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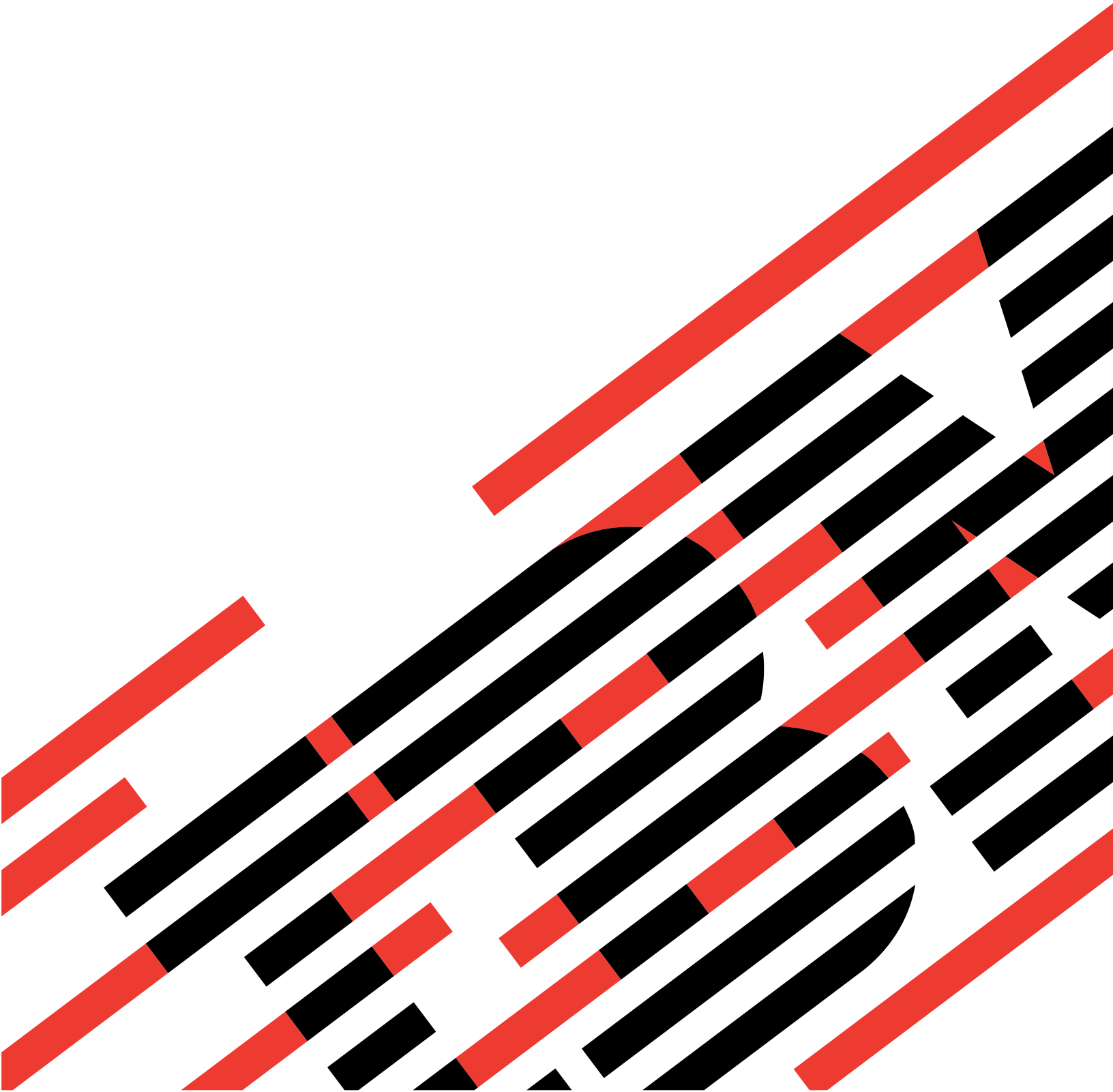
BladeCenter Products FAQ

Hints and Tips



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BladeCenter Products FAQ

Hints and Tips

Note: Before using this information and the product it supports, be sure to read the general information in “Notices”, on page 47.

Second Edition (December 2002)

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Chapter 1. Introduction

This document is intended to supplement the IBM® @server BladeCenter™ publications provided with the BladeCenter products. In addition to the publications being provided with the BladeCenter products, they also are available in Portable Document Format (PDF) on the World Wide Web. The latest versions of the publications are available from the IBM web site at http://www.ibm.com/pc/support/.

The information provided in this document is based on technical observations. The topics are arranged alphabetically so you can find the information easily.

BladeCenter publications include the following:

- *IBM @server BladeCenter Type 8677 Installation and User's Guide*

  This printed publication is provided with the BladeCenter unit and is on the IBM *BladeCenter Documentation* CD. It contains general information about your BladeCenter unit, including information about features, how to configure your BladeCenter unit, and how to get help.
- *IBM @server BladeCenter Type 8677 Hardware Maintenance Manual and Troubleshooting Guide* (HMM)

  This publication is provided on the IBM *BladeCenter Documentation* CD. It contains the information to help you solve BladeCenter problems yourself, and information for service technicians.
- *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide*

  This printed publication is provided with the BladeCenter HS20 Type 8678 blade server and is on the IBM *BladeCenter Documentation* CD. It contains instructions for setting up a BladeCenter HS20 Type 8678 blade server and basic instructions for installing some options. It also contains general information about the blade server.
- *IBM @server BladeCenter HS20 Type 8678 Hardware Maintenance Manual and Troubleshooting Guide* (HMM)

  This publication is provided on the IBM *BladeCenter Documentation* CD. It contains the information to help you solve BladeCenter HS20 problems yourself, and information for service technicians.
- *IBM @server BladeCenter Rack Installation Instructions*

  This printed publication is provided with the BladeCenter unit and is on the IBM *BladeCenter Documentation* CD. It contains instructions for installing the BladeCenter unit in a rack.
- *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation Guide*

  This printed publication is provided with the IBM 4-Port Gb Ethernet Switch Module option. It contains setup and installation instructions for the IBM BladeCenter 4-Port Gb Ethernet Switch Module. This publication also provides general information about your Ethernet switch module, including information about getting started, first-time connection to the Ethernet switch module, how to configure your Ethernet switch module, and how to get help.
- *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide*

  This publication is provided on the IBM *BladeCenter Documentation* CD. It contains instructions for setting up and configuring the IBM 4-Port Gb Ethernet Switch Module for BladeCenter and a description of the switch module features.

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- *IBM @server BladeCenter Management Module User's Guide*

  This publication is provided on the IBM *BladeCenter Documentation* CD. It contains detailed information about the Management Module that comes with your IBM BladeCenter unit.
- *IBM @server BladeCenter Acoustic Attenuation Module*

  This printed publication comes with the acoustic attenuation module. It contains instructions for installing the optional acoustic attenuation module on a BladeCenter unit.
- *IBM @server BladeCenter HS20 IDE Hard Disk Drive*

  This printed publication comes with the HS20 IDE hard disk drive. It contains instructions for installing an optional hard disk drive in a blade server.
- *IBM @server BladeCenter HS20 SCSI Storage Expansion Unit*

  This printed publication comes with the HS20 SCSI storage expansion unit. It contains instructions for installing the optional SCSI storage expansion unit on a blade server.
- *IBM @server BladeCenter Microprocessor Option*

  This printed publication comes with the microprocessor option. It contains instructions for installing an optional microprocessor in a blade server.
- *IBM @server BladeCenter Power Supply Modules*

  This printed publication comes with the power supply modules option. It contains instructions for installing the optional power supply modules in a BladeCenter unit.
- *IBM Director 4.0 for BladeCenter products Installation and Configuration Guide*

  This publication is provided on the *IBM Director* CD. It contains instructions for installing and configuring IBM Director 4.0 for BladeCenter products.
- *IBM Director 4.0 for BladeCenter products Systems Management Guide*

  This publication is provided on the *IBM Director* CD. It contains instructions for using IBM Director 4.0 for BladeCenter products for systems-management tasks.

In addition to the publications provided with the BladeCenter products, the following publications are available in Portable Document Format (PDF) on the World Wide Web:

- *IBM @server BladeCenter Type 8677 Planning and Installation Guide* (GA27-4327-00)

  This document is available for download from the IBM Web site at http://www.ibm.com/pc/eserver/bladecenter/. It contains planning information for the IBM BladeCenter products. It describes the BladeCenter components, explains deployment and installation considerations, and provides worksheets that you can use to determine your BladeCenter hardware configuration.
- *IBM @server BladeCenter Systems Management* (REDP3582)

  This document is available for download from the IBM Web site at http://www.ibm.com/redbooks/. It contains an overview of the IBM @server BladeCenter management tools and describes the management module integrated Web GUI.

- *The Cutting Edge: IBM @server BladeCenter* (REDP3581)

  This document is available for download from the IBM Web site at http://www.ibm.com/redbooks/. It contains an introduction to the IBM @server BladeCenter unit and presents the advantages of blade servers. It also looks at the various installation methods that are available and important items to consider before you perform your installation.
- *Deploying Microsoft Exchange on IBM @server BladeCenter* (REDP3585)

  This document is available for download from the IBM Web site at http://www.ibm.com/redbooks/. It describes how to set up and configure Microsoft Exchange 2000 on the IBM @server BladeCenter unit. It also describes the functionality of the IBM @server BladeCenter unit in this type of environment.
- *Deploying Lotus Domino on IBM @server BladeCenter* (REDP3584)

  This document is available for download from the IBM Web site at http://www.ibm.com/redbooks/. It will help you to set up and configure your IBM @server BladeCenter products to run Lotus Domino 6 on Windows 2000 Advanced Server. It will also help you tune Lotus Domino 6 for better performance while running in an IBM @server BladeCenter environment.

You can obtain up-to-date information about the BladeCenter unit, blade server, and other IBM server products at http://www.ibm.com/eserver/xseries/.

Before you begin

Please read the following before you use the information in this document:

- Review the “Safety information” and “Handling static-sensitive devices” sections in the documentation provided with the BladeCenter unit. These guidelines will help you work safely while working with the BladeCenter unit, blade server, or options.
- Back up all important data before you make changes to disk drives.
- For a list of supported options for the BladeCenter unit, refer to http://www.ibm.com/pc/us/compat/ on the World Wide Web.

