NovaScale Blade B240

Installation and User's Guide

NOVASCALE BLADE

REFERENCE
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Installation and User's Guide

Hardware

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Trademarks and Acknowledgements

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Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

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

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

.לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Safety statements

Important:

Each caution and danger statement in this documentation begins with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Bull Safety Information* document.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in the *Bull Safety Information* document under statement 1.

Be sure to read all caution and danger statements in this documentation before performing the instructions. Read any additional safety information that comes with your computer or optional device before you install the device.

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

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

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 2:

CAUTION:
When replacing the lithium battery, use only a battery recommended by the manufacturer. If your system has a module containing a lithium battery, replac it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

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

Dispose of the battery as required by local ordinances or regulations.

Statement 3:

CAUTION:
When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

DANGER

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

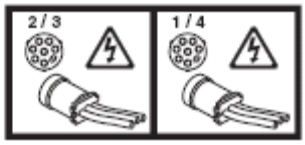
Statement 4:

≥ 18 kg (39.7 lb) ≥ 32 kg (70.5 lb) ≥ 55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.

Statement 5:

CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



Statement 8:

CAUTION:
Never remove the cover on a power supply or any part that has the following label attached.

Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 12:

CAUTION:
The following label indicates a hot surface nearby.

Statement 13:

DANGER

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

Statement 20:

CAUTION:
To avoid personal injury, before lifting the unit, remove all the blades to reduce the weight.

Statement 21:

CAUTION:
Hazardous energy is present when the blade is connected to the power source. Always replace the blade cover before installing the blade.

WARNING: Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

ADVERTENCIA: El contacto con el cable de este producto o con cables de accesorios que se venden junto con este producto, pueden exponerle al plomo, un elemento químico que en el estado de California de los Estados Unidos está considerado como un causante de cancer y de defectos congénitos, además de otros riesgos reproductivos. ***Lávese las manos después de usar el producto.***

Chapter 1. Introduction

"Blade Chassis" is a generic term used to indicate both the Bull Blade Chassis-Standard and/or the Bull Blade Chassis-Enterprise. The Bull NovaScale Blade B240 server is compatible with any Blade Chassis. The NovaScale Blade B240 blade server supports one Intel® LGA-771 high-performance microprocessor and has six memory-module slots, two storage-device bays, one Peripheral Component Interconnect eXtended (PCI-X) slot, a PCI-Express (PCI-E) connector, and a concurrent keyboard/video/mouse (cKVM) slot.

This *Installation and User's Guide* provides information about:

- Setting up the blade server
- Starting and configuring the blade server
- Installing hardware options
- Installing the operating system
- Performing basic troubleshooting of the blade server

The blade server comes with a limited warranty. For information about the terms of the warranty and getting service and assistance, see the *Bull Hardware Product Warranty* document for your blade server on the *Resource DVD*. You can obtain up-to-date information about the blade server at http://www.bull.com/support.

If firmware and documentation updates are available, you can download them from http://www.bull.com/support/. The blade server might have features that are not described in the documentation that comes with the blade server, and the documentation might be updated occasionally to include information about those features, or technical updates might be available to provide additional information that is not included in the blade server documentation.

Record information about the blade server in the following table.

Product name	
Model number	_____
Serial number	_____

The model number and serial number are located on the ID label that is behind the control panel door on the front of the blade server, and on a label on the side of the blade server that is visible when the blade server is not in the Blade Chassis.

