code from a network, complete the following steps:
  - a. Select the Install option, and click **Next**.
  - b. Select **Install from network**. Click **Next**.
  - c. To finish the restore from a remote server, select **2 - Finish the Installation**.

## Backing up partition profiles

Refer to this procedure when needing to back up a partition profile.

To back up partition profile data, you must be a member of one of the following roles:

- Super administrator
- Service representative

To back up partition profile data, do the following:

1. In the contents area, select the managed system.
2. From the menu, select **Configuration > Manage Partition Data > Backup**.
3. Type the name you want to use for this backup file.
4. Click **OK**.

## Restoring critical HMC data

Restore critical HMC data.

Restore HMC backup data *only* in conjunction with a reinstallation of the HMC. For information about how to reinstall the HMC, see “Reinstalling the HMC machine code” on page 49.

**Attention:** Data that is backed up by using the **Save Upgrade Data** or **Backup Critical Console Data** tasks can be restored only to the same HMC. For information about how to replace an HMC with another HMC, see “Replacing an HMC” on page 67.

**Note:** For this operation, you must have one of the following:

- The backup DVD media
- Access to the remote server where the archive was created by using the procedure in “Backing up critical HMC data” on page 69

To restore the HMC data, you must be a member of one of the following roles:

- Super administrator
- Operator
- Service representative

Select the data-restoration procedure based on the data archiving method used:

If the critical console data has been archived on a DVD, do the following:

1. Select **1 - Restore Critical Console Data** from the menu displayed at the end of the HMC reinstallation.
2. Insert the DVD containing the archived console data. On the first boot of the newly installed HMC, the data is automatically restored.

If the critical console data from a remote server, do the following:

1. Manually reconfigure network settings to enable access to the remote server after the HMC is newly installed. For information about configuring network settings, see *Configuring the HMC*.
2. In the navigation area, click the **Licensed Internal Code Maintenance** icon.
3. In the contents area, click the **HMC Code Update** icon.
4. Select **Restore Remote Console Data**.
5. Select the type of remote restoration.
6. Follow the directions on the window to restore the critical console data. The data automatically restores from the remote server when the system is rebooted.

## Rebuilding a RAID 1 array

Use this information to rebuild a RAID 1 array on a Hardware Management Console (HMC) that has a failed disk drive or solid-state drive.

Before you begin, ensure that you replace the failed disk drive or solid-state drive. For instructions about replacing a drive, see the Problem determination and service guide for your HMC model.

To rebuild a RAID 1 array on the HMC, complete the following steps:

1. Power on or restart the system.
2. When the system prompt is displayed, press the F1 key to access the **Setup Utility**.
3. In the System Settings window, use the up or down arrow keys to highlight **Storage** and then press Enter.
4. In the Storage window, use the up or down arrow keys to highlight **LSI MegaRAID Configuration Utility** and then press Enter.
5. In the Configuration Options window, use the up or down arrow keys to highlight **Drive Management** and then press Enter.
6. In the Drive Management window, use the up or down arrow keys to highlight **Select Drive Operations** and then press Enter.

7. In the Select Drive Operations window, press Enter. Use the up or down arrow keys to highlight the drive that is listed as **Unconfigured Bad** and then press Enter.
8. In the Select Drive Operations window, use the up or down arrow keys to highlight **Make Unconfigured Good** and then press Enter.
9. In the Success window, use the up or down arrow keys to highlight **OK** and then press Enter.
10. In the Select Drive Operations window, use the up or down arrow keys to highlight **Assign Global Hot Spare Drive** and then press Enter.
11. In the Success window, use the up or down arrow keys to highlight **OK** and then press Enter. The rebuild operation starts.
12. From the **Setup** menu, press the Esc key repeatedly to exit the **Setup Utility**.
13. In the Exit Setup window, press the Y key to save the changes and to exit the **Setup Utility**.
14. The HMC starts and the rebuild operation continues to run until it is complete. **This step ends the procedure.**

## Setting up the network interface as a startup device

This section describes how to enable the F12 function key to set up the network interface as a startup device.

On some HMC models, the F12 function key is not enabled for use when the HMC is powered on. These steps enable the F12 function key so that you can specify the network interface as a startup device.

To set up the network interface as a startup device, you must be a member of one of the following roles:

- Super administrator
- Operator
- Service representative

To set up the network interface as a startup device, do the following:

1. Shut down and power off the HMC. For more information, see “Shutting down, logging off, and disconnecting the HMC” on page 71.
2. Power on the HMC console.
3. Press F1 to start the BIOS Setup utility.
4. Find and select **Startup** or **Start Options**.
5. Select **Startup Sequence** to view the list of startup devices.
6. Depending on the type of HMC (stand-alone or rack-mounted), use the +/- key or arrow key to make the network interface an entry in the startup list, after the hard disk.
7. If the HMC is a stand-alone model, find and enable the Start up Device Menu prompt. This enables the F12 function key when the HMC powers on, so that you can select the network device in your startup list.

For CR2 and CR3 machine types, the Planar Ethernet PXE/DHCP entry should have Planar Ethernet 1 and Planar Ethernet 2.

On desktop HMC machines, do the following:

- a. Press Esc.
- b. Select **Devices > Network Setup**.
- c. Ensure that **PXE Boot Agent** and **PXE Base code** are set to **Enabled**. If these settings are not enabled, networking will not occur.
8. Save the settings and exit the BIOS setup utility to restart the boot process.

You can now press F12 to select the network device as the startup device. If a DHCP server can accept PXE requests from the HMC, and has the required files, the HMC will boot from it. The Backup/Upgrade/Restore/Install window opens.

The **chhmc** command can be used on some HMC machine types to set the network interface as a startup device. To enable network boot on the HMC, use the following command:

```
chhmc -c netboot -s enable
```

When the command completes, run the following command to verify that network boot has been enabled:

```
lshmc -r
```

The command then displays the following:

```
ssh=enable,xntp=disable,websm=enable,http=enable,netboot=enable
```

To disable network boot, use the **chhmc** command:

```
chhmc -c netboot -s disable
```

## Upgrading the machine code on an HMC from Version 6 to Version 7

Learn how to upgrade the machine code on an HMC from Version 6 to Version 7 while maintaining your HMC configuration data.

Perform Steps 1 through 9 to upgrade machine code on an HMC from Version 6 to Version 7.