Getting started

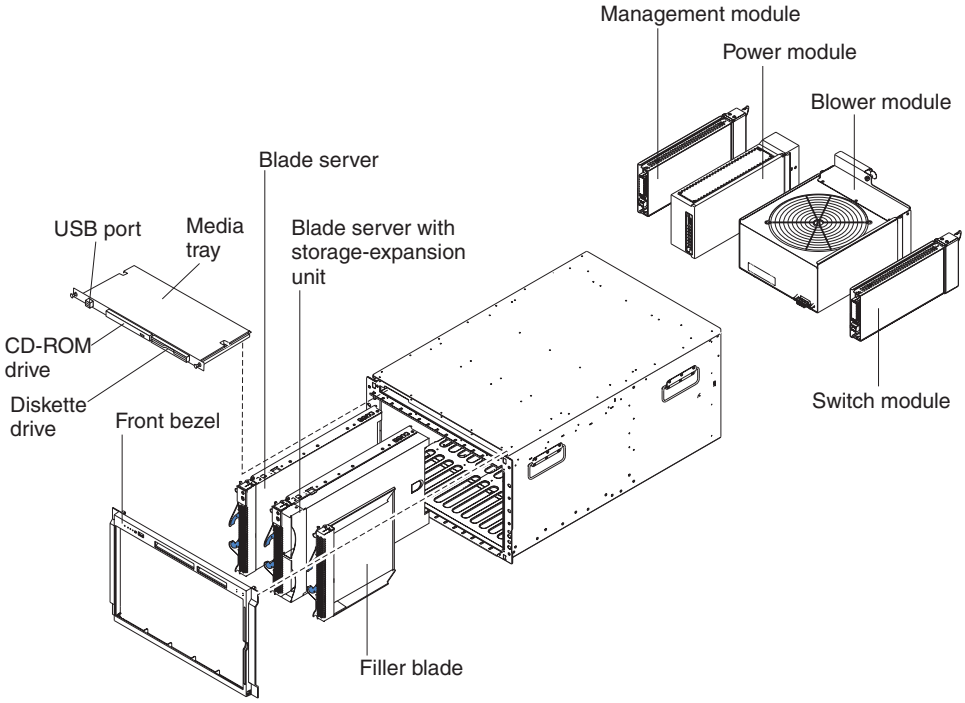
After you receive and unpack your BladeCenter unit, verify the following:

- The BladeCenter unit is mounted in a rack before you install any blade servers.
- All modules are fully seated.
- All module bays have either a module or a filler module in them.
- All blade bays have a blade server, expansion unit, or filler blade in them.
- All cords and cables are securely connected to the modules.

Major components of the BladeCenter Type 8677

The following illustration shows the locations of major components in the BladeCenter unit.

Note: The illustrations in this document might differ slightly from your hardware.



Features and specifications of the BladeCenter Type 8677

The following table provides a summary of the features and specifications for your BladeCenter unit.

Table 1. Features and specifications

Media tray (on front):
- Diskette drive: 1.44 MB
- CD-ROM drive: IDE
- Universal Serial Bus (USB) v1.1 port
- Front system LED panel

Module bays (on rear):
- Four hot-swap 220-volt power-module bays
- One hot-swap management-module bay
- Four hot-swap switch-module bays
- Two hot-swap blower bays

Blade bays (on front):

14 hot-swap blade bays

Redundant cooling:

Two variable-speed hot-swap blowers

Power modules:
- Standard: Two 1200-watt or greater 220-volt (200-240 V ac) hot-swap power modules
  - Both power modules supply 12 V power to all modules and to blade bays 1 through 6
  - Both power modules provide redundancy to each other
- Maximum: Four
  - Power modules 1 and 2 supply 12 V to all modules and to blade bays 1 through 6
  - Power modules 3 and 4 supply 12 V to blade bays 7 through 14
  - Power modules 1 and 2 provide redundancy to each other
  - Power modules 3 and 4 provide redundancy to each other

Switch modules:
- Standard: None
- Maximum: Two hot-swap 1 Gb Ethernet four-port switch modules and two hot-swap switch modules of another network-communication standard, such as Fibre Channel

Management module:
One hot-swap management module providing the following features:
- System-management functions for the BladeCenter system
- Video port (analog)
- PS/2® keyboard port
- PS/2 mouse port
- 10/100 Mb Ethernet remote management connection

Upgradeable microcode:
- Management module firmware
- Ethernet switch module firmware
- Blade server service processor firmware

Security features:
- Login password for remote connection
- Secure socket layer (SSL) security for remote management access

Predictive Failure Analysis® (PFA) alerts:
- Blowers
- Blade-dependent features

Size (7U):
- Height: 304.2 mm (12 in. or 7 U)
- Depth: 711.2 mm (28 in.)
- Width: 444 mm (17.5 in.)
- Weight:
  - Fully configured with modules and blades: Approx. 108.86 kg (240 lb)
  - Fully configured without blades: Approx. 44.91 kg (99 lb)

Acoustical noise emissions:
- Without acoustics module option:
  - Sound power, idle: 7.4 bels maximum
  - Sound power, operating: 7.4 bels maximum
- With acoustics module option:
  - Sound power, idle: 6.9 bels maximum
  - Sound power, operating: 6.9 bels maximum

Environment:
- Air temperature:
  - BladeCenter unit on: 10° to 35°C (50° to 95°F). Altitude: 0 to 914 m (2998.69 ft)
  - BladeCenter unit on: 10° to 32°C (50° to 89.6°F). Altitude: 914 m to 2134 m (2998.69 ft to 7000 ft)
  - BladeCenter off: -40° to 60° C (-40° to 140° F).
- Humidity:
  - Server on: 8% to 80%
  - Server off: 8% to 80%

Electrical input:
- Sine-wave input (50-60 Hz single-phase) required
- Input voltage:
  - Minimum: 200 V ac
  - Maximum: 240 V ac

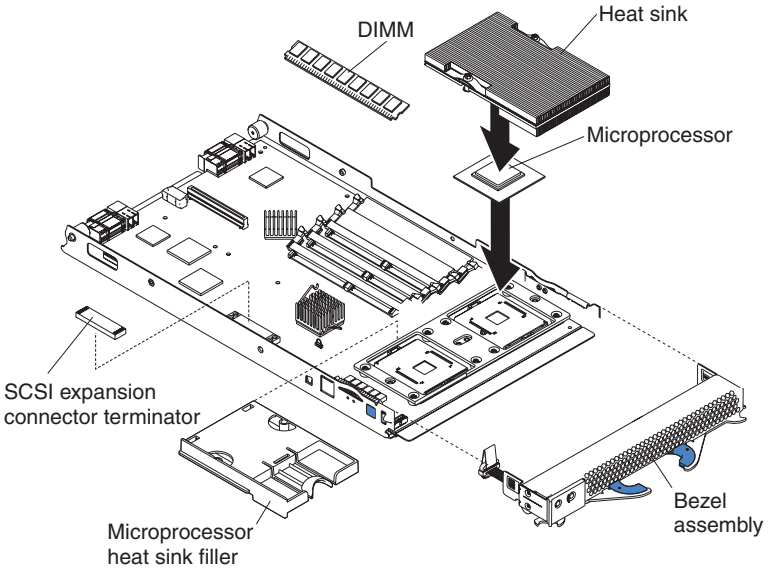
Heat output:

Approximate heat output in British thermal units (Btu) per hour
- Minimum configuration: 1365 Btu/hour (400 watts)
- Maximum configuration: 9622 Btu/hour (2820 watts)

Major components of the BladeCenter HS20 Type 8678 blade server

The following illustration shows the locations of major components in the BladeCenter HS20 blade server.

Note: The illustrations in this document might differ slightly from your hardware.



Features and specifications of the BladeCenter HS20 blade server

The following table provides a summary of the features and specifications of your BladeCenter HS20 Type 8678 blade server.

Note: Power, cooling, removable-media drives, external ports, and advanced system management are provided by the IBM @server BladeCenter Type 8677.

Microprocessor:

Supports up to 2 microprocessors

- Intel™ Xeon 2.0 GHz or faster
- 512 KB ECC L2 cache

Memory:

- Four double data rate (DDR) PC1600 sockets
- Minimum: 512 MB
- Maximum: 4 GB
- Type: 2-way interleaved, DDR, PC2100, ECC SDRAM registered x4 (Chipkill) DIMMs only
  Note: PC2100 DIMMs are backward-compatible and can function in the PC1600 sockets
- Supports 256 MB, 512 MB, and 1 GB dual inline memory modules (DIMMs)

Drives:

- Support for up to two internal IDE 2.5-inch hard disk drives
- Support for up to two Ultra320 SCSI hot-swap hard disk drives available in an optional SCSI storage expansion unit

Size:

- Height: 24.5 cm (9.7 inches)
- Depth: 44.6 cm (17.6 inches)
- Width: 2.9 cm (1.14 inches)
- Maximum weight: 5.4 kg (12 lb)

Integrated functions:

- Two Gigabit Ethernet controllers
- ATI Rage XL video controller
- Light Path Diagnostics™
- Local service processor
- IDE hard disk drive controller
- RS-485 interface for communication with BladeCenter management module
- USB buses for communication with keyboard, mouse, diskette drive, and CD-ROM drive

Predictive Failure Analysis (PFA) alerts:

- Microprocessor
- Memory
- Hard disk drives

Environment:

- Air temperature:
  - Blade server on: 10° to 35°C (50° to 95°F). Altitude: 0 to 914 m (2998.69 ft)
  - Blade server on: 10° to 32°C (50° to 89.6°F). Altitude: 914 m to 2134 m (2998.69 ft to 7000 ft)
  - Blade server off: -40° to 60°C (-40° to 140° F)
- Humidity:
  - Blade server on: 8% to 80%
  - Blade server off: 5% to 80%

Electrical input:

- Input voltage: 12 V dc

Note: The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The BladeCenter unit uses USB for internal communication with these devices.

Chapter 2. Hints and tips

This chapter contain some installation and troubleshooting hints and tips related to the @server BladeCenter products. This information is intended to supplement the existing IBM @server BladeCenter documentation (listed on page 1).

Acoustic attenuation module

Noise reduction

For server environments where noise reduction is essential, you might choose to install the BladeCenter Acoustic Attenuation Module option (acoustic module) on the BladeCenter unit. The acoustic module reduces the sound level of the BladeCenter unit to below 6.9 bel using a T-shaped baffle. The acoustic module is installed on the back of the BladeCenter unit, directly covering the blower modules and partially covering the other modules. The system LED panel is replicated on the acoustic module for visibility. Installing an acoustic module increases the length of a BladeCenter unit and requires use of an enterprise rack.

BladeCenter chassis

Related topics

- "BladeCenter unit requires 220 V ac (nominal) power" on page 41
- "Blade server does not turn off during Red Hat Linux 7.3 shutdown" on page 35

Blade bays must all be occupied at all times

To help ensure proper cooling, performance, and system reliability, make sure that each of the blade bays on the front of the BladeCenter unit has a blade server, expansion unit, or filler blade installed.

Important: When replacing a blade server or installing an expansion unit, do not operate the BladeCenter unit for more than one minute without either a blade server, an expansion unit, or a filler blade installed in each blade bay.

CD-ROM drive, diskette drive, and keyboard are seen as Universal Serial Bus (USB) devices

The CD-ROM drive, diskette drive, and keyboard in the BladeCenter unit are viewed as USB devices by the blade server operating system.