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

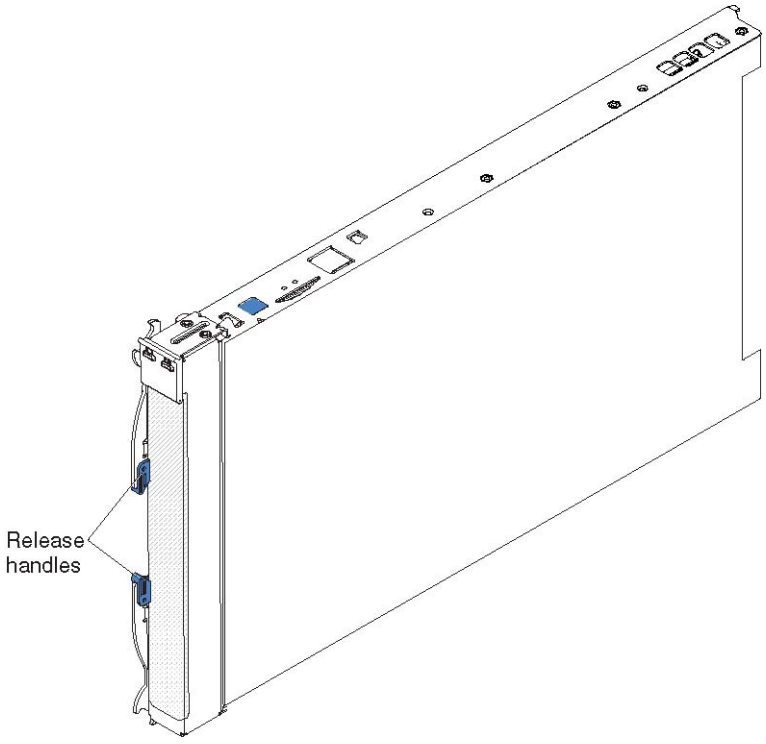


Figure 1-1. Blade server

A set of blank labels comes with the blade server. When you install the blade server in the Blade Chassis, write identifying information on a label and place the label on the Blade Chassis bezel. See the documentation for your Blade Chassis for recommended label placement.

Important:
Do not place the label on the blade server itself or in any way block the ventilation holes on the blade server.

1.1 Related documentation

This *Installation and User's Guide* contains general information about the blade server, including how to install supported optional devices and how to configure the blade server. The following documentation also comes with the blade server:

Problem Determination and Service Guide

This document is in Portable Document Format (PDF) on the *Resource DVD*. It contains information to help you solve problems yourself, and it contains information for service technicians.

Safety Information

This document is in PDF on the *Resource DVD*. It contains translated caution and danger statements. Each caution and danger statement that appears in the documentation has a number that you can use to locate the corresponding statement in your language in the *Safety Attention* document.

Bull Hardware Product Warranty

This document is in PDF on the *Resource DVD*. It contains information about the terms of the warranty and getting service and assistance. Depending on your Blade product, additional documents might be included on the *Resource DVD*.

In addition to the documentation in this library, be sure to review the *Bull Blade Planning and Installation Guide* for your Blade Chassis for information to help you prepare for system installation and configuration.

1.2 Notices and statements in this document

The caution and danger statements that appear in this document are also in the multilingual *Safety Attention* document, which is on the *Resource DVD*. Each statement is numbered for reference to the corresponding statement in the *Safety Attention* document.

The following types of notices and statements are used in this document:

Note:
These notices provide important tips, guidance, or advice.

Important:
These notices provide information or advice that might help you avoid inconvenient or problem situations.

Attention:
These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.

CAUTION:
These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.

DANGER:
These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure, step, or situation.

1.3 Features and specifications

The following table provides a summary of the features and specifications of the blade server.

Notes:

- Power, cooling, removable-media drives, external ports, and advanced system management are provided by the Blade Chassis.
- The operating system in the blade server must provide USB support for the blade server to recognize and use the removable-media drives and front-panel USB ports. The Blade Chassis uses USB for internal communications with these devices.