**Important:** You must be at a minimum of HMC machine code Version 6 Release 1.2 to upgrade to Version 7 Release 3.1.0.

### Step 1. Obtain the upgrade

You can order the HMC machine code upgrade through the Fix Central website, by contacting service and support, or by downloading it to an FTP server.

**Note:** If you do not have access to the Internet, contact service and support to order the upgrade on DVD.

1. From a computer or server that has an Internet connection, go to the Fix Central website at <http://www.ibm.com/support/fixcentral/>.
2. From the **Product Group** list, select **Power System Management Consoles**.
3. From the **Product** list, select **Power Hardware Management Console**.
4. From the **Select from Power Hardware Management Console**, select the HMC version and click **Continue**.
5. Locate the Recovery CD download and ordering section.
6. Follow the on-screen prompts to submit your order.
7. After you receive the upgrade, continue with "Step 2. Back up critical console information."

### Step 2. Back up critical console information

Back up critical console information before installing a new version of HMC software so that previous levels can be restored in the event of a problem while upgrading the software. Do not use this critical console data after a successful upgrade to a new version of the HMC software.

**Note:** If you choose to back up the console data to removable media (that is, diskette or DVD), you will need to have a diskette or DVD available.

1. Choose from the following options:
  - If you do *not* plan to back up to diskette or DVD-RAM, continue with the next step.
  - If you plan to back up to diskette or DVD-RAM, perform the following steps:

- a. Insert the media into the drive.
  - b. Select **Format Removable Media**.
  - c. Select **Format DVD-RAM** or **Format diskette**.
  - d. Click **OK**.
  - e. Continue with the next step.
2. Select **Back up Critical Console Data**.
3. Select an archive option. You can back up to a DVD in the HMC, a remote system mounted to the HMC file system (for example, NFS), or send the backup to a remote site by using File Transfer Protocol (FTP).
  - To back up to DVD, choose **Back up to DVD on local system** and follow the instructions.
  - To back up to a mounted remote system, choose **Backup to mounted remote system** and follow the instructions.
  - To back up to a remote FTP site, choose **Send backup critical data to remote site** and follow the instructions.
4. Continue with "Step 3. Record the current HMC configuration information."

### Step 3. Record the current HMC configuration information

Before you upgrade to a new version of HMC software, as a precautionary measure, record HMC configuration information.

To record HMC configuration information, follow these steps:

1. In the navigation area, open **HMC Management**.
2. Select **HMC Configuration**.
3. In the tasks list, select **Schedule Operations**. The Scheduled Operations window opens with a list of all managed systems.
4. Select the HMC you plan to upgrade and click **OK**. All scheduled operations for the HMC are displayed.
5. Select **Sort > By Object**.
6. Select each object and record the following details:
  - Object Name
  - Schedule date
  - Operation Time (displayed in 24-hour format)
  - Repetitive (if Yes, perform the following steps:)
    - a. Select **View > Schedule Details**.
    - b. Record the interval information.
    - c. Close the scheduled operations window.
    - d. Repeat for each scheduled operation.
7. Close the Customize Scheduled Operations window.
8. Continue with "Step 4. Record remote command status."

### Step 4. Record remote command status

1. In the navigation area, select **HMC Management**.
2. Select **HMC Configuration**.
3. In the tasks list, click **Enable/Disable Remote Command Execution**.
4. Record whether the **Enable remote command execution using the ssh facility** check box is selected.
5. Click **Cancel**.
6. Continue with "Step 5. Save upgrade data" on page 55.

## Step 5. Save upgrade data

You can save the current HMC configuration in a designated disk partition on the HMC. Only save upgrade data immediately prior to upgrading your HMC software to a new release. This action allows you to restore HMC configuration settings after upgrading.

**Note:** Only one level of backup data is allowed. Each time you save upgrade data, the previous level of data is overwritten.

1. In the navigation area, open the **Licensed Internal Code** folder.
2. Select **HMC Code Update**.
3. Select **Save Upgrade Data**.
4. Select **Hard Drive** and click **Continue**.
5. Click **Continue** to start the task.
6. Wait for the task to complete. If the Save Upgrade Data task fails, contact your next level of support before proceeding.

**Note:** If the Save Upgrade Data task fails, do not continue the upgrade process.

7. Click **OK**.
8. Click **Close**.
9. Continue with "Step 6. Upgrade the HMC software from Version 6 to Version 7."

## Step 6. Upgrade the HMC software from Version 6 to Version 7

To upgrade the HMC software, do the following:

1. Insert the HMC Product Installation DVD-RAM into the DVD-RAM drive.
2. Select **Upgrade** and click **Next**.
3. When the message is displayed, choose from the following options:
  - If you have saved upgrade data during the previous task, continue with the next step.
  - If you did not save upgrade data previously in this procedure, you must save the upgrade data now before you continue.
4. Select **Upgrade from media** and click **Next**.
5. Confirm the settings and click **Finish**.
6. Follow the on-screen prompts.

### Notes:

- If the screen goes blank, press the space bar to view the information.
  - The first DVD can take approximately 20 minutes to install.
7. When prompted, remove the first media and then insert the second media into the DVD-RAM drive.
  8. Select **1. Install additional software from media** and press Enter. Press any key to confirm the installation. The HMC will display status messages while it installs the packages.
  9. When the second media installation is complete, remove the media from the drive and close the drawer.
  10. Select **Option 2 Finish the installation** and press Enter. The HMC will complete the booting process.
  11. Accept the License Agreement for Machine Code twice.
  12. At the login prompt, log in using your user ID and password. The HMC code installation is complete.
  13. Continue with "Step 7. Verify that the HMC machine code upgrade installed successfully."

## Step 7. Verify that the HMC machine code upgrade installed successfully

1. Verify that the version and release match the update that you installed.
2. If the level of code displayed is not the level that you installed, perform the following steps:

- a. Try again to update the HMC machine code by using a different DVD.
- b. If the problem persists, contact your next level of support.

## HMC problem analysis

Use this information to diagnose and repair problems that are related to the Hardware Management Console (HMC).

### DANGER

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

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

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

#### To Disconnect:

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

#### To Connect:

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

(D005)

If you were directed here from the Beginning problem analysis procedure because your HMC is not functioning correctly, continue with the "Entry point for HMC problem determination" on page 57.