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Configuring Wake on LAN in the BladeCenter unit

Complete the following steps to configure Wake on LAN in the BladeCenter unit:

1. Write down the MAC addresses of the integrated Ethernet controllers of each blade server. This information can be found using the Configuration/Setup Utility for each blade server (**Devices and I/O Ports → System MAC Addresses**). The blade server MAC addresses can also be found on a barcode label that is on the bottom of the blade server enclosure. There might also be a loose label that shipped with the blade server that has the MAC addresses printed on it. The MAC addresses are needed to configure a remote system to start the blade servers using Wake on LAN: the remote system issues the Wake on LAN command (magic packet) by broadcasting it to a MAC address.
2. Make sure that Wake on LAN is enabled in the BladeCenter management module.
3. Make sure that the external ports of the Ethernet switch modules are enabled. If the external ports are not enabled, the BladeCenter unit will not be able to communicate with the external network.

Verifying your Wake on LAN configuration

Complete the following steps to verify that Wake on LAN was properly configured and is functioning:

1. Start the blade server operating system.
2. Attempt to ping the remote computer that will issue the Wake on LAN command (magic packet). This verifies network connectivity.
3. Shut down the blade server, insert a DOS bootable diskette in the diskette drive, and then restart the blade server.
4. When the A:\ prompt appears, turn off the blade server using the power-control button.
5. Issue the Wake on LAN command (magic packet) from the remote computer.

   If Wake on LAN was properly configured and is functioning, the single blade server will wake up. This is a good procedure to determine whether it is a single blade or BladeCenter configuration problem, or a device driver issue within the operating system.

Linux specific configuration:

Complete the following steps when configuring Wake on LAN under Linux (RedHat or SuSE):

1. Type the following command:

   ```
   insmod bcm5700.o enable_wol=1,1
   ```

   Where The “1,1” in the switch “enable_wol=1,1” instructs the driver to enable Wake on LAN for both Broadcom controllers onboard a single blade. Since there are two Broadcom controllers, it is required to issue a “1” for each of them.
2. Recompile the driver for your Linux image. For example, a driver compiled in RedHat is not guaranteed to function for SuSE. See the documentation that comes with your operating system for information about compiling drivers.

   To compile the Broadcom drivers successfully in RedHat, a default installation is not sufficient because all files needed to compile successfully are not included. A custom installation of RedHat, in which the packages for software and kernel development are chosen, will include the files required for successful compilation of the drivers.

Connecting to the default IP address on a new BladeCenter

Description: A newly-installed (out-of-the-box) BladeCenter unit tries to locate a DHCP server on the network before it will default to the factory-configured static IP address in the management module. This is the initial configuration setting. When there is no DHCP server on the network the BladeCenter unit is connected to, it takes two minutes before the management module uses the default (static) IP address.

Solution: When the DHCP search times out and the management module uses the static IP address, you can change the management module configuration so that it will not attempt to locate a DHCP server (**MM Control → Network Interfaces → External Network Interface → DHCP**, select **Static only**).

See "Assigning the IP address to the management module" on page 30 for the default IP address of the management module and "Identifying the IP address assigned to the management module" on page 30 for how to identify the actual management module IP address. See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for information on connecting to and configuring the BladeCenter management module.

Hot-swap capabilities

The front bays on the BladeCenter unit are hot-swap blade bays; the rear bays on the BladeCenter unit are hot-swap module bays. You can add, remove, or replace blade servers or management, switch, power, or blower modules in hot-swap bays without removing power from the BladeCenter unit.

Attention: To maintain proper system cooling, each unoccupied bay must contain a filler blade, expansion or filler module. When replacing a blade server or installing an expansion unit, do not operate the BladeCenter unit for more than one minute without either a blade server, an expansion unit, or a filler blade installed in each blade bay; or without a module or filler installed in each rear bay.

Module bays must all be occupied at all times

To help ensure proper cooling, performance, and system reliability, make sure that each of the module bays on the rear of the BladeCenter unit has a module or filler module installed.

Important: When replacing a module, do not operate the BladeCenter unit for more than one minute without either a module or a filler module installed in each module bay.

No power switch on BladeCenter chassis

The BladeCenter unit does not have a power switch. Plugging the power cords into the power modules and a 220 V ac power source (rack-mounted 220-volt PDU) starts the BladeCenter unit (the management module, switch modules, and blowers start running).

Each blade server in the BladeCenter unit has an individual power-control button, behind the control panel door on the front of the blade server, that turns on or turns off the blade server. Be sure to shut down the operating system before turning off the blade server, to avoid damaging the hard disk drives.

Notes:

1. The blade server power button turns on or turns off the blade server if local power control has not been disabled through the management module.
2. The blade server power button turns on the blade server only if the green power light on the blade server is flashing slowly. If the light flashes rapidly, the blade server has not yet synchronized with the management module and the power button will have no effect.

See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for more information about the BladeCenter unit. See the *IBM BladeCenter HS20 Type 8678 Installation and User's Guide* for more information about the blade server power controls and turning on or turning off the blade server.

Registering and profiling the BladeCenter products

You can register and profile the BladeCenter unit and blade servers on the World Wide Web.

- To register, go to: http://www.ibm.com/pc/register/
- To profile, go to: http://www.ibm.com/pc/support/

BladeCenter HS20 blade server

Related topics

- "Blade server does not turn off during Red Hat Linux 7.3 shutdown" on page 35

Blade server configuration tied to blade bay

Some blade server configuration information and update options are established according to bay number. Reinstalling a blade server into a different bay than the one from which it was removed could have unintended consequences and you might need to reconfigure the blade server.

See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* and the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

Blade servers turn off for no apparent reason

Description: Blade servers turn off for no apparent reason.

Solution: Ensure that all blade bays have a blade server, expansion unit, or filler blade in them. Blade bays that do not have these items installed, or have them installed improperly, disturb airflow in the BladeCenter unit with an adverse effect on BladeCenter unit cooling. If the BladeCenter unit begins to overheat, blade server processors will begin to slow down and will eventually turn off the system.

Do not change ownership of the shared CD-ROM or diskette drive while they are in use

Do not switch control of the shared CD-ROM drive or diskette drive to another blade server until the activity lights on both the CD-ROM drive and diskette drive are off, indicating that no read or write operations are in progress.

Ethernet controllers in blade servers

The Ethernet controllers are integrated on each blade server system board. The Ethernet controllers provide 1-Gbps full-duplex capability only, which enables simultaneous transmission and reception of data to the external ports on the Ethernet switches. You do not need to set any jumpers or configure the controllers for the blade server operating system. However, you must install a device driver in the blade server to enable the blade server operating system to address the Ethernet controllers. For blade server device drivers and information about configuring the Ethernet controllers, see the *Broadcom NetXtreme Ethernet Software* CD that comes with the BladeCenter unit.

Improper blade server shutdown disables Wake on LAN

Description: Improper shutdown of a blade server will not allow that blade server to be restarted using Wake on LAN.
Workaround: Complete the following steps to reset the blade server power state and re-enable its previously programmed Wake on LAN capability:

1. Turn off the blade server.
2. Unlatch and slide the blade server partially out of the BladeCenter unit.
3. Reinstall the blade server.

Time delay when switching control of shared BladeCenter resources

It can take approximately 20 seconds for the operating system in the switched-to blade server to recognize the CD-ROM drive, diskette drive, and USB port, or the keyboard, video, and mouse.

Notes:

1. The system-error LED might light, and a KVM allocation error might be logged, if the change in ownership for the CD-ROM drive, diskette drive, and USB port, or the keyboard, video, and mouse takes more than 8 seconds. The system-error LED will go off after the ownership change is complete.
2. It can take up to 48 seconds after a blade server is initially turned on before you can attempt to switch KVM control to that blade server.

See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* and the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

Turn off blade servers before removal

Before you remove a hot-swap blade server from the BladeCenter unit, you must shut down the operating system and turn off the blade server. You do not have to shut down the BladeCenter unit itself.
See the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

Wake on LAN enabled by default

The Wake on LAN (WOL) feature is enabled permanently in the blade server BIOS code. The WOL enabled/disabled setting for each blade server slot is stored in the management module NVRAM. The default setting for each blade server slot is enabled. To disable WOL for one or more blade servers, use the management module Web interface.

Blower module

Minimum blower speed varies based on ambient temperature

If ambient temperature is 72° F or below, the BladeCenter blowers will run at 30% of their maximum rotational speed, increasing their speed as required to control internal BladeCenter temperature. If ambient temperature is above 72° F, the blowers will run at 80% of their maximum rotational speed increasing their speed as required to control internal BladeCenter temperature.

Device drivers

Latest device drivers

To download the latest device drivers, go to the IBM Support Web site at http://www.ibm.com/pc/support/ on the World Wide Web.

Drives

CD-ROM drive

Related topics

- The hints and tips in "Media tray" on page 32
- "Linux does not install from the BladeCenter CD-ROM drive, or will not start afterward" on page 37

CD-ROM drive is seen as /dev/sr0 by SuSE

Description: If the SuSE Linux operating system is installed remotely onto a blade server that is not the current owner of the media tray (CD-ROM drive, diskette drive, and USB port), SuSE sees the CD-ROM drive as /dev/sr0 instead of /dev/cdrom.
Workaround: Establish a link between /dev/sr0 and /dev/cdrom as follows:

1. Enter the following command:

   ```
   rm /dev/cdrom; ln -s /dev/sr0 /dev/cdrom
   ```

2. Insert the following line in the /etc/fstab file:

   ```
   /dev/cdrom  /media/cdrom  auto  ro,noauto,user,exec  0 0
   ```

CD-ROM drive is not recognized after being switched back to blade server running Windows 2000 Advanced Server with SP3 applied

Description: When the CD-ROM drive owned by blade server *x* is switched to another blade server, then is switched back to blade server *x*, the operating system in blade server *x* no longer recognizes the CD-ROM drive. This happens when you have not safely stopped the drives before switching ownership of the CD-ROM drive, diskette drive, and USB port (media tray).

Note: Because the BladeCenter unit uses a USB bus to communicate with the media tray devices, switching ownership of the media tray to another blade server is the same as unplugging a USB device.

Solution: Before switching ownership of the CD-ROM drive (media tray) to another blade server, safely stop the media tray devices on the blade server that currently owns the media tray, as follows:

1. Double-click the **Unplug or Eject Hardware** icon in the Windows taskbar at the bottom right of the screen.
2. Select **USB Floppy** and click **Stop**.
3. Select **USB Mass Storage Device** and click **Stop**.
4. If an external USB device is connected to the USB port on the media tray, select it and click **Stop**.
5. Click **Close**.

You can now safely switch ownership of the media tray to another blade server.