Blade server features and specifications
Microprocessor: Supports one Intel® LGA-771 microprocessor **Note:** Use the Configuration/Setup Utility program to determine the type and speed of the microprocessors in your blade server.
Memory: • Dual-channel dual inline memory modules (DIMMs): 6 DIMM connectors • Type: ECC double-data rate (DDR2 667) DRAM • Supports 512 MB, 1 GB, 2 GB, and 4 GB DIMMs with up to 24 GB of total memory on the system board
Drives: Support for a pair of hot-swap, small form factor (SFF) Serial Attached SCSI (SAS) hard disk drives.
Predictive Failure Analysis® (PFA) alerts: • Microprocessor • Memory • Hard disk drive
Electrical input: 12 V dc
Integrated functions: • Expansion card interface • Local service processor: Baseboard Management Controller (BMC) with Intelligent Platform Management Interface (IPMI) firmware • ATI ES1000 video controller • LSI 1064E Serial Attached SCSI (SAS) controller • Light path diagnostics • RS-485 interface for communication with the management module • Automatic server restart (ASR) • Serial over LAN (SOL) • Redundant buses for communication with keyboard, mouse, and removable media drives • Concurrent keyboard/video/mouse (cKVM) support when optional cKVM feature card is installed • USB 2.0 for communication with the cKVM and removable media drives (an external USB port is not supported)

Environment (non-NEBS): • Air temperature: – Blade server on: 10° to 35° C (50° to 95° F). Altitude: 0 to 914.4 m (0 to 3000 ft) – Blade server on: 10° to 32° C (50° to 89.6° F). Altitude: 914.4 to 2133.6 m (3000 to 7000 ft) – Blade server off: 10° to 43° C (50° to 109.4° F). Altitude: 914.4 to 2133.6 m (3000 to 7000 ft) – Blade server shipping: -40° to 60° C (-40° to 140° F) • Humidity: – Blade server on: 8% to 80% – Blade server off: 8% to 80%
Size: • Height: 24.5 cm (9.7 inches) • Depth: 44.6 cm (17.6 inches) • Width: 2.9 cm (1.14 inches) • Maximum weight: 4.8 kg (10 lb.)

Table 1-1. Blade server features and specifications

1.4 What your blade server offers

The blade server uses the following features and technologies:

- **Baseboard management controller (BMC)**
  The baseboard management controller (BMC) is on the system board of the blade server. The BMC operates as the service processor for the blade server and performs several tasks, including the following:
  – Provides RS-485 interfaces to the management module
  – Provides support for:
  – Intelligent Platform Management Interface (IPMI)
  – Power control and advanced power management
  – Reliability, availability, and serviceability (RAS) features
  – Serial over LAN (SOL)
- **Disk drive support**
  The blade server supports up to two 2.5-inch hot-swap SAS SFF hard disk drives, RAID 0 and RAID 1 support, up to 146 GB.
- **Microprocessor technology**
  The blade server supports one Intel LGA-771 microprocessor. Depending on the model, the blade server comes with one of three specialty of Intel microprocessors.
- **Integrated network support**
  The blade server comes with one integrated Broadcom 5714S dual Gigabit Ethernet controller, which support connection to a 10 Mbps network through an Ethernet-compatible switch module in the Blade Chassis. The controller supports Wake on LAN® technology.

- I/O expansion
  The blade server has connectors on the system board for optional expansion cards for adding more network communication capabilities to the blade server.
- Large system memory capacity
  The blade server system board supports up to 24 GB of system memory. The memory controller provides support for up to six industry-standard registered ECC DDR2 667 on Very Low Profile (VLP) form factor DIMMs installed on the system board.
- Light path diagnostics
  Light path diagnostics provides light-emitting diodes (LEDs) to help you diagnose problems. For more information, see the *Problem Determination and Service Guide*.
- PCI Express
  PCI Express is a serial interface that is used for chip-to-chip interconnect and expansion adapter interconnect. With the blade expansion connector you can add optional I/O and storage devices.
- Power throttling
  Each blade server is powered by two Blade redundant power-supply modules. By enforcing a power policy known as power-domain oversubscription, the Blade Chassis can share the power load between two power modules to ensure sufficient power for each device in the Blade Chassis. This policy is enforced when the initial power is applied to the Blade Chassis or when a blade server is inserted into the Blade Chassis.

  The following settings for this policy are available:
  - Redundant without performance impact
  - Redundant with performance impact
  - Nonredundant

  You can configure and monitor the power environment by using the management module. For more information about configuring and using power throttling, see the management-module documentation.