To perform other maintenance tasks on your HMC, see following procedures:

- For general maintenance information on the base personal computer that is used to build the HMC, see "HMC diagnostics" on page 5.
- For instructions to replace an HMC, see Replacing an HMC.
- For HMC parts information, see following:
  - Hardware Management Console (HMC) parts. Because the personal computer that is used for your HMC can be serviced by the customer, you are the service provider for your HMC.

- To find links to the appropriate personal computer hardware maintenance information, see “Equivalent maintenance information for the HMC personal computer hardware” on page 6.
- For removing and replacing HMC parts, see “Removal and replacement procedures” on page 8.
- For backing up critical disk drive information on the HMC, see Backing up critical HMC data topic.
- For restoring disk drive information on the HMC, see Reinstalling the HMC machine code .
- For checking modem settings, see Cabling the HMC topic.

## Entry point for HMC problem determination

Find the symptom you are having in the Symptom column of the following table. Then perform the action described in the Action column.

Symptom	Action
Operator reported that the HMC did not start, but no other problems were reported.	Go to “Beginning HMC problem determination” on page 58.
Operator reported “Communication not active” on the HMC.	Go to “Testing the HMC Ethernet adapter” on page 62.
Operator reported communication problems with a remotely connected HMC or a managed system.	Go to “Testing the modem connection to the managed system” on page 60.
Power problems	Go to “Testing for a power problem” on page 59.
HMC boot problems	Go to “Beginning HMC problem determination” on page 58.
Display problem	Go to “Testing the HMC display” on page 66.
DVD-RAM drive problem	Go to “Testing the HMC DVD-RAM drive” on page 64.
Diskette drive problem	Go to “Testing the HMC diskette drive” on page 65.
Ethernet LAN problem	Go to “Testing the HMC Ethernet adapter” on page 62.
A problem with any of the following: <ul style="list-style-type: none"> <li>• display</li> <li>• diskette drive</li> <li>• DVD-RAM Drive</li> <li>• disk drive</li> <li>• Ethernet LAN</li> </ul>	Go to “Performing system unit testing using PC-Doctor” on page 59.
Eight character error code beginning with <i>HMC</i> was received when using the HMC graphical user interface.	Go to the “HMC system reference code” on page 5.
HMC does not communicate through the modem.	Go to “Testing the HMC modem connection” on page 60.
PC-Doctor diagnostic tests detected an error.	For PC hardware maintenance manuals to help isolate the problem to a failing part, see “Equivalent maintenance information for the HMC personal computer hardware” on page 6.
Problems understanding the usage of the HMC.	Go to Managing the Hardware Management Console.
All other problems (for example: HMC GUI is unresponsive, parity errors, power, POST codes, blank display, mouse, or keyboard).	Go to “Beginning HMC problem determination” on page 58.
Symptoms not in this list.	Go to “Beginning HMC problem determination” on page 58.

## Beginning HMC problem determination

Use this procedure to determine if there is a problem with the HMC hardware. This procedure might direct you to procedures in various sections of this information or to personal computer maintenance information.

### Step 1. HMC problem determination:

1. If the HMC is running, shut down the console by exiting the graphical user interface. The PC power turns off automatically. If the PC cannot turn off the power, then turn the power switch off.
2. Turn on the HMC power.
3. Watch the console and allow enough time for the system to complete the POST and load the HMC machine code.
4. Watch and listen for the following failing symptoms during power-on:
  - POST error condition.
  - A series of beeps that indicate an error condition.
  - The HMC login screen and user interface fails to start.
  - A reference code or any other error information is displayed.
5. Do you have any of the failing symptoms during power on?
  - **No:** Continue with step 6.
  - **Yes:** Go to the "Equivalent maintenance information for the HMC personal computer hardware" on page 6.
6. Perform system unit testing using PC-Doctor. For details, see "Performing system unit testing using PC-Doctor" on page 59.
7. Does the PC-Doctor diagnostics diskette start and allow tests to be run on the PC system unit?
  - **No:** Go to "Testing for a power problem" on page 59.
  - **Yes:** Go to "Step 2. HMC problem determination."

### Step 2. HMC problem determination:

1. Perform system unit testing using PC-Doctor. For details, see "Performing system unit testing using PC-Doctor" on page 59. Select **System Unit > Run All Selected**.
2. Did the system unit tests detect errors?
  - **No:** Go to "Step 3. HMC problem determination."
  - **Yes:** Continue with step 3.
3. Use the PC-Doctor diagnostics and the maintenance procedures for the type of PC that you are working on to isolate the failure and exchange customer replaceable units (CRUs). Refer to the publications listed in the "Equivalent maintenance information for the HMC personal computer hardware" on page 6.
4. When the problem is repaired, or if the problem cannot be isolated, continue with "Step 4. HMC problem determination."

### Step 3. HMC problem determination:

**Attention:** This step requires HMC support assistance. Contact HMC support before continuing.

1. If you are directed to reload the HMC from the recovery DVD and then reload the backup profile and configuration data, see Recovering the HMC.
2. After reloading the machine code from the recovery DVD, does the HMC start correctly?
  - **No:** Contact your next level of support.
  - **Yes: This ends the procedure.**

### Step 4. HMC problem determination:

**Note:** If you reach this step and you have not been able to isolate a failure, contact your next level of support for assistance.

1. Reinstall all CRUs that did not fix the problem.
2. You must have performed a repair action to continue. If you have not already done so, verify the repair. For instructions, see “Performing system unit testing using PC-Doctor.”
3. Did the system unit tests run without errors?
  - **No:** To troubleshoot the error, return to “Performing system unit testing using PC-Doctor.” Then return here and continue with step 4.
  - **Yes:** Continue with step 4.
4. Does the HMC communicate with all connected managed systems?
  - **No:** Go to “Testing the modem connection to the managed system” on page 60.
  - **Yes:** Did you exchange the system board or the system board battery?
    - **No: This ends the procedure.**
    - **Yes:** Recover the HMC. For details, see Recovering the HMC. **This ends the procedure.**

## Testing the HMC

Use these procedures when you are directed to them from the HMC problem analysis procedure to test the HMC. If a failure is detected, you will be instructed to fix the failing part and then verify the repair.

### Testing for a power problem:

To troubleshoot a power problem on the PC, see service documentation for the PC on which your HMC is based. For PC hardware maintenance manuals to help isolate the problem to a failing part, see publications listed in “Equivalent maintenance information for the HMC personal computer hardware” on page 6.