Diskette drive

Related topics

- The hints and tips in “Media tray” on page 32

Diskette drive is seen as /dev/sd*x* by Red Hat Linux 7.3 and SuSE version 8.0

Description: Both Red Hat Linux and SuSE Linux see the diskette drive as /dev/sd*x* (where *x* is the last SCSI device in the line) instead of /dev/fd0. When you try to mount the drive as fd0, the Linux operating system does not recognize the device (“not a valid block device”).
Workaround: There are two options:

- **For SuSE Linux version 8.0**

  Modify the /etc/fstab file to include the following line:

  ```
  /dev/sdx  /media/floppy  auto  noauto,user,sync  0 0
  ```

  where *x* is the letter that was assigned to the diskette drive.
- **For Red Hat Linux 7.3**
  1. Modify the /etc/fstab file to include the following line:

     ```
     /dev/sdx   /mnt/floppy   auto  noauto,user 0 0
     ```

     where *x* is the letter that was assigned to the diskette drive.
  2. Create a directory for the diskette drive under /mnt by running:

     ```
     mkdir /mnt/floppy
     ```
  3. Mount the diskette drive by typing:

     ```
     mount /mnt/floppy
     ```

Note: When running Linux, you must unmount the diskette drive before changing ownership of the media tray. See ““Media not found” error message and other file system errors occur on a blade server running Linux or DOS” on page 32 for additional information.

Hard disk drives (IDE and SCSI)

Related topics

- The hints and tips in “SCSI Storage expansion option” on page 42

Hot-swap drive bay fillers

To ensure proper cooling and system reliability, make sure that each of the SCSI hard disk drive bays on the SCSI storage expansion unit contains either a hot-swap SCSI hard disk drive or a filler panel.

Second IDE drive cannot be used when installing an I/O expansion option

Do not install a drive into IDE connector 2 on the blade server if you intend to also install an I/O expansion option. The I/O expansion option occupies the same area as the second IDE drive.
See the *IBM @server BladeCenter HS20 IDE Hard Disk Drive* option documentation, the *IBM @server BladeCenter HS20 I/O Expansion Module* option documentation, and the *IBM @server BladeCenter HS20 Type 8678 Installation and User’s Guide* for more information.

RAID with IDE drives

Two IDE drives can be used to implement and manage RAID level-1 under both the Linux and Microsoft Windows 2000 operating systems. Details of the implementation for Microsoft Windows 2000 can be found at http://support.microsoft.com/default.aspx?scid=kb;EN-US;q302969 on the World Wide Web.

Important: To avoid potential performance and reliability problems when configuring or replacing drives in a mirrored configuration, ensure that the storage capacities and speeds of the drives are identical.

See the *IBM @server BladeCenter HS20 IDE Hard Disk Drive* option documentation for more information.

RAID with SCSI drives

The SCSI controller in the SCSI storage expansion unit supports RAID level-1 (embedded mirroring).

Important: To avoid potential performance and reliability problems when configuring or replacing drives in a mirrored configuration, ensure that the storage capacities and speeds of the drives are identical.

See the *IBM @server BladeCenter HS20 SCSI Storage Expansion Unit* option documentation for more information.

Ethernet Controllers

Operating systems number Ethernet controllers differently

Description: Enumeration of the Ethernet controllers in a blade server is operating-system dependent. For example, the Ethernet controller located nearer the top of the blade server, whose communications are routed through Ethernet switch module 1, is designated as the first connection (or Local Area Connection) by Microsoft™ Windows 2000, but is designated as the second connection (or eth1) by Red Hat Linux Version 7.3. The Ethernet controller located nearer the bottom of the blade server, whose communications are routed through Ethernet switch module 2, is designated as the second connection (or Local Area Connection 2) by Microsoft Windows 2000 but is designated as the first connection (or eth0) by Red Hat Linux Version 7.3. In the blade server Configuration/Setup Utility program, the Ethernet port designated as Planar Ethernet 1 is routed to Ethernet switch module 2 and the Ethernet port designated as Planar Ethernet 2 is routed to Ethernet switch module 1.

Solution: You can verify the designations through your operating system settings or by completing the following steps:

1. Install only one switch module, in switch bay 1.
2. Enable only one of the Ethernet controllers on the blade server. Make note of the designation the blade server operating system has for the controller.
3. Ping an external computer on the network connected to the switch module.

If you can ping the external computer, the Ethernet controller you enabled is the upper controller in the blade server and is associated with Ethernet switch 1.

Broadcom NetXtreme Software CD

Description: The Make Disk choice on the main menu of the *Broadcom NetXtreme Software CD* is nonfunctional and is not needed to configure the BladeCenter unit or blade server.

Solution: The Make Disk choice will be removed from the next release of the Broadcom CD.

See the `README` file on the *Broadcom NetXtreme Software* CD for more information.

Ethernet switch module

Related topics

- "Updating the Ethernet switch module configuration through the management module does not save to the switch NVRAM" on page 31
- "Operating systems number Ethernet controllers differently" on page 17

Configuring the Ethernet switch module

Before you configure the Ethernet switch module, be sure that the management module in the BladeCenter unit is properly configured. In addition, to access and manage the Ethernet switch module from an external environment, you might need to enable certain features, such as the external ports and external management over all ports. See the applicable *BladeCenter Installation and User's Guide* publications on the *IBM BladeCenter Documentation* CD for more information.

In addition to reviewing the publications in this library, be sure to review the *IBM BladeCenter Planning and Installation Guide* located at http://www.ibm.com/pc/eserver/bladecenter/ on the World Wide Web for information to help you prepare for system installation and configuration. See the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* for more information.

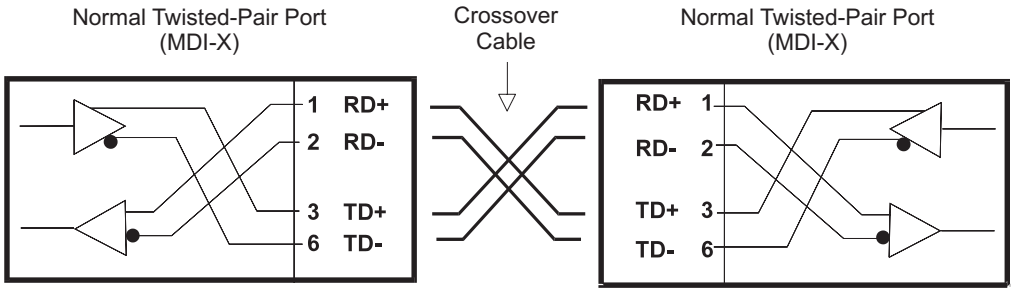
Connecting an Ethernet switch module to another switch or hub

The ports on the D-Link Ethernet switch module are enabled for Auto Negotiation by default. Normally, a straight cable is used to connect the ports to objects on the network. However, you need to connect the ports as follows if you have specifically set the speed/duplex value:

- Use a straight cable to connect the port to NICs on the network.
- Use a crossover cable to connect the port to another switch or hub on the network.

In a crossover cable, two pairs of wires are switched at one connector end (in this case, the Transmit pair and the Receive pair). If you need a crossover cable, you can obtain a commercially-available one or you can make one. Complete the following steps to create a customized crossover twisted-pair cable for 10BASE-T or 100BASE-TX connections:

1. Leave one end of the cable as is, with the RJ-45 connector intact.
2. At the other end of the cable, connect wires 1 and 2 to contacts 3 and 6, respectively. Then, connect wires 3 and 6 to contacts 1 and 2, respectively. Refer to the following diagram.



Default Ethernet switch module user ID and password

The default user ID and password for the Ethernet switch module are:

- User ID = USERID
- Password = PASSW0RD (All capitals with a “0” (numeric zero) used for the “O” in PASSW0RD.)

Default IP address set by the Ethernet switch module does not match the one assigned by the management module

Description: The default IP address that the Ethernet switch module sets for itself, based on its bay number, and the default IP address the management module assigns to the switch module, based on its bay number, do not match. If you intend to use the default IP addresses, be aware that if the management module is absent or non-functional and you restart the Ethernet switch module, you need to use the switch module true IP address (10.90.90.9*x*, where *x* depends on the number of the bay into which you have installed the switch module) to manage the switch module through the external or internal (to the blade servers) switch module ports.

Solution: Configure the Ethernet switch module, the management module, or both, to specify the same IP addresses for the switch module as for the management module. There are two options:

- Telnet directly into the switch module, or log into the switch module directly through the switch module Web interface (not through the management module Web interface), to set the IP addresses to the same as indicated in the management module (default is 192.168.70.1*xx*, where *xx* depends on the number of the bay into which you have installed the switch module) and save the settings.
- Use the management module Web interface to set the IP addresses for the switch module to the same as indicated in the switch module (default is 10.90.90.9*x*, where *x* depends on the number of the bay into which you have installed the switch module) and save or apply the settings.

See the *IBM @server BladeCenter Type 8677 Installation and User’s Guide* and the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation Guide* for information about configuring the IP addresses.

Ethernet switch module graphical interface might show a blank panel when the blade server is present but powered off

Description: If the Wake-on-LAN (WOL) feature is disabled on a blade server, and the blade server is turned off, the switch module internal port link to that blade server is down. This is not an error, but the graphic of the BladeCenter unit might show a blank panel instead of a blade server in that bay.

Note: You can enable or disable the WOL feature on a blade server through the management module Web interface or through the IBM Director console.

Solution: Do not rely on the BladeCenter graphic in the Ethernet switch module firmware Web interface to determine the presence or absence of blade servers in the BladeCenter unit.

Ethernet switch module IP addresses in Ethernet switch module NVRAM and management module NVRAM must match

Ethernet switch module IP address changes made through the management module are not stored in the switch module NVRAM, and vice-versa. See “Updating the Ethernet switch module configuration through the switch does not save in management module NVRAM” on page 23 and “Updating the Ethernet switch module configuration through the management module does not save to the switch NVRAM” on page 31 for information.

Ethernet switch module log reports elapsed time, not time-of-day

The timestamp on entries in the Ethernet switch module log uses elapsed-time (since last switch restart). The timestamp on entries restarts from 0 each time the switch is restarted, although the entries do remain in order of occurrence.

Ethernet switch module ports are disabled by default

Description: After installing an operating system on a blade server and connecting the BladeCenter unit to a network using the Ethernet switch module, the blade server is unable to communicate with network resources.
Solution: The default setting for the four Ethernet ports on the Ethernet switch module is disabled. Before you can use these ports, you must use the BladeCenter management module to enable the ports.
See the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* for more information.

Faster remote blade server startups through Ethernet switch 2

Blade server startups initiated from the network will be faster if you connect the DHCP server to the Ethernet switch in switch bay 2. This is because the BIOS code in the blade server "sees" the bottom Ethernet controller first, and the bottom Ethernet controller in each blade server is associated with the switch in switch bay 2.

First ping from Ethernet switch module through Telnet reports failure

Description: When you use the Ethernet switch module Telnet interface to request the switch module to ping a network device, the first ping response reports a failure, although the other repetitions might report success. This occurs regardless of whether the switch module port the pinged object is connected to is internal or external. It applies to pinging blade servers, but not to pinging the management module or objects connected to its external Ethernet port, such as the network management station.
Solution: To get accurate results, always specify multiple repetitions (>1) in the ping request, and ignore the first ping response from that request.
See the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation Guide* for instructions on how to ping through the Telnet interface.