1.5 Reliability, availability, and serviceability features

Three of the most important features in server design are reliability, availability, and serviceability (RAS). These RAS features help to ensure the integrity of the data that is stored in the blade server, the availability of the blade server when you need it, and the ease with which you can diagnose and correct problems.

The blade server has the following RAS features:

- Advanced Configuration and Power Interface (ACPI)
- Automatic BIOS recovery (ABR)
- Automatic server restart (ASR)
- Built-in monitoring for temperature, voltage, hard disk drives.
- Customer-upgradeable basic input/output system (BIOS) code and diagnostics
- Diagnostic support of Ethernet controllers
- ECC protection on the L2 cache
- Error codes and messages
- Hot-swap SAS storage drives
- Light path diagnostics feature
- Memory parity testing
- Microprocessor built-in self-test (BIST) during power-on self-test (POST)
- Microprocessor serial number access
- PCI-PMI 2.2
- PCI-X 1.0a
- PCI Express 1.0a
- POST
- ROM resident diagnostics
- Registered ECC DDR2 667 memory
- Service processor that communicates with the management module to enable remote blade server management
- System error logging
- Wake on LAN capability
- Wake on PCI (PME) capability
- Wake on USB 2.0 capability

1.6 Major components of the blade server

You must remove the blade server from the Blade Chassis and remove the cover to access the components.

The following illustration shows the major components of the blade server.

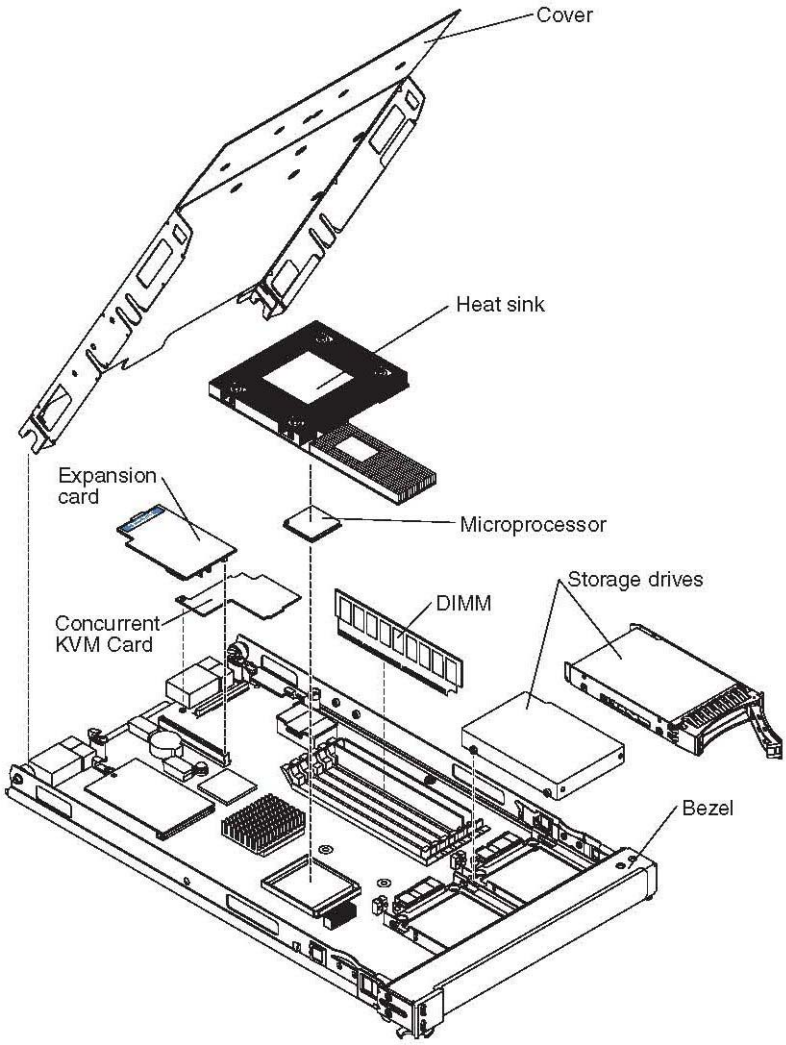


Figure 1-2. Major blade server components

Chapter 2. Power, controls and indicators

This chapter describes the power features, how to turn on and turn off the blade server, and what the controls and indicators mean. This chapter also identifies the system-board connectors.