### Performing diagnostic procedures:

You should have been directed here to test a specific part of the HMC. For problems in the following areas, see “Performing system unit testing using PC-Doctor”:

- Display
- Keyboard
- Mouse
- Floppy Drive
- DVD-RAM
- DASD (disk drive)
- Memory
- Power
- Run All Selected
- SCSI
- System Port/Modem
- 16/4 Port Serial
- Ethernet

To access the HMC diagnostic information, follow the procedures in “HMC diagnostics” on page 5.

### Performing system unit testing using PC-Doctor:

This section provides information to help you use the PC-Doctor diagnostics. For information on running PC-Doctor, go to “HMC diagnostics” on page 5.

**Note:** Performing procedures other than those specified in the following steps might cause errors.

1. Start the PC-Doctor diagnostics.
2. From the diagnostic selection display, select either **Diagnostics** or **Interactive Tests** for a list of devices to test:
  - Devices that require manual intervention (keyboard, video, mouse, diskette, optical drive) might be selected from the interactive tests task bar.
  - Devices that do not require manual intervention (processor, system board, I/O ports, fixed disks, memory) and predefined test sequences (Run Normal/Quick Test) can be selected from the diagnostic task bar.
3. Select the task containing the device or test and follow the instructions. If you were instructed to **Run All Selected**, continue with that selection.
4. If the diagnostics report a failure on the PC hardware, see service documentation for the PC on which your HMC is based. For PC hardware maintenance manuals to help isolate the problem to a failing part, see publications listed in "Equivalent maintenance information for the HMC personal computer hardware" on page 6.
5. If the diagnostics do not report a failure, the HMC PC hardware is functioning correctly. If you still have a problem, go to "Beginning HMC problem determination" on page 58.

#### Testing the modem connection to the managed system:


Use this procedure to test the modem connection to the PC for the HMC.

1. Can the HMC be used to communicate through the modem?
  - **No:** Go to step 2.
  - **Yes: This ends the procedure.**
2. Is a device other than a modem attached to system port 2 on the HMC?

**Note:** If the HMC is a rack-mounted model, answer no to this question.

- **No:** Go to "Testing the HMC modem connection."
  - **Yes:** Go to step 3.
3. System port 2 of the HMC is reserved for external modem use only. Move the serial cable from serial port 2 of the HMC to another HMC system port. Connect the modem to system port 2 and go to step 1.

**Note:** If the HMC is a rack-mounted model, an internal modem is installed to handle the connection of the HMC to the telephone line. If a redundant telephone connection is required, connect an external modem to the system port on the rear of the HMC. If needed, go to the MultiTech MultiModem<sup>II</sup> installation guide for modem installation instructions. If you do not have access to a hardcopy version

of the MultiTech MultiModem<sup>II</sup> documentation, go to the MultiTech  website at <http://www.multitech.com/documents/families/multimodemII/manuals.asp>.

#### Testing the HMC modem connection:

Use this procedure to test the modem connection to the PC for the HMC.

1. Verify that the modem and the telephone line are functioning correctly by performing the following steps:
  - a. On the HMC console, open the Service Agent application.
  - b. Select **Test Tools**.
  - c. Initiate a Test PMR.
  - d. Monitor the call log to verify that the call is completed successfully. If the call is completed successfully, the modem is functioning correctly.
2. Is the installed modem currently functioning on the HMC?
  - **No:** Go to step 3 on page 61.
  - **Yes:** The problem is not in the modem. **This ends the procedure.**

3. Are the HMC configurations, relating to the modem operation, correct?
  - **No:** Correct the HMC configuration arguments. Return to step 1 on page 60.
  - **Yes:** Continue with step 4.
4. Is the modem powered on? (Are any indicators lit?)
  - **No:** Ensure the modem is powered on. For details, see 1 on page 60. After power on verification is completed, continue with step 5.
  - **Yes:** Go to step 5.
5. Is the serial cable between the serial (COM) port connector of the HMC and the modem attached?
  - **No:** Attach the serial cable between the serial (COM) port connector of the HMC and the modem.
  - **Yes:** Load the PC-Doctor diagnostics.
    - If you are working on a desktop model HMC, load the PC-Doctor from diskette or CD.
    - If you are working on a rack-mounted model HMC, load the PC-Doctor from diskette using an external USB diskette drive, CD or selecting F12 during a system shut down and restart.

**Note:** If you are using a CD or diskette to load PC-Doctor, shut down and restart the HMC and wait until the PC-Doctor main menu is displayed.

6. Click **Diagnostics > Other Devices > Modem** to perform the modem diagnostic test.
7. Did the diagnostic pass?
  - **No:** Go to step 8.
  - **Yes:** Go to 9.
8. Is the modem connected correctly to a working telephone line (or equivalent)?

**Note:** This can be checked by connecting a known good telephone to the line in place of the modem and making a telephone call.


- **No:** Correctly connect the telephone line (or equivalent) to the modem. Go to step 1 on page 60. After completing the telephone line and modem verification test, continue with step 9.
  - **Yes:** Go to step 9.
9. Verify the COM port by performing the following steps:
    - a. Disconnect the modem cable from the COM port of the HMC.
    - b. Select **Diagnostics** from the top menu.
    - c. Select **System Ports** from the pull-down menu. The *SERIAL PORT TEST CATEGORY* screen displays.
    - d. Ensure the following:
      - On desktop HMC models - IRQ numbers 4 and 3 are assigned to COM 1 and COM 2, and the planar to COM 2 connector cable is present and correctly installed.
      - On rack-mounted models - IRQ number 4 is assigned from COM 1.
    - e. Ensure all diagnostics except **External Loopback** are selected.
    - f. Select **Run Screen** from the bottom menu.
    - g. Ensure all selected diagnostics show Passed.

**Note:** If the preceding information is not correct, the COM port might be disabled, or might be incorrectly configured. This can be resolved by accessing the setup utility (by pressing the F1 key) during power on.

10. Verify the external modem by performing the following steps:
  - a. Reconnect the modem cable to the correct COM port.