Integrated Ethernet controllers require optional Ethernet switch module

The BladeCenter unit does not include an Ethernet switch module; this is an optional feature that must be purchased separately. An Ethernet switch module must be installed in the BladeCenter unit before the Ethernet controllers integrated on each blade server system board can be used.

Management module Web interface to Ethernet switch module does not refresh

Description: After adding or restarting an Ethernet switch module through the management module Web interface the Web page does not refresh. You will also be unable to connect to the Ethernet switch module through the Telnet interface.
Solution: You must wait until the Ethernet switch module completes POST. After Ethernet switch module POST is complete, you will be able to connect to the Ethernet switch module.

Managing an Ethernet switch module

You can manage an Ethernet switch module from both the production network and the management network.

- Management network: Ethernet switch module management is through the external Ethernet port of the BladeCenter management module. For communication to take place between the switch module and the network management console, the switch module and the management module IP addresses must use the same subnet.
- Production, or campus, network: Ethernet switch module management is through an external port on the Ethernet switch module. For communication to take place between the switch module and the management console, the IP addresses for the switch module and the production network must use the same subnet.

In order for you to manage the Ethernet switch module from both the management network and the production network, the management network and the production network must use the same IP subnet. External management over all ports must be enabled to manage the Ethernet switch module from the production network or the campus network.

Two Ethernet switch modules required to use both Ethernet channels of the blade server

Description: One Ethernet switch module is installed in the BladeCenter unit and is fully functional with blade server integrated Ethernet channel ETH0. If the second blade server integrated Ethernet channel ETH1 is configured, it is unable to communicate with network resources.
Solution: Within the BladeCenter unit, Ethernet switch modules are physically wired independently to the integrated Ethernet controller channels of each blade server: the ETH0 Ethernet controller channel on the blade server is wired to the top Ethernet switch module and the ETH1 Ethernet controller channel on the blade server is wired to the bottom Ethernet switch module. Two Ethernet switch modules are required to use both blade server Ethernet channels.
See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for more information.

Update to Remote Management Setup documentation

The "Remote Management Setup" topic in Chapter 6, "Configuring the switch module through the Telnet interface," of the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* has been updated as follows:

Remote Management Setup: The IP addresses of up to three management stations can be specified to access the management agent of the switch, with all other IP addresses being blocked. Management requests from a management module are always available and are not affected by the IP addresses entered in the list.

The switch sends out SNMP traps to trap receiver stations whenever certain exceptional events occur, such as when the switch is turned on or when a system reset occurs. The switch enables traps to be routed to up to four different network management hosts.

For a detailed list of the trap types that are used for this switch, see "Traps" on page 20 of the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide*.

SNMP (version 1) implements a rudimentary form of security by requiring that each request include a *community name*. A community name is an arbitrary string of

characters used as a “password” to control access to the switch. If the switch receives a request with a community name that it does not recognize, it will trigger an authentication trap.

The SNMP enables up to four different community names to be defined. The community name **public** is defined by default; you can change this name and add others. You will need to coordinate these names with the community name settings that you use in your network management system.

When you select **Remote Management Setup** on the main menu, the following window opens.

You can set the following parameters:

IP Address

The IP address of the network management station to access the management agent of the switch. The management module can always access the management agent of the switch, even if its IP address is not the same as the network management station.

Community String

The community string that will be included on SNMP packets sent to and from the switch. Any station that is not a member of this community will not receive the packet.

Rights

Enables each community to be separately set to either **Read** (read-only), meaning that the community member can only view switch settings or **R/W** (read/write), which enables the member to change settings in the switch.

Status

Determines whether this community name entry is **Enabled** or **Disabled**.

To set up trap recipients, highlight **SETUP TRAP RECEIVERS** at the bottom of the Remote Management Setup menu and press Enter.

You can set the following parameters:

IP Address

The IP address of the network management station to receive traps.

SNMP Community String

The community string that will be included on SNMP packets sent to and from the switch. Any station that is not a member of this community will not receive the packet.

Status

Determines whether this community name entry is **Enabled** or **Disabled**.

Highlight **APPLY** and press Enter to make your changes effective.

Updating the Ethernet switch module configuration through the switch does not save in management module NVRAM

Description: If you log in to the Ethernet switch module directly (through the Ethernet switch module Web interface or Telnet interface instead of through the management module Web interface) and update the switch module configuration, saving the new configuration saves only to the switch NVRAM, not to the management module NVRAM. The management module will not be able to communicate with the switch module.

Solution: In the management module Web interface, in **Switch Tasks → Management**, change the New Static IP Configuration values to match the ones in Current IP Configuration, and apply the configuration.

Updating the Ethernet switch module IP address through the switch drops active management module Web interface connections

Description: If you log in to the Ethernet switch module directly (through the Ethernet switch module Web interface or Telnet interface instead of through the management module Web interface) and change the switch module IP address, active connections to the Ethernet switch module through the management module Web interface will be lost.

Solution: In the management module Web interface, in **Switch Tasks → Management**, change the IP address and click **Save** to apply the change.

Updating the switch module firmware

Complete the following steps to update the firmware on the Ethernet switch module:

1. Download the firmware.
2. Set up and start a TFTP server on the station that received the firmware.
3. From a DOS prompt, Telnet to the switch module and log in.
4. Select **Utilities**.
5. Select **Upgrade Firmware from TFTP Server**.
6. Enter the IP address for the station where the firmware is and the TFTP server is running.
7. Enter the file name of the firmware and select **Start**. The update dialog displays a progress bar and completion indication (100%). The Telnet window displays **OK** when the firmware update is complete.
   Note: If the TFTP server and the Telnet session are on the same station, the graphical update dialog might be hidden by the Telnet window.

See “Firmware updates” on page 25 for information about installing firmware updates.

Virtual LAN (VLAN) ID range of Ethernet switch module

The range of VLAN IDs for the Ethernet switch module is 0001 to 4094.
See the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* for more information.

Web-based management

The switch module offers an embedded hypertext markup language (HTML), Web-based interface that enables you to manage the switch through a standard browser, such as Opera, Netscape Navigator/Communicator, or Microsoft Internet Explorer. The Web browser acts as an access tool and can communicate directly with the switch using the HTTP protocol.
Note: The Web-based interface does not accept Chinese language input (or other double-byte character-set languages).

The Web-based interface and the Telnet program are different ways to access and configure the same internal switching software. Thus, all the settings that you encounter in the Web-based interface are the same as those found in the Telnet program.
See the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* for more information.

Firmware updates

IBM will periodically make firmware updates available for the BladeCenter management module, Ethernet switch module, fibre channel switch module, and blade servers. Use the following table to determine the methods you can use to install these firmware updates.
Note: The current version of Update*X*press does not provide support for the BladeCenter and blade server environment. Update*X*press packages are available from http://www.ibm.com/pc/support/ on the World Wide Web, which provide support for the BladeCenter product.

Important: To avoid problems and to maintain proper system performance, always ensure that the:

- Blade server BIOS, ISMP, and diagnostic firmware levels are consistent for all blade servers within the same BladeCenter unit.
- Ethernet switch module firmware level is consistent for all Ethernet switch modules within the same BladeCenter unit.
- Fibre channel switch module firmware level is consistent for all fibre channel switch modules within the same BladeCenter unit.

Firmware	Update diskette	RDM	Management module Web interface	Switch module Web interface	Switch module Telnet interface
BladeCenter Ethernet switch module	No	No	Yes	Yes	Yes
BladeCenter fibre channel switch module	No	No	Yes	No	Yes
BladeCenter management module	No	No	Yes	No	No
Blade server BIOS code	Yes	Yes	No	No	No
Blade server diagnostic code	Yes	Yes [1]	No	No	No
Blade server ISMP code	Yes	Yes	Yes	Yes	No
1. User must set up a Custom Task.					

Fibre channel switch module and I/O expansion card

Inter-Switch Link (ISL) support

The fibre channel switch module will support ISL links to other fibre channel switches. See the *IBM Fibre Channel Switch Module for BladeCenter Installation and User's Guide* for more information.

I/O expansion option

I/O expansion option and switch modules must be for same interface

When you add an I/O expansion option, you must make sure that the switch modules in switch module bays 3 and 4 on the BladeCenter unit are the same type of interface. For example, if you add the IBM HS20 Fibre Channel Expansion Card option to the blade server, the modules in switch module bays 3 and 4 on the BladeCenter unit must be fibre channel switches, such as the IBM BladeCenter 2-Port Fibre Channel Switch Module, and all other I/O expansion options installed on other blade servers in the BladeCenter unit must also be fibre channel interfaces.
See the *IBM @server BladeCenter HS20 Type 8678 I/O Expansion Module* option documentation and the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

IBM Director

Using IBM Director

The IBM Director program is a system-management product that comes with the BladeCenter unit. Through the remote connection on the management module, you can use the IBM Director software at the IBM Director console to configure the BladeCenter unit, modify the configuration, and set up more advanced features.
Note: Some tasks, such as software distribution, require an in-band connection from the Director server through a campus (public) LAN to a switch module port.

The IBM Director software includes the IBM BladeCenter Deployment Wizard.
See the *IBM Director 4.0 for BladeCenter products Installation and Configuration Guide* and the *IBM Director 4.0 for BladeCenter products Systems Management Guide* for more information.

IBM RDM

Installing blade server operating systems using Remote Deployment Manager (RDM)

Instructions for using Remote Deployment Manager to install operating systems can be found at http://www.ibm.com/pc/ww/eserver/xseries/systems_management/index.html on the World Wide Web.

Installing a Microsoft Windows operating system:

Use the Remote Deployment Manager Version 3.1.01 (or later) program with the RDM patch 2 (blade server patch) applied to install a supported Microsoft Windows operating system onto a blade server. Follow the instructions in the documentation that comes with the RDM program and with the patch, to log into the BladeCenter system and install a supported Microsoft Windows operating system.
See the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* and the Remote Deployment Manager documentation for more information.

Keyboard, video, and mouse (KVM)

Related topics

- The hints and tips for your operating system, for KVM-related issues.
- See “Linux” on page 35 for more Linux-related hints and tips.
- See “Windows” on page 40 for more Windows-related hints and tips.

Caps, Num, or Scroll Lock key state not retained when switching between blade servers running a Linux operating system

Description: The Caps Lock, Num Lock, and Scroll Lock states are not retained when switching KVM control between blade servers that are running a Linux operating system. In addition, the Num Lock, Caps Lock, and Scroll Lock LEDs might not reflect their current state. For example, when switching the KVM control from a blade server running Windows 2000 with its Caps Lock function enabled to a blade server running Linux, the Caps Lock LED might remain lit, indicating that it is still enabled, but when you type, the letters appear in lower case.