2.1 Blade server controls and LEDs

This section describes the controls and LEDs on the blade server.

Note:
The control panel door is shown in the closed position in the following illustration. To access the power-control button, you must open the control panel door.

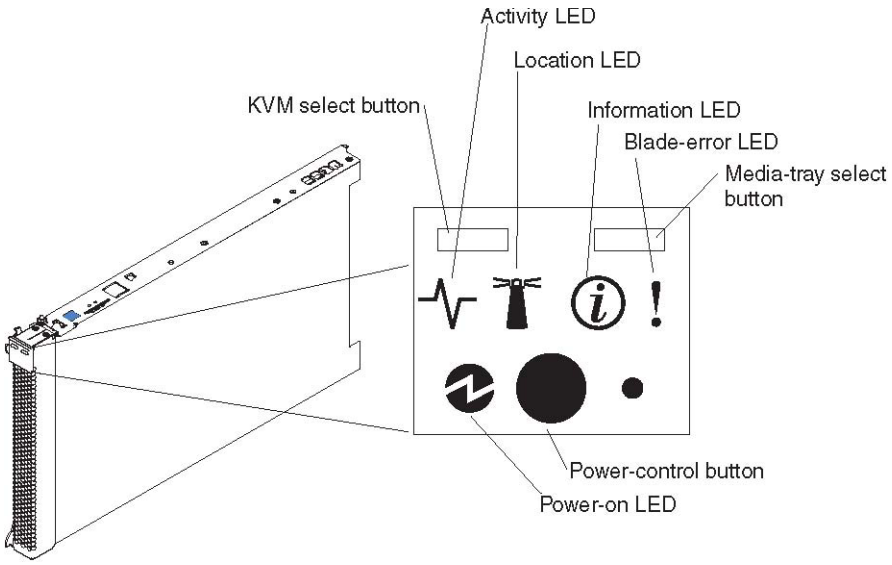


Figure 2-1. Blade server controls and LEDs

Keyboard/video/mouse (KVM) select button:
Press this button to associate the shared Blade Chassis keyboard port, video port, and mouse port with the blade server. The LED on this button flashes while the request is being processed, and then is lit when the ownership of the keyboard, video, and mouse has been transferred to the blade server. It can take approximately 20 seconds to switch the keyboard, video, and mouse control to the blade server.

Using a keyboard that is directly attached to the management-module, you can press keyboard keys in the following sequence to switch KVM control between blade servers instead of using the KVM select button:

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. A blade server that occupies more than one blade bay is identified by the lowest bay number that it occupies.

If there is no response when you press the KVM select button, you can use the management-module Web interface to determine whether local control has been disabled on the blade server.

Notes:

- The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard and mouse, even if the keyboard and mouse have PS/2-style connectors.
- If you install a supported Microsoft Windows operating system on the blade server while it is not the current owner of the keyboard, video, and mouse, a delay of up to 1 minute occurs the first time that you switch the keyboard, video, and mouse to the blade server. All subsequent switching takes place in the normal KVM switching time frame (up to 20 seconds).

Activity LED:

When this green LED is lit, it indicates that there is activity on the hard disk drive or network.

Location LED:

The system administrator can remotely turn on this blue LED to aid in visually locating the blade server. When this LED is lit, the location LED on the blade unit is also lit. The location LED can be turned off through the management-module Web interface.

Information LED:

When this amber LED is lit, it indicates that information about a system error for the blade server has been placed in the management-module event log. The information LED can be turned off through the management-module Web interface.