- b. Ensure that the modem is powered on, connected to a working telephone line, and is securely cabled to the communications cable.
- c. Press Esc to return to the PC-Doctor main menu or shut down and restart the HMC.
- d. Select **Hardware Info** from the top menu.
- e. Select **COM and LPT Ports** from the menu. The hardware query displays COM and LPT port information.
- f. Verify the following:
  - A modem was detected on the correct COM port
  - The modem test returned Passed
  - Dial tone: Detected
  - AT11: Displays the modem's model information

**Note:**

- a. If you were not able to get the desired results in step 10f, see MultiTech MultiModem<sup>II</sup> user's guide, installation guide, or reference guide for your modem. To access the MultiTech MultiModem<sup>II</sup> documentation, go to the MultiTech  website at <http://www.multitech.com/documents/families/multimodemII/manuals.asp>.
- b. If necessary, after you have completed the MultiTech MultiModem<sup>II</sup> documentation, return here to complete the final step of this procedure.

11. Choose from the following options:

- If the modem was not detected, replace and verify the following customer replaceable parts in the order listed:
  - a. Communications cable
  - b. Modem
- If the modem test did not return with Passed, replace the modem.
- If the dial tone did not return with Detected, verify the telephone line operation then retest. If the failure reoccurs, replace the modem.

**Testing the HMC Ethernet adapter:**

Use this procedure to test the Ethernet adapter in the HMC.

1. Is the Ethernet port currently functioning though normal operation of the HMC?
  - **No:** Go to step 2.
  - **Yes: This ends the procedure.**
2. Are the Ethernet configuration values set correctly? (IP address, subnet mask, and so on.)
  - **No:** Set the Ethernet configuration values to their correct settings. Then go back to step 1.
  - **Yes:** Go to step 3.
3. Can the IP address of the HMC be 'pinged' by another system that should be able to 'see' the HMC on the network?
  - **No:** Go to step 4.
  - **Yes:** Go to step 9 on page 63.
4. Is the Ethernet cable attached correctly to the HMC and the network?
  - **No:** Attach the HMC to the network using an Ethernet cable with the correct pinout. Then go to step 1.
  - **Yes:** Go to step 5.
5. Is the Ethernet cable the correct pinout? (There are two types of Ethernet cables in use, which are distinguished by different pinouts. The network will determine which version of cable to use.)
  - **No:** Replace the Ethernet cable with the correct version. Then go to step 1.
  - **Yes:** Go to step 6 on page 63.

6. Perform the following steps:
  - a. Install the PC-Doctor diskette into drive A of the HMC: (floppy drive).
  - b. Shut down and restart the HMC and wait until the PC-Doctor main menu is displayed.
  - c. To run the Ethernet diagnostics, select **Diagnostics > Other Devices > Intel Ethernet**.  
Did the diagnostic pass?
    - **No:** Go to step 7.
    - **Yes:** Go to step 9.
7. Refer to the Ethernet hardware's hardware maintenance manual to determine if there are any internal settings or jumpers that might disable the Ethernet port.  
Are there any internal settings or jumpers?
  - **No:** Go to step 8.
  - **Yes:** Go to step 9.
8. Replace the Ethernet hardware in the HMC. (This might be a PCI card or system board replacement, depending on the HMC hardware.) Go to step 1 on page 62.
9. Set the internal settings/jumpers to enable the Ethernet port on the HMC. Go to step 1 on page 62.  
The failure does not seem to be in the HMC.

### Testing the HMC disk drive:

Learn how to test and run diagnostics on a failing HMC disk drive.

To test for HMC disk drive problems, complete the following steps:

1. Did the disk drive test fail?
  - **No:** Go to step 5.
  - **Yes:** Continue with the next step.
2. Perform the following steps:
  - a. Exchange the CRUs called by the diagnostics one at a time. For CRU removal and replacement instructions, see PC hardware maintenance manual for the system on which you are working. See "Equivalent maintenance information for the HMC personal computer hardware" on page 6 to access the hardware maintenance manual for your HMC personal computer model.
  - b. After each CRU is exchanged, test the repair using the information in "Performing system unit testing using PC-Doctor" on page 59. Select **Hard Disk Drive** problem area.  
Did the disk drive test fail?
    - **No:** Continue with the next step.
    - **Yes:** Contact your next level of support.
3. Ensure the following and then continue with the next step:
  - If you exchanged the disk drive and there are jumpers or tab settings on the new disk drive, ensure that the settings are the same as the old drive.
  - If there is a SCSI cable-terminating resistor device, ensure it is secured to the cable and (if necessary) reattached to its original location on the PC.  
Go to "Hard Disk Jumper Settings" in the PC hardware maintenance manual. See "Equivalent maintenance information for the HMC personal computer hardware" on page 6 to access the hardware maintenance manual for your HMC personal computer model.
4. If you exchanged the disk drive, restore the HMC image to the new disk drive.
5. Use the information in "Performing system unit testing using PC-Doctor" on page 59 to test the PC. Select **Run All Selected** problem area.
  - If the tests fail, isolate the problem using the "Beginning HMC problem determination" on page 58 procedure.

- If the tests run without errors, turn off the PC power and then turn on the power. Ensure that the system boots and the HMC screen is displayed. **This ends the procedure.**

### Testing the HMC DVD-RAM drive:

Learn how to test and run diagnostics on a failing DVD-RAM.

To test for HMC DVD-RAM drive problems, complete the following steps:

1. Determine the media in the DVD-RAM drive:
  - Compact Disk Recordable (CD-R) similar to a CD
  - DVD-RAM media cartridge

Is the media a CD-R?

  - **No:** Go to step 4.
  - **Yes:** Continue with the next step.
2. Perform the following steps:
  - a. Clean the compact disk as follows:
    - Hold the disk by its edges. Do not touch the surface.
    - Remove dust and fingerprints from the surface by wiping from the center to the outside using a dry, soft cloth.
  - b. Reinstall the CD, with the label-side facing up.
  - c. Continue with the next step.
3. Retry the failing task using the original media.
 

Does the failure occur again?

  - **No:** Continue with the next step.
  - **Yes:** Go to step 4 on page 63.

**This ends the procedure.**

4. Ensure the write protect tab is in the "disabled" (down) position.
 

Was the write protect tab in the "disabled" (down) position?

  - **No:** Go to step 3.
  - **Yes:** Continue with the next step.
5. Perform the following steps:
  - a. With the original media in the drive, note the following:
    - If you are attempting a restore procedure, turn off the PC power.
    - For any other operation, shut down the HMC, and then turn off the PC power.