Workaround: Press the Num Lock, Caps Lock, or Scroll Lock key once to synchronize the state of its LED and function; then, press each key as required to obtain the desired state for each of these functions.

Configure the mouse as USB

Description: Some operating systems permit you to select the type of mouse being used. If offered this choice, select USB instead of PS/2. Although the mouse is a PS/2-style device, communication with the mouse is through an internal USB bus in the BladeCenter chassis; therefore, the operating system in the blade server must recognize the mouse as a USB device.

Known configuration affected: Red Hat Linux 7.3

See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* and the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

Key sequence to switch KVM control between blade servers

Press keyboard keys in the following sequence to switch KVM control between blade servers:

NumLock NumLock *<blade server number>* **Enter**

Where <blade server number> is the two-digit number for the blade bay in which the blade server is installed.

You will need to press the **Shift** key to switch KVM control when using the 28L3644 (37L0888) keyboard. If the above key sequence does not switch KVM control, do the following steps:

1. Press and hold the **Shift** key.
2. Press keyboard keys in the following sequence:

   NumLock NumLock *<blade server number>* **Enter**
3. Release the **Shift** key.

Keyboard and mouse take longer to switch than video

Sometimes when switching ownership of the KVM to a blade server, the video for the blade server appears almost immediately, but it takes up to 10 or 20 seconds for the mouse and keyboard to be usable.

Keyboard is very slow when using an operating system that does not have USB drivers

Although the keyboard attached to the BladeCenter unit is a PS/2-style keyboard, communication with it is through a USB bus. When you are running an operating system that does not have USB drivers, such as in the following instances, the keyboard responds very slowly.

- Running the blade server integrated diagnostics
- Running a BIOS update diskette on a blade server
- Updating the diagnostics on a blade server
- Running the Broadcom firmware CD for a blade server

Monitor displays video for blade server 14 during management module restart

The monitor attached to the BladeCenter management module normally shows the video output from the blade server that is the current owner of the keyboard, video, and mouse (KVM). When there is no actively selected video from any blade server, the video from blade server 14 is routed to the management module. While the management module is restarting, there is temporarily no current KVM owner. The video from blade server 14 displays on the monitor briefly until the management module uses its NVRAM values to reestablish ownership of the KVM and media tray (CD-ROM drive, diskette drive, and USB port). After that, the video from the blade server that is the current KVM owner displays on the monitor.

Mouse function lost during Red Hat installation

Description: If, while installing Red Hat Linux 7.3 to a blade server, you or someone else selects a different blade server as owner of the keyboard, video, and monitor (KVM), you might lose mouse function for the installation process.
Solution: Do not switch KVM owners until the installation process begins to install the packages (after the 'About to Install' window).

See "Linux" on page 35 for more Linux-related hints and tips.

Possible one-time long delay when switching KVM to a blade server running Windows 2000

Description: If you install Microsoft Windows 2000 on a blade server while the blade server is not the current owner of the keyboard, video, and mouse (KVM), a delay of up to one minute occurs the first time you switch the keyboard, video, and mouse to the blade server. During this one-time-only delay, the blade server Device Manager enumerates the keyboard, video, and mouse and loads the device drivers. All subsequent switching takes place in the normal keyboard-video-mouse switching time frame.
Solution: Make sure the blade server on which you plan to install Windows 2000 is the owner of the KVM before you begin the installation.

See "Windows" on page 40 for more Windows-related hints and tips.

Supported video resolutions and refresh rates

Description: When using the remote console to access a blade server, the desktop displays properly for some operating systems but will not display properly for other operating systems. The system might also display a video error message.

Solution: Use only the video resolutions and refresh rates given in the following table. These are the only video resolution and refresh rate combinations that are supported for all system configurations.

Resolution	Refresh rate
640x480	60 Hz
640x480	72 Hz
640x480	75 Hz
640x480	85 Hz
800x600	60 Hz
800x600	72 Hz
800x600	75 Hz
800x600	85 Hz
1024x768	60 Hz
1024x768	75 Hz

Switching KVM control between blade servers gives USB device error

Description: If a blade server is under heavy load, it can take several minutes before it enumerates the USB devices connected to it. If control of the KVM and media tray is switched away from the blade server before this enumeration is complete, a USB device installation error might be received.

Solution: Do not switch KVM control between blade servers until the mouse and keyboard are both working on the blade server that has control of the KVM and media tray.

Management module

Related topics

- "Updating the Ethernet switch module configuration through the switch does not save in management module NVRAM" on page 23
- "Connecting to the default IP address on a new BladeCenter" on page 11

Accessing the management module with a laptop

Set your laptop to have an address with the same subnet as the management module; then, enter the address of the management module in your web browser.

See the *IBM @server BladeCenter Management Module User's Guide* for more information.

Assigning the IP address to the management module

By default, the BladeCenter system looks for a DHCP server to assign it an IP address. If it cannot find one, it will time-out and use the factory assigned static IP address of 192.168.70.125 and subnet mask of 255.255.255.0, which are printed on the management module label.

Blank management module default internal gateway address is invalid

Description: A “blank” management module internal gateway address is invalid. If you set the default internal gateway in the management module web interface to “blank”, a “Gateway Address: invalid input, is not a valid IP address ” error message will appear.

Solution: Use the 0.0.0.0 address to indicate that a gateway is not required. Setting the default internal gateway management module address to 0.0.0.0 indicates that a gateway is not required and will render the management module unable to communicate beyond the local network.

Default management module user ID and password

The default user ID and password for the management module are:

- User ID = USERID
- Password = PASSW0RD (All capitals with a “0” (numeric zero) used for the “O” in PASSW0RD.)

Important: If the management module password is forgotten, it cannot be overridden and the management module will need to be replaced. This replacement is not covered under warranty.

For more information: See the *IBM @server BladeCenter Management Module User’s Guide*.

Identifying the IP address assigned to the management module

Description: There is no discovery mechanism to identify the IP address assigned by DHCP to the management module.

Solution: You need to be a DHCP administrator. If you are not one, give your DHCP administrator the management module MAC address (from the label on the module), and ask them to tell you the IP address that DHCP assigned to your management module.

IP reset button

Do not press the IP reset button unless you intend to erase your configured IP addresses for the management module and lose connection with the remote management station, the switch modules, and the blade servers. If you press this button, you will need to reconfigure the management module settings.

Note: Pressing the IP reset button does not reset the password.

See the *IBM @server BladeCenter Management Module User’s Guide* and the *IBM @server BladeCenter Type 8677 Installation and User’s Guide* for more information.

Management module password cannot be reset if forgotten

Important: If you forget the management module password, you will not be able to access the BladeCenter management module. The management module password cannot be overridden and the management module will need to be replaced. This replacement is not covered under warranty.

Media tray access is lost temporarily during management module restart

Description: When the BladeCenter management module is restarted, use of the media tray (CD-ROM drive, diskette drive, and USB port) is lost temporarily. If you or a failure condition initiates a management module restart while I/O activity is taking place on the media tray, the disruption can interrupt reads to the CD-ROM drive or lose data being written to a diskette.
Note: You can restart the management module through the Web interface to the management module or from a network management station such as the IBM Director console. Some failures on the BladeCenter unit can result in the management module restarting automatically.
Solution: Make sure there is no I/O activity on the media tray before you restart the management module.

Refreshing Firmware Vital Product Data (VPD) information takes 3 to 4 minutes

Selecting Firmware VPD in the BladeCenter management module takes 3 to 4 minutes to refresh and display information. Users are advised that the operation will take some time to complete and are given the option to continue or cancel. If they choose to continue, no information appears to indicate progress, other than the standard status information at the bottom of the browser window.

Some components do not report environmentals (temperature, voltage)

The green status dot for a component is not automatically a link to environmental information (temperature and voltage) for the component. Only the management module and blade servers have environmental information, and only the green dot for those components contains a link to environmental information.

Updating the Ethernet switch module configuration through the management module does not save to the switch NVRAM

Description: When you use the management module Web interface to update the Ethernet switch module configuration, the management module firmware writes its settings for the switch module only to the management module NVRAM; it does not write its settings for the switch module to the switch module NVRAM.

If the switch module restarts when the management module is not able to apply the IP address it has in NVRAM for the switch module, the switch module will use whatever IP address it has in its own NVRAM. If the two IP addresses are not the same, you might not be able to manage the Ethernet switch module any more.

The management module cannot apply the switch IP address from its NVRAM if:
- The management module is restarting
- The management module has failed
- The management module has been removed from the chassis.

Solution: Telnet into the switch module, change the IP address to match the one you assigned through the management module, and save the switch settings in the Telnet session (**Basic Setup → Save Changes**).

Wake on LAN is controlled through the management module, not through blade server BIOS code

The Wake on LAN feature is enabled by default in blade server BIOS code and cannot be disabled. The BladeCenter management module provides a single point of control for the Wake on LAN feature, allowing the settings to be controlled for either the entire BladeCenter unit or a single blade server. Wake on LAN settings made in the management module override the settings in the blade server BIOS code.

Media tray

The media tray contains the CD-ROM drive, diskette drive, and USB port. Some problems may arise as a result of switching ownership of the media tray to another blade server inappropriately.

Related topics

- The hints and tips in "Drives" on page 14
- "Media tray access is lost temporarily during management module restart" on page 31
- "CD-ROM drive is not recognized after being switched back to blade server running Windows 2000 Advanced Server with SP3 applied" on page 15

"Media not found" error message and other file system errors occur on a blade server running Linux or DOS

Description: Attempting to access the mounted CD-ROM drive or diskette drive (media tray) after it has been switched to another blade server results in I/O errors, even if the media tray has been switched back.
Note: Because the BladeCenter unit uses a USB bus to communicate with the media tray devices, switching ownership of the media tray to another blade server is the same as unplugging a USB device.

- If a blade server tries to access the CD-ROM after it has been switched to another blade server, a "Media not found" error occurs.
- If a blade server is running a DOS environment, such as when updating firmware on the blade server, the firmware can be interrupted or corrupted when the media tray is switched away; you might need to call for service on the blade server.
- If a file handle was left open by switching the media tray away, the system administrator will not be able to do a clean unmount (umount command) unless the unmount is forced by umount command parameters (see the online manual entry for the unmount command for information).
- If the system administrator is sharing out the CD-ROM drive for multiple users, that network share is broken.

Solution: Before switching ownership of the media tray to another blade server, ensure that the CD-ROM drive and diskette drive are not mounted for the current blade server owner (check for open file handles and sharing out). If a firmware update is taking place on the blade server, DO NOT switch the media tray to another blade server.

Complete the following steps to disable local switching of media tray control:

1. In the management module Web interface, click **Blade Tasks → Remote Control**.
2. Under **Redirect Server Console** put a check mark in the check box next to "Disable local media tray switching".
3. Click **Save**.