Blade-error LED:

When this amber LED is lit, it indicates that a system error has occurred in the blade server. The blade-error LED will turn off only after the error is corrected.

Media-tray select button:

Press this button to associate the shared Blade Chassis media tray (removable-media drives) with the blade server. The LED on the button flashes while the request is being processed, and then is lit when the ownership of the media tray has been transferred to the blade server. It can take approximately 20 seconds for the operating system in the blade server to recognize the media tray.
If there is no response when you press the media-tray select button, you can use the management-module Web interface to determine whether local control has been disabled on the blade server.

Note:
The operating system in the blade server must provide USB support for the blade server to recognize and use the removable-media drives.

Power-control button:

This button is behind the control panel door. Press this button to turn on or turn off the blade server.

Note:

The power-control button has effect only if local power control is enabled for the blade server. Local power control is enabled and disabled through the management-module Web interface.

Power-on LED:

This green LED indicates the power status of the blade server in the following manner:

- **Flashing rapidly:** The service processor (BMC) on the blade server is communicating with the management module.
- **Flashing slowly:** The blade server has power but is not turned on.
- **Lit continuously:** The blade server has power and is turned on.

2.2 Turning on the blade server

After you connect the blade server to power through the Blade Chassis, the blade server can start in any of the following ways:

- You can press the power-control button on the front of the blade server (behind the control panel door, see *Blade server controls and LEDs* on page *9*) to start the blade server.

Notes:

1. Wait until the power-on LED on the blade server flashes slowly before pressing the power-control button. While the service processor in the management module is initializing, the power-on LED does not flash, and the power-control button on the blade server does not respond.
2. While the blade server is starting, the power-on LED on the front of the blade server is lit. See *Blade server controls and LEDs* on page *9* for the power-on LED states.

- If a power failure occurs, the Blade Chassis and then the blade server can start automatically when power is restored, if the blade server is configured through the management module to do so.
- You can turn on the blade server remotely by using the management module.
- If the blade server is connected to power (the power-on LED is flashing slowly), the operating system supports the Wake on LAN feature, and the Wake on LAN feature has not been disabled through the management module, the Wake on LAN feature can turn on the blade server.

2.3 Turning off the blade server

When you turn off the blade server, it is still connected to power through the Blade Chassis. The blade server can respond to requests from the service processor, such as a remote request to turn on the blade server. To remove all power from the blade server, you must remove it from the Blade Chassis.

Shut down the operating system before you turn off the blade server. See the operating-system documentation for information about shutting down the operating system.

The blade server can be turned off in any of the following ways:

- You can press the power-control button on the blade server (behind the control panel door, see *Blade server controls and LEDs* on page *9*). This starts an orderly shutdown of the operating system, if this feature is supported by the operating system.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the blade server.
- The management module can turn off the blade server through the management-module Web interface.
  For additional information, see the Bull Blade Management Module documentation.

2.4 Blade server connectors

The following illustration shows the system-board components, including connectors for user-installable optional devices, for the blade server.