**Note:** For shutdown procedures, see HMC and system power on and power off procedures.
  - b. Turn on the PC power and test the DVD-RAM drive using the information in "Performing system unit testing using PC-Doctor" on page 59.
  - c. Select **DVD-RAM Drive** problem area.
  - d. When the test is complete, return here and continue with the next step.
6. Did the DVD-RAM test fail while testing with the original media?
  - **No:** Go to step 1.
  - **Yes:** Continue with the next step.
7. Exchange the original media with a new one.

**Note:** If you are replacing DVD-RAM media, the new cartridge must be formatted. If possible, use another HMC to format the new cartridge.

8. Turn off the PC power.

9. Turn on the PC power, and test the DVD-RAM drive with the new media. Use the information in "Performing system unit testing using PC-Doctor" on page 59 to test the PC. Select **DVD-RAM Drive** problem area.
10. Did the DVD-RAM test fail while testing with the new media?
  - **No:** The original media was defective. **This ends the procedure.**
  - **Yes:** Continue with the next step.
11. Verify the following:
  - All DVD-RAM drive data and power cables are secure.
  - The DVD-RAM drive is jumpered as "master" and is cabled to the secondary IDE bus.
12. If the diagnostics continue to fail, exchange the DVD-RAM drive. When complete, run the DVD-RAM test again.
 

**Note:** If there are any jumpers or tab settings on the new drive, ensure that the settings match the old drive.
13. Did the DVD-RAM Drive test continue to fail?
  - **No:** The original DVD-RAM drive was defective. **This ends the procedure.**
  - **Yes:** Continue with the next step.
14. Continue exchanging CRU from the CRU list and running the DVD-RAM drive tests.
  - If the CRUs fix the problem, this ends the procedure.
  - If you cannot isolate the problem, call your next level of support for assistance.
15. The PC resources (for example: interrupt, I/O address) might be configured incorrectly. Verify the PC resources are correctly configured.
  - a. Select **System Unit** for the configuration area, and verify configuration for the system unit and all adapters.
  - b. When you complete the verification, retry the failing procedure and continue with the next step.
16. Does the failing procedure continue to fail?
  - **No:** The resource settings were incorrect. **This ends the procedure.**
  - **Yes:** If you cannot isolate the problem, contact your next level of support for assistance. **This ends the procedure.**

#### Testing the HMC diskette drive:

Using PC-Doctor learn to run a diagnostic test to determine diskette drive problems.

To test for HMC diskette drive problems, complete the following steps:

1. Perform the following steps:
  - a. Turn on the PC power and test the diskette drive using the information in "Performing system unit testing using PC-Doctor" on page 59.
  - b. Select **System Unit** problem area and the test of **Diskette Drive**.
 

**Note:** Do not test with the diskette on which the errors occurred. Use a new diskette.
  - c. When the test is complete, continue with the next step.
2. Did the diskette test fail while testing with a new diskette?
  - **No:** Go to step 6 on page 66.
  - **Yes:** Continue with the next step.
3. Exchange the diskette drive and run the diskette test again.
4. Did the diskette test fail again?
  - **No:** The original diskette drive was failing. **This ends the procedure.**
  - **Yes:** Continue with the next step.

5. Continue exchanging CRUs from the CRU list and running tests. If one of the replaced CRUs fixes the problem, **this ends the procedure**. If you cannot resolve the problem, contact your next level of support for assistance.
6. Did the original failure occur while writing to a diskette?
  - **No:** Go to step 8.
  - **Yes:** Continue with the next step.
7. Retry the original task using a new diskette.
  - If the failure occurs again, go to step 10.
  - If no failures occur, the original diskette was failing. **This ends the procedure.**
8. Re-create the information on the diskette, or obtain a new diskette with the information.
9. Retry the original task.
  - If the failure occurs again, continue with the next step.
  - If no failures occur, the original diskette was failing. **This ends the procedure.**
10. Test the diskette drive, using the information in "Performing system unit testing using PC-Doctor" on page 59. Select **System Unit** problem area and the test of **Diskette Drive**.
  - If the tests fail, isolate the problem using the procedures found in the PC hardware maintenance manual. For additional PC maintenance information, see "Equivalent maintenance information for the HMC personal computer hardware" on page 6 to access the hardware maintenance manual for your HMC personal computer model.
  - If the tests do not isolate the problem, contact your next level of support for assistance.

### Testing the HMC display:

Learn to test and diagnose HMC display problems.

To test for HMC display problems, complete the following steps:

1. Is the display type a 95xx (17P, 17X, 21P)?
  - **No:** Continue with the next step.
  - **Yes:** 95xx-xxx repairs might require replacing internal display CRUs.  
Repair and test the display using the procedures in *Monitor Hardware Maintenance Manual Vol 2, S41G-3317*.
2. Is the display type a 65xx (P70, P200)?
  - **No:** Continue with the next step.
  - **Yes:** 65xx-xxx repairs might require replacing the entire display. There are no internal display CRUs. Repair and test the display using the procedures in *Monitor Hardware Maintenance Manual Vol 3, P and G series, S52H-3679*.  
When the test and repair are complete, continue with step 5.
3. Is the display type a 65xx (P72, P202)?
  - **No:** Continue with the next step.
  - **Yes:** 65xx-xxx repairs might require replacing the entire display. There are no internal display CRUs. Repair and test the display using the procedures in *Color Monitor Operating Instructions*.  
When the test and repair are complete, continue with step 5.
4. Repair and test the display using the documentation included with the display. When the test and repair are complete, continue with step 6.
5. Verify the repair using the information in "Performing system unit testing using PC-Doctor" on page 59. Select **System Unit** for the problem area and the **Test for Display**.  
When the test and repair are complete, continue to step 6.
6. Return the system to normal operations. **This ends the procedure.**

## Replacing an HMC

Identifies the prerequisites needed and the tasks that must be performed when you replace a Hardware Management Console (HMC).

If you are replacing an HMC that is set up as a DHCP server, you must first reinstall the HMC code base by using one of the following:

- The recovery media that was provided with your HMC
- The recovery media that you last used to upgrade your HMC

You must also reinstall your customized HMC configuration data by using backup media.

Procedures for replacing an HMC differ, depending on which HMC version you have installed. To determine your HMC version, see [Determining your HMC machine code version and release](#) and then return here.