“Unsafe Removal of Device” error message appears on blade server running Microsoft Windows 2000

Description: An “Unsafe Removal of Device” error dialog might display when control of the CD-ROM drive, diskette drive, and USB port (media tray) is switched to another blade server. You also get this message if the management module restarts the blade server. To continue, click the **OK** button at the bottom of the error dialog.
Note: Because the BladeCenter unit uses a USB bus to communicate with the media tray devices, switching ownership of the media tray to another blade server is the same as unplugging a USB device.
Solution: Before switching ownership of the media tray to another blade server, safely stop the media tray devices on the blade server that currently owns the media tray, as follows:

1. Double-click the **Unplug or Eject Hardware** icon in the Windows taskbar at the bottom right of the screen.
2. Select **USB Floppy** and click **Stop**.
3. Select **USB Mass Storage Device** and click **Stop**.
4. If an external USB device is connected to the USB port on the media tray, select it and click **Stop**.
5. Click **Close**.

You can now safely switch ownership of the media tray to another blade server.

Memory

DIMM installation

The DIMM options available for the blade server are 256 MB, 512 MB, and 1 GB. The blade server supports a minimum of 512 MB and a maximum of 4 GB of system memory. The system board contains four DIMM connectors and supports two-way memory interleaving. Install only 2.5 V, 184-pin, double-data-rate (DDR), PC2100, registered synchronous dynamic random-access memory (SDRAM) with error correcting code (ECC) DIMMs. These DIMMs must be compatible with the latest PC2100 SDRAM Registered DIMM specification, which is available from http://www.jedec.org/ on the World Wide Web. For a list of supported options for the blade server, see http://www.ibm.com/pc/us/compat/ on the World Wide Web.
Important: To avoid breaking the DIMM retaining clips or damaging the DIMM connectors, handle the clips gently.

Microprocessors

Microprocessor installation and replacement requirements

Important: To ensure proper blade server operation when you install a second microprocessor or replace an existing microprocessor:

- Always install microprocessors that have the same cache size and type, the same clock speed, and identical internal and external clock frequencies.
- Ensure that the microprocessor with the lowest feature set and stepping level is the startup (bootstrap) microprocessor installed in the Microprocessor 1 socket (location U66). See “Mismatched microprocessors” on page 34 for more information.

Mismatched microprocessors

Description: After you install the second microprocessor option or after you replace a failed microprocessor in a two-way blade server, the blade server does not power up, the amber system-error and blade-error LEDs on the BladeCenter system LED panel are lit, and the system error log contains the following message: “CPUs Mismatched”. These symptoms can occur when the microprocessor with the higher feature set and stepping level is installed in the Microprocessor 1 socket (location U66). The Microprocessor 1 socket must always contain the microprocessor with the lowest feature set and stepping level.
Solution: Move the microprocessor from location U66 to location U70, and move the microprocessor from location U70 to location U66.

Networking

Related topics
- “Ethernet switch module” on page 18
- “Fibre channel switch module and I/O expansion card” on page 25

Network environments supported

The BladeCenter unit supports up to two four-port 1-Gb Ethernet switch modules, for blade server communication with the network. Each switch module provides one internal connection to each blade server, up to 14 internal connections per switch module. The BladeCenter unit also supports two additional switch modules, for a total of four switch modules. The two additional switch modules support the network interface on the optional I/O expansion card installed on one or more blade servers in the BladeCenter unit.
Note: The two additional switch modules must have the same I/O type, such as fibre channel, and must match the network interface on the optional I/O expansion cards in the blade servers.

Each of these two additional switch modules provides one internal connection to the optional I/O expansion card, up to 14 internal connections per switch module.
See the *IBM @server BladeCenter Type 8677 Installation and User’s Guide*, the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User’s Guide*, and the *IBM Fibre Channel Switch Module for BladeCenter Installation and User’s Guide* for more information.

Topology change counter

Only the root bridge can receive topology change notifications from designated switches. The topology counter does not increment for every STP configuration change. Instead, a bridge can detect and collect multiple changes over a period of time, and then treat them collectively as one topology change. For example, if you unplug several cables from the Ethernet switch module, the bridge might report only one topology change.

Operating systems

Instructions for installing an operating system on a blade server can be found at http://www.ibm.com/pc/support/ on the World Wide Web. Operating systems and versions that are officially supported for the blade servers are listed on the ServerProven website at http://www.ibm.com/pc/us/compat/ on the World Wide Web.

General

USB support required for shared BladeCenter resources

The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The BladeCenter unit uses USB for internal communication with these devices.
See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* and the *IBM @server BladeCenter HS20 Type 8678 Installation and User's Guide* for more information.

Linux

Related topics

- "CD-ROM drive is seen as /dev/sr0 by SuSE" on page 14
- "Diskette drive is seen as /dev/sd*x* by Red Hat Linux 7.3 and SuSE version 8.0" on page 16
- "Mouse function lost during Red Hat installation" on page 28
- ""Media not found" error message and other file system errors occur on a blade server running Linux or DOS" on page 32
- "Installing blade server operating systems using Remote Deployment Manager (RDM)" on page 26

Blade server does not turn off during Red Hat Linux 7.3 shutdown

Description: Issuing any of the Linux shutdown commands shuts down the operating system, but does not turn off the blade server. The blade server shuts down to the point where a message is displayed on the management module saying that the blade server is off, but the blade server power-on LED remains lit.
Known configuration affected: Red Hat Linux 7.3
Workaround:

Complete the instructions provided for Red Hat Linux in "Enabling Wake on LAN for Red Hat Linux 7.3 and SuSE Linux 8.0" on page 36 to enable Wake On LAN for both onboard Broadcom integrated Ethernet controllers. This will allow the blade server to restart using Wake on LAN even if the Linux shutdown is incomplete and the blade server does not turn off.

Forcing a blade server to turn off

Complete the following steps to turn off a blade server, after an incomplete Linux shutdown:

Manually press the power-control button on the front of the blade server (behind the control panel door) to turn off the blade server. Turning off the blade server in this way is considered an improper shutdown by the Wake on LAN feature, which will not allow the Wake on LAN feature to restart the blade server. Unlatch and slide the blade server partially out of the BladeCenter; then, reinstall it to reset the blade server power state and re-enable its previously programmed Wake on LAN capability.

Blade server does not turn off during SuSE Linux 8.0 shutdown

Description: Issuing any of the Linux shutdown commands shuts down the operating system, but does not turn off the blade server. The blade server shuts down to the point where a message is displayed on the management module saying that the blade server is off, but the blade server power-on LED remains lit.
Known configuration affected: SuSE Linux 8.0
Solution:

A blade server running SuSE Linux 8.0 will not turn off during shutdown if ACPI is not enabled. Complete the following steps to enable ACPI:

1. Type the following command: `modprobe ospm_system`
2. Type the following command to save this setting upon subsequent reboots: `echo "/sbin/modprobe ospm_system" >> /etc/init.d/boot.local`

Enabling Wake on LAN for Red Hat Linux 7.3 and SuSE Linux 8.0

Complete the following steps to enable Wake On LAN for both onboard Broadcom integrated Ethernet controllers. This will allow the blade server to restart using Wake on LAN even if the Linux shutdown is incomplete and the blade server does not turn off.

- For SuSE Linux:
  1. Type the following command to enable ACPI: `modprobe ospm_system`
  2. Type the following command to save this setting upon subsequent reboots: `echo "/sbin/modprobe ospm_system" >> /etc/init.d/boot.local`
  3. Enable Wake on LAN:
     - Enter the following command to immediately enable Wake on LAN on the blade server in a running system:

       ```
       insmod bcm5700.o enable_wol=1,1
       ```

     - Edit the /etc/modules.conf file and add the following lines to enable Wake on LAN automatically every time the blade server starts:

       ```
       alias eth0 bcm5700
       alias eth1 bcm5700
       options eth0 enable_wol=1
       options eth1 enable_wol=1
       ```

- For Red Hat Linux:
  - Enter the following command to immediately enable Wake on LAN on the blade server in a running system:

    ```
    insmod bcm5700.o enable_wol=1,1
    ```

  - Edit the /etc/modules.conf file and add the following lines to enable Wake on LAN automatically every time the blade server starts:

    ```
    alias eth0 bcm5700
    alias eth1 bcm5700
    options eth0 enable_wol=1
    options eth1 enable_wol=1
    ```

Recompile the driver for your Linux image. See the documentation that comes with your operating system for information about compiling drivers.

To compile the Broadcom drivers successfully in Red Hat Linux or SuSE Linux, a default installation is not sufficient because all files needed to compile successfully are not included. A custom installation of RedHat Linux or SuSE Linux, in which the packages for software and kernel development are chosen, will include the files required for successful compilation of the drivers.

IBM Director console does not show WOL for blade server running Red Hat Linux 7.3

Description: After you install the IBM Director agent on a blade server running Red Hat 7.3 and start the IBM Director service, Blade with Agent does appear on the IBM Director console, but the Wake on LAN (WOL) feature does not appear.
Solution: Enable WOL in the IBM Director Agent on the blade server and in the Ethernet controllers on the blade server.

Complete the following steps to enable Wake on LAN:

1. Stop IBM Director Agent. To do this, type the following command and press Enter:

   ```
   /opt/IBM/director/bin/twgstop
   ```

2. Open an ASCII text editor and edit the ServiceNodeLocal.properties file. This file is located in /opt/IBM/director/data.
3. Modify the value of ipc.wakeonlan to read as follows:

   ```
   ipc.wakeonlan=1
   ```

4. Save and close the ServiceNodeLocal.properties file.
5. Start IBM Director Agent. Type the following command and press Enter:

   ```
   /opt/IBM/director/bin/twgstart
   ```

To enable Wake on LAN in the Ethernet controllers:

- Enter the following command to immediately enable Wake on LAN on the blade server in a running system:

  ```
  insmod bcm5700.o enable_wol=1,1
  ```

- Edit the /etc/modules.conf file and add the following lines to enable Wake on LAN automatically every time the blade server starts:

  ```
  alias eth0 bcm5700
  alias eth1 bcm5700
  options eth0 enable_wol=1
  options eth1 enable_wol=1
  ```

Linux does not install from the BladeCenter CD-ROM drive, or will not start afterward

Description: Neither Red Hat Linux 7.3 nor SuSE Linux version 8.0 will install locally, although Red Hat Linux might appear to install.

- If you try to install Red Hat Linux to the blade server IDE drive, Linux does not install.
- If you try to install Red Hat Linux to the SCSI drive on a blade server expansion unit, Linux appears to install but the operating system will not start properly.
- If you try to install SuSE Linux, Linux does not install.

Workaround: Download the latest operating system installation instructions for your operating system from the IBM Support Web page at http://www.ibm.com/pc/support/. The necessary workaround is described in the instructions for your operating system.

Linux installation instructions

Download the latest instructions for installing a Linux operating system on a blade server from the IBM Support Web page at: http://www.ibm.com/pc/support/ on the World Wide Web. Each set of instructions specifies everything you need to perform the installation.

Mouse is not detected during SuSE installation

Description: The installation of the SuSE Linux version 8.0 operating system does not detect the mouse.