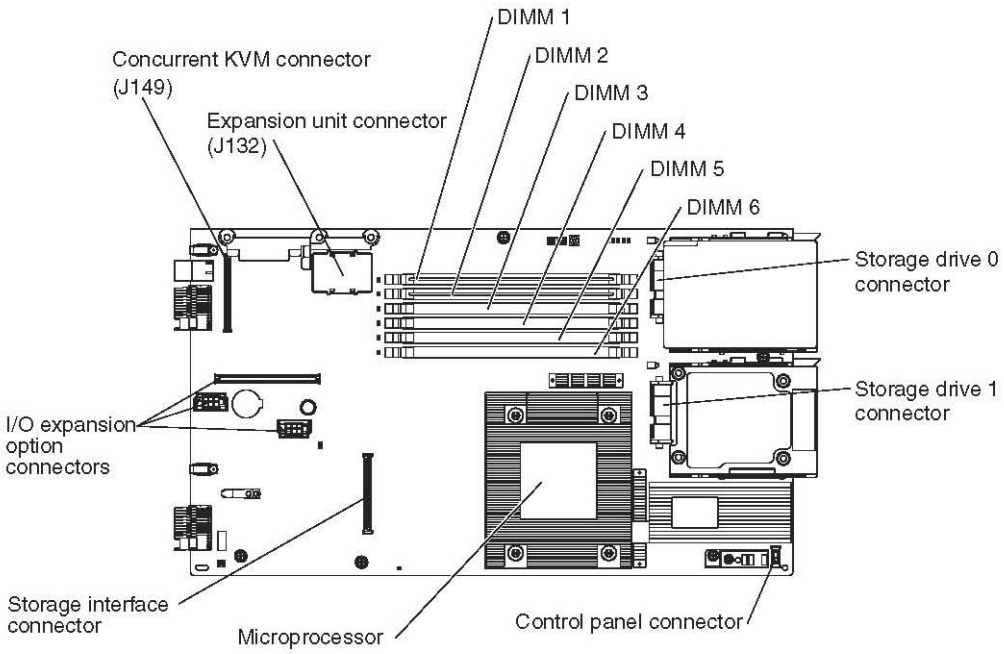


Figure 2-2. Blade server connectors

Chapter 3. Installing Options

This chapter provides instructions for installing optional hardware devices in the blade server. Some option-removal instructions are provided in case you have to remove one option to install another.

3.1 Installation guidelines

Before you install options, read the following information:

- Read the safety information that begins on page vii and the guidelines in *Handling static-sensitive devices* on page *14*. This information will help you work safely.
- When you install your new blade server, take the opportunity to download and apply the most recent firmware updates. This step will help to ensure that any known issues are addressed and that your blade server is ready to function at maximum levels of performance. To download firmware updates for your blade server, go to http://www.bull.com/support/.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- Back up all important data before you make changes to disk drives.
- Before you remove a blade server from the Blade Chassis, you must shut down the operating system and turn off the blade server. You do not have to shut down the Blade Chassis itself.
- Blue on a component indicates touch points, where you can grip the component to remove it from or install it in the blade server, or open or close a latch.
- Orange on a component or an orange label on or near a component indicates that the component can be hot-swapped, which means that if the server and operating system support hot-swap capability, you can remove or install the component while the server is running. (Orange can also indicate touch points on hot-swap components.) See the instructions for removing or installing a specific hot-swap component for any additional procedures that you might have to perform before you remove or install the component.

3.1.1 System reliability guidelines

To help ensure proper cooling and system reliability, make sure that the following requirements are met:

- You do not operate the Blade Chassis without a blade server, expansion unit, or filler blade installed in each blade bay to ensure proper cooling. See the documentation for your Blade Chassis for additional information.
- The blade server battery must be operational. If the battery becomes defective, replace it immediately. For instructions, see the *Problem Determination and Service Guide*.

3.1.2 Handling static-sensitive devices

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

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

- When you work on a Blade Chassis that has an electrostatic discharge (ESD) connector, use a wrist strap when you handle modules, optional devices, or blade servers. To work correctly, the wrist strap must have a good contact at both ends (touching your skin at one end and firmly connected to the ESD connector on the front or back of the Blade Chassis).
- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal part of the Blade Chassis or any *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the device for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the blade server without setting it down. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on the blade server cover or on a metal surface.
- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

3.2 Removing the blade server from the Blade Chassis

If you need an unpopulated I/O-module bay in your Blade Chassis unit to install your new blade server, remove an existing blade server or filler module from the Blade Chassis unit. The following illustration shows how to remove a blade server or a blade filler from a Blade Chassis. The appearance of your Blade Chassis might be different, see the documentation for your Blade Chassis for additional information.