These instructions assume that you have created a backup of your HMC configuration data from the HMC being replaced. For more information about backing up important HMC data, see [Backing up critical HMC data](#).

### For HMC V4.5 or earlier

1. Insert the HMC recovery media, then power on or reboot the HMC. The HMC powers on and loads from the media.
2. Press F8 to select **Install/Recovery**.
3. Press F1 to continue. After the installation is complete, the HMC prompts you to insert the backup media.
4. Insert the backup media. When you are finished, the HMC is restored to the state that it was in at the time that the backup was created.
5. After the HMC interface has been restored, verify that your HMC DHCP private network is configured correctly. For more information, see [Verifying that your HMC DHCP private network is configured correctly](#).

### For HMC V5.0 or later

1. Insert the HMC recovery media, then power on or reboot the HMC. The HMC powers on from the media and displays the **Backup/Upgrade/Restore/Install** panel.
2. Select **Install** and click **Next**. Wait for the installation to complete.
3. Select **1 - Install additional software from media** from the menu displayed to install the second HMC recovery media.
4. Remove the recovery media and insert the second media.
5. Press Enter to start the installation of the second recovery media.
6. After the installation is complete, remove the second recovery media, insert the backup media, and select **1 - Restore Critical Console Data** from the menu to restore data from the backup media. When you are finished, the HMC is restored to the state that it was in at the time that the backup was created.
7. After the HMC interface has been restored, verify that your HMC DHCP private network is configured correctly. For more information, see [Verifying that your HMC DHCP private network is configured correctly](#).

## Verifying that your HMC DHCP private network is configured correctly

Learn how to verify that all of your HMC DHCP private networks are configured correctly.

If your HMC is configured as a DHCP server on a private network and is not communicating correctly with the managed system, or you have recently modified your network configuration (moved a managed

system, replaced an HMC, or added a second HMC), use the following instructions to determine if your DHCP-managed private network is configured correctly.

**Note:** If your HMC is set up as a DHCP server on a private network, do not use the static IP commands **mksysconn** and **rmsysconn** to change HMC connection settings. These commands are intended for use on a public network only, where the HMC is not set up as DHCP server and managed servers use static IP addresses.

If a system administrator previously assigned an IP address to the system through a manually executed static IP command, Support must remove the manual connection and establish a DHCP connection between the HMC and the server. This section describes how to identify any manually assigned IP addresses so that an authorized service provider can remove them.

To identify a manually assigned IP address so that your HMC can communicate correctly with your managed systems, you must perform the following high-level tasks. The following are detailed step-by-step task descriptions.

- Identify the configured HMC IP connection addresses and compare them to the list of IP addresses assigned by the DHCP server.
- Identify the HMC IP connection addresses that have been correctly assigned through the DHCP server, for which no further action is required.
- Identify any manually configured HMC IP connection addresses that DHCP did not assign and that need to be corrected by support.

To identify manually assigned IP addresses when the HMC is configured as a DHCP server, do the following

1. Create a list of all of the configured HMC IP connections. On the HMC command line, type the following command:

```
lssysconn -r all
```

This command displays the following information for service processors and Bulk Power Cards (BPCs) on the network for which the HMC has configured IP connection:

element type, MTMS, IP address(es), connection state

2. Make a note of all IP addresses that are displayed. You will need these addresses later.
3. Display a list of the DHCP IP addresses that have been assigned. To do this, type the following HMC command:

```
lshmc -n -F clients
```

The output of this command lists all IP addresses that have been assigned by the HMC's DHCP server.

4. Make a note of all IP addresses that are listed in the output.
5. Compare the **lssysconn** and **lshmc** lists. If an IP address is displayed in the output for both the **lshmc -n -F clients** and **lssysconn -r all** commands, the IP address was assigned by the HMC DHCP server and the connection is being managed by the HMC DHCP server.
6. Remove from the list any address that is displayed in the output of the **lshmc -n -F clients** command but not displayed in the output of the **lssysconn -r all** command, and is not in the list of servers that use static IP addresses.

**Note:** If an IP address is displayed in the **lshmc -n** output and not in the **lssysconn -r all** output, that IP address was assigned by the HMC DHCP server. However, it is not a current connection on the HMC. The DHCP server keeps a history of all IP address assignments in the event that the connection is re-established. The DHCP server might also have assigned an IP address if an unknown device on the private network requested a DHCP IP address from the HMC.

7. If the HMC is managing servers on both a private and a public network, any connections to the service processor on the public network (not in the private network address range) must also be identified and removed from this list. If there are no IP addresses remaining in the list that contains the **lssysconn -r all** output, the HMC DHCP server has assigned all of the system IP addresses, and the network configuration is working correctly.
8. If there are any IP addresses not removed from the list taken from the **lssysconn -r all** command, this address was not assigned by the HMC's DHCP server. These IP address assignments must be corrected, so that they can be automatically reassigned by the HMC DHCP server. Contact an authorized service provider and request that someone correct the manually assigned IP addresses that you have identified.

If you have followed this procedure and not all of your connections appear to be active, call an authorized service provider for additional support.

## Backing up critical HMC data

You can back up important console information to DVD, to a remote system mounted to the HMC file system, such as Network File System (NFS), or to a remote site through File Transfer Protocol (FTP).

Using the HMC, you can back up all important data, such as the following:

- User-preference files
- User information
- HMC platform-configuration files
- HMC log files
- HMC updates through Install Corrective Service

The Backup function saves the HMC data stored on the HMC hard disk to DVD, a remote system mounted to the HMC file system (such as NFS), or a remote site through FTP. Back up the HMC after you have made changes to the HMC or to the information associated with logical partitions.

**Note:** Before data can be saved to the DVD, the DVD must be formatted in the DVD-RAM format.

To back up the HMC, you must be a member of one of the following roles:

- Super administrator
- Operator
- Service representative

To back up the HMC critical data, do the following:

1. In the Navigation area, click **HMC Management**.
2. Select **Back up HMC Data**.
3. Select an archive option. You can back up to DVD on the local system, back up to a mounted remote system, or send backup data to a remote site.
4. Follow the instructions on the window to back up the data.

## Determining your HMC machine code version and release

The level of machine code on the HMC determines the available features to upgrading to a new release, including concurrent server firmware maintenance and enhancements.