Solution: You need to select the mouse manually. Download the latest operating system installation instructions for your operating system from the IBM Support Web page at http://www.ibm.com/pc/support/. The steps for selecting the mouse are described in the instructions for your operating system.

Mouse offset problems occur when using remote console and running an X Window

Description: When you are using the remote console on a blade server that is running an X Window in Red Hat Linux 7.3 or SuSE Linux version 8.0, you see two cursor arrows on the screen, widely spaced, one white and one black.

Solution: Configure Linux and the X Window for accurate mouse tracking. See the online help information in the management module configuration and management software for instructions (**Blade Tasks → Remote Control**, click the circled question mark next to **Redirect Server Console**, read the section titled **Notes on mouse support under Linux**).

Red Hat 7.3 hangs in GNOME

Description: Red Hat Linux 7.3 running on a blade server hangs when running the GNOME X Window and you switch ownership of the media tray to the blade server. The hang generally occurs within 30 minutes of switching ownership to the blade server.

Solution: Remove the magicdev package. To do this, enter the command: `rpm -e magicdev`; then, restart the blade server.

Remote console does not work with default SuSE Linux, version 8.0, display settings

Description: The remote console requires a display setting of 1024x768@60Hz in the blade server operating system. The default resolution in SuSE is 1024x768, but the default refresh rate falls somewhere between 50Hz and 60Hz. The remote console does not work for a blade server running SuSE with a display refresh rate other than exactly 60Hz. The message "eServer/No video available" displays.

Other operating systems do not exhibit the problem.
Workaround: Set the refresh rate in the XF86Config file to exactly 60Hz.

There are two methods.

- **Method 1 (unattended network install, prevent the problem):** Modify the AutoYaST control file to specify 1024x768@60Hz.
  1. Run the graphical interface to the AutoYaST control file to set the VESA video mode to 1040x768@60Hz. The graphical interface creates the AutoYaST control file.
  2. Edit the resulting AutoYaST control file to set the value for min_vsync to `60`.

  During an unattended network install, the YaST program uses the AutoYaST control file to modify the XF86Config file (/etc/X11/XF86Config); these changes will cause XF86Config to set the display resolution to 1040x768 with a refresh rate of 60Hz.

  -- OR --
- **Method 2 (situation has already occurred):** Modify the xF86Config file.
  1. In the Monitor section of the /etc/X11/XF86Config file, change the value of VertRefresh to `60`, as shown in these sample lines.

     ```
     Section "Monitor"
       Option       "CalcAlgorithm" "IteratePrecisely"
       HorizSync    31-48
       Identifier   "Monitor[0]"
       ModelName    "AutoDetected"
       Option       "DPMS"
       VendorName   "AutoDetected"
       VertRefresh  60
       UseModes     "Modes[0]"
     EndSection
     ```
  2. Shut down the X Window; then, restart it.

Unhandled exception error during Red Hat Linux 7.3 installation

Description: An unhandled exception error is received while installing Red Hat Linux 7.3 from the second operating system installation CD and the installation terminates.
Known configuration affected: Red Hat Linux 7.3
Solution:

Restart the installation and perform the following steps:

1. At the Package Group Selection window, select **Select individual packages**.
2. At the Individual Package Selection window, select **Applications** and then select **Internet**; then, deselect all the Mozilla packages that are listed.
3. After you finish installing the Red Hat Linux operating system, install the latest Mozilla packages listed at https://rhn.redhat.com/errata/rh73-errata.html on the World Wide Web.

X Window does not start in Red Hat 7.3 when the blade server does not own the KVM

Description: For Red Hat Linux 7.3 with kernel prior to 2.4.18-17.7.x, the X Window does not start in a blade server if the blade server is not the current owner of the keyboard, video, and mouse (KVM). Because the blade server does not own the KVM, the X Window cannot find the mouse.
Solution: Do one of the following:

- Install the 2.4.18-17.7.x or later kernel errata, available from https://rhn.redhat.com/errata/rh73-errata.html.

  -- OR --

- Add the following line to the /etc/modules.conf file.

```
alias char-major-13 mousedev
```

Windows

Related topics

- “CD-ROM drive is not recognized after being switched back to blade server running Windows 2000 Advanced Server with SP3 applied” on page 15
- “Installing blade server operating systems using Remote Deployment Manager (RDM)” on page 26

Installing Windows 2000 using the BladeCenter CD-ROM drive requires an integrated CD with SP3 applied

Description: When the Microsoft Windows 2000 Install CD is inserted in the CD-ROM drive on the BladeCenter unit, the blade server that owns the CD-ROM drive begins to start from the CD-ROM, but then ceases to respond. Windows 2000 is not installed onto the blade server.
Solution: You need to use an integrated Windows 2000 Install CD with Service Pack 3 applied. Download the latest operating system installation instructions for Windows 2000 from the IBM Support Web page at http://www.ibm.com/pc/support/. The steps for obtaining and using an integrated CD are described in the instructions.

Ethernet disconnect notice will not appear when running Windows 2000

Description: If an Ethernet cable is accidentally removed from the back of the BladeCenter unit, the small red X (disconnect notice) that normally would appear to indicate that the cable was disconnected will not appear in the bottom right of the screen. The disconnect notice does not appear because the blade server Ethernet controller connects to the Ethernet switch module through integrated circuitry inside the BladeCenter unit.
Solution: When troubleshooting Ethernet-related problems, ensure that the Ethernet cables on the back of the BladeCenter unit are connected properly.

Power Modules

BladeCenter power configuration

The power modules in power bays 1 and 2 provide power to blade bays 1 through 6 and to common components in the BladeCenter unit. The power modules in power bays 3 and 4 provide power to blade bays 7 through 14. Power modules must always be present in power bays 1 and 2. When any blade server or option is in blade bay 7 through 14, power modules must be present in power bays 1 and 2, *and* power modules must be present in power bays 3 and 4.
See the *IBM @server BladeCenter Power Supply Modules* option documentation and the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for more information.

BladeCenter unit requires 220 V ac (nominal) power

The power supply modules in the BladeCenter unit must be connected to 220 V ac (between 200 V ac and 240 V ac) power only. The BladeCenter unit comes with two power cords to connect the BladeCenter unit to the power distribution unit (PDU).

Power Distribution Unit (PDU) limitations and requirements

The BladeCenter unit supports four 1200-watt, 7 A (max), 220-volt power modules. Due to current limitations, the existing PDU (part number 37L6866) can support only two BladeCenter power modules and the existing front-end PDU (part number 37L6884) can support only one PDU. Therefore, five of the seven ports must remain unused on each of the PDUs and two of the three ports must remain unused on each of the front-end PDUs. If you populate more than two ports on each PDU or more than one port on each front-end PDU, the circuit breaker in the PDU might trip or the fuse in the front-end PDU might blow, and the BladeCenter unit might power off.
See the *IBM @server BladeCenter Type 8677 Planning and Installation Guide* at http://www.ibm.com/pc/eserver/bladecenter/ for cabling examples and additional rack installation information.

Non-redundant power operation

Non-redundant power is not supported in BladeCenter products. Power modules must always be present in power bays 1 and 2. When any blade server or option is in blade bay 7 through 14, power modules must be present in power bays 1 and 2, *and* power modules must be present in power bays 3 and 4.

The BladeCenter unit might operate with power modules present in only power bays 1 and 3; however, power modules should be installed in power bays 2 and 4 as soon as possible to regain redundant power operation.

See the *IBM @server BladeCenter Power Supply Modules* option documentation and the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for more information.

Redundant power

To provide true redundant power, BladeCenter power modules 1 and 3 must connect to a different AC power source than power modules 2 and 4. Connect BladeCenter power modules 1 and 3 to a different PDU than power modules 2 and 4; then, connect each PDU to an AC power source (building power source or service entrance) that is controlled by a separate circuit breaker. Carefully route power cables around the BladeCenter Acoustic Attenuation Module if this option is installed on the BladeCenter unit.

See the *IBM @server BladeCenter Type 8677 Planning and Installation Guide* for more information.

Remote console

Related topics

- "Remote console does not work with default SuSE Linux, version 8.0, display settings" on page 39
- "Mouse offset problems occur when using remote console and running an X Window" on page 38

SCSI Storage expansion option

Expansion unit occupies a blade bay

The blade server and SCSI storage expansion unit together occupy two adjacent blade bays in the BladeCenter unit. The SCSI controller in the SCSI storage expansion unit supports RAID level-1 (embedded mirroring).

Important: To avoid potential performance and reliability problems when configuring or replacing drives in a mirrored configuration, ensure that the storage capacities and speeds of the drives are identical.

See the *IBM @server BladeCenter HS20 SCSI Storage Expansion Unit* option documentation and the *IBM @server BladeCenter Type 8677 Installation and User's Guide* for more information.

Supported options

List of supported options

For a list of supported options for the BladeCenter unit and blade servers, go to http://www.ibm.com/pc/us/compat/ on the World Wide Web.

Switch module

Related topics

See “Ethernet switch module” on page 18 or “Fibre channel switch module and I/O expansion card” on page 25, as appropriate.

Troubleshooting

Light Path Diagnostics feature

On the BladeCenter system, the Light Path Diagnostics feature consists of the LEDs on the front and rear of the BladeCenter chassis and on the front of the modules and blade servers. See the *IBM @server BladeCenter Type 8677 Installation and User's Guide* and the *IBM @server BladeCenter Type 8677 Hardware Maintenance Manual and Troubleshooting Guide* for more information.

Support telephone numbers

View support telephone numbers at http://www.ibm.com/planetwide/ on the World Wide Web.

Chapter 3. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your xSeries or IntelliStation® system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system is turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system.
- Go to the IBM Support Web site at http://www.ibm.com/pc/support/ to check for technical information, hints, tips, and new device drivers.
- Use an IBM discussion forum on the IBM Web site to ask questions.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most xSeries and IntelliStation systems, operating systems, and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, README files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to http://www.ibm.com/pc/support/ and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM xSeries and IntelliStation products, services, and support. The address for IBM xSeries information is http://www.ibm.com/eserver/xseries/. The address for IBM IntelliStation information is http://www.ibm.com/pc/intellistation/.

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You can find service information for your IBM products, including supported options, at http://www.ibm.com/pc/support/. If you click **Profile** from the support page, you can create a customized support page. The support page has many sources of information and ways for you to solve problems, including:

- Diagnosing problems, using the IBM Online Assistant
- Downloading the latest device drivers and updates for your products
- Viewing Frequently Asked Questions (FAQ)
- Viewing hints and tips to help you solve problems
- Participating in IBM discussion forums
- Setting up e-mail notification of technical updates about your products

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with xSeries servers, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, go to http://www.ibm.com/services/sl/products/.

For more information about Support Line and other IBM services, go to http://www.ibm.com/services/, or go to http://www.ibm.com/planetwide/ for support telephone numbers.

Hardware service and support

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