To determine how to view the HMC machine code version and release, complete the following steps:

1. In the navigation area, click **Updates**.
2. In the Work area, view and record the information that is displayed under the HMC Code Level heading, including: the HMC version, release, maintenance level, build level, and base versions.

3. To update your HMC machine code version and release, see Obtaining HMC machine code updates and upgrades. **This ends the procedure.**

## Preparing for HMC configuration

To configure the Hardware management Console (HMC), you must understand the related concepts to gather the required configuration settings that you need to know before you begin the configuration steps.

To prepare for HMC configuration, do the following steps:

1. Determine if this is a new HMC supporting one or more new systems, or if this is a second new HMC supporting existing systems. This will determine which installation path to follow.
2. Determine the physical location of the HMC in relation to the servers it will manage. If the HMC is more than 25 feet from its managed system, you must provide Web browser access to the HMC from the managed system's location so that service personnel can access the HMC.
3. Identify the servers that the HMC will manage.
4. Determine whether you will use a private or an open network to manage servers. The HMC manages the servers through the Flexible Service Processor (FSP) over a network connection. A *private* network is a non-routable network from the HMC to one or more FSPs. An *open* network is any routable network linking the HMC to FSPs, logical partitions, administrative workstations or other network devices, such as routers and firewalls. A private network is recommended for HMC management of all systems. Servers that have bulk power controllers require a private network with an HMC acting as a Dynamic Host Control Protocol server (DHCP). Review the available non-routable network subnet ranges that are available and determine which one you will use for each DHCP server. Each FSP may be connected to two HMCs acting as DHCP servers as long as they are using two different IP address ranges.
5. If you will use an open network to manage an FSP, you must set the FSP's address manually through the Advanced System Management Interface (ASMI) menus. A private, non-routable network is recommended.
6. Determine the open network settings that you will need to connect the HMC to workstations used by system administrators, logical partitions on the managed systems, and other network devices. Also, determine how the HMC will "call home." Call home options can include an outbound-only Secure Sockets Layer (SSL) Internet connection, a modem, or a Virtual Private Network (VPN) connection.
7. Determine the HMC users that you will create and their passwords, as well as which roles they will be given.
8. Document the following company contact information that will be needed when configuring call home:
  - Company name
  - Administrator contact
  - e-mail address
  - Telephone numbers
  - Fax numbers
  - The street address of the HMC physical location
9. If you plan to use e-mail to notify operators or systems administrators when information is sent to IBM Service through call-home, identify the Simple Mail Transfer Protocol (SMTP) server and the e-mail addresses you will use.
10. If this is a new HMC connecting to a new managed system, create a password that will be used to authenticate the HMC to the system's service processor. At the same time, create a password for the Advanced System Management Interface (ASMI) admin and general users. All three passwords can be set when connecting the first time from the HMC to a new server. If the new HMC is to be used

as a redundant HMC, obtain the HMC user password from the already attached and configured HMC. Be prepared to enter the password when you first connect to the managed server's service processor.

## Shutting down, logging off, and disconnecting the HMC

Learn how to shut down, log off, and disconnect the HMC interface.

Shut down, log off, and disconnect the HMC interface.

**Attention:** Only use the white button on the HMC to perform a manual shutdown if the server does not respond to any tasks performed from the console, such as shutting down the HMC.

If an operating system is running in a logical partition and you decide to shut down, reboot, or log off the HMC interface, the operating system continues to run without interruption.

### Shutting down the HMC

To shutdown the HMC, do the following:

1. In the navigation area, open **HMC Management**.
2. Click **Shutdown or Restart**. The Shutdown or Restart window opens.
3. Select **Shutdown HMC**, and then click **OK**.

### Logging off the HMC

Perform the following steps:

1. In the main menu, click **Logoff**. The Choose to Logoff or Disconnect window opens.
2. Click **Log off**, then click **OK**.

### Disconnecting from the HMC interface

To disconnect from the HMC interface, do the following:

1. In the main menu, click **Logoff**. The Choose to Logoff or Disconnect window opens.
2. Click **Disconnect**, then click **OK**.



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## **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

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

### **Industry Canada Compliance Statement**

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

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

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

### **European Community Compliance Statement**

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European Community contact:  
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Technical Regulations, Department M372  
IBM-Allee 1, 71139 Ehningen, Germany  
Tele: +49 7032 15 2941  
email: lugi@de.ibm.com

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VCCI-A

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

高調波ガイドライン適合品

**Japanese Electronics and Information Technology Industries Association (JEITA)  
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高調波ガイドライン準用品

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在这种情况下,可能需要用户对其  
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Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

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台灣IBM 產品服務聯絡方式：  
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#### **Germany Compliance 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.

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EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

##### **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  
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:  
IBM Deutschland GmbH  
Technical Regulations, Abteilung M372  
IBM-Allee 1, 71139 Ehningen, Germany  
Tel: +49 7032 15 2941  
email: lugi@de.ibm.com

Generelle Informationen:

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

### **Electromagnetic Interference (EMI) Statement - Russia**

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

### **Class B Notices**

The following Class B statements apply to features designated as electromagnetic compatibility (EMC) Class B in the feature installation information.

### **Federal Communications Commission (FCC) statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for

any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this equipment.

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

### **Industry Canada Compliance Statement**

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

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

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

### **European Community Compliance 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 B Information Technology Equipment according to European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:  
IBM Deutschland GmbH  
Technical Regulations, Department M372  
IBM-Allee 1, 71139 Ehningen, Germany  
Tele: +49 7032 15 2941  
email: lugi@de.ibm.com

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取扱説明書に従って正しい取り扱いをして下さい。 VCCI-B

**Japanese Electronics and Information Technology Industries Association (JEITA)  
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高調波ガイドライン適合品
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**Japanese Electronics and Information Technology Industries Association (JEITA)  
Confirmed Harmonics Guideline with Modifications (products greater than 20 A per  
phase)**

高調波ガイドライン準用品

**IBM Taiwan Contact Information**

台灣IBM 產品服務聯絡方式：  
台灣國際商業機器股份有限公司  
台北市松仁路7號3樓  
電話：0800-016-888

**Electromagnetic Interference (EMI) Statement - Korea**

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**Germany Compliance Statement**

**Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B 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 B ein.

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**Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten**

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

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

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Tel: +49 7032 15 2941

email: [lugi@de.ibm.com](mailto:lugi@de.ibm.com)

Generelle Informationen:

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

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