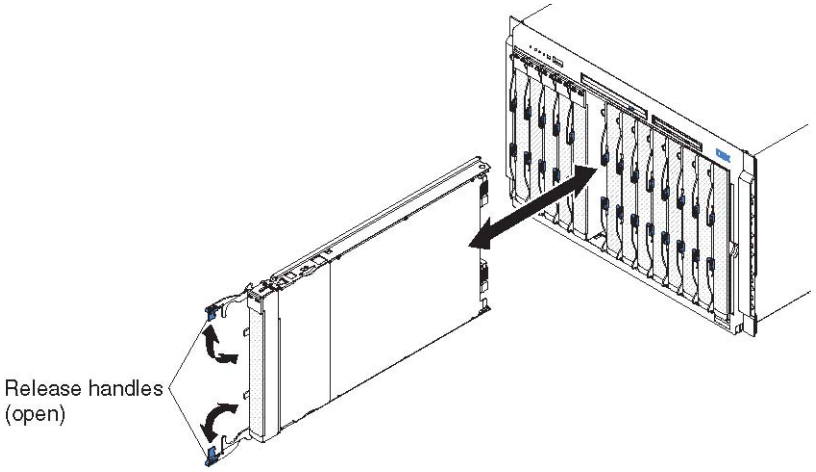


Figure 3-1. Removing the blade server from the Blade Chassis

Attention:

- To maintain proper system cooling, do not operate the Blade Chassis without a blade server, expansion unit, or blade filler installed in each blade bay.
- When you remove the blade server, note the bay number. Reinstalling a blade server into a different bay from the one it was removed from could have unintended consequences. Some configuration information and update options are established according to bay number; if you reinstall the blade server into a different bay, you might need to reconfigure the blade server.

To remove the blade server, complete the following steps:

1. If the blade server is operating, shut down the operating system; then, press the power-control button (behind the blade server control panel door) to turn off the blade server (see *Turning off the blade server* on page 12 for more information).

Attention:
Wait at least 30 seconds, until the hard disk drives stop spinning, before you proceed to the next step.

2. Open the two release handles as shown in the illustration. The blade server moves out of the bay approximately 0.6 cm (0.25 inch).
3. Pull the blade server out of the bay.
4. Place either a blade filler or another blade in the bay within 1 minute.

3.3 Opening the blade server cover

Notes:

- The following illustration shows how to open the cover on the blade server.
- The illustrations in this document might differ slightly from your hardware.

To open the blade server cover, complete the following steps:

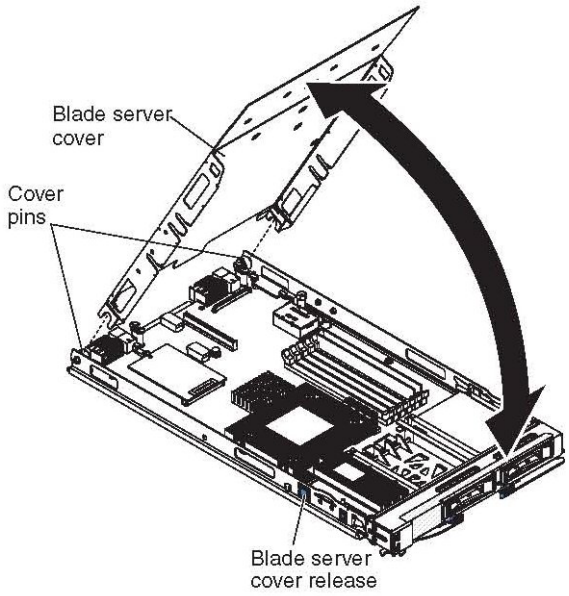


Figure 3-2. Opening the blade server cover

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.
2. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis* on page *15* for instructions).
3. If the blade server has an expansion unit in place of the cover, remove it (see *Removing an optional expansion* unit on page 17).
4. Carefully lay the blade server on a flat, static-protective surface, with the cover side up.
5. Press the blade-cover release on each side of the blade server or expansion unit and lift the cover open, as shown in the illustration.
6. Lay the cover flat, or lift it from the blade server and store for future use.

Statement 21:

CAUTION:
Hazardous energy is present when the blade is connected to the power source. Always replace the blade cover before installing the blade.

3.4 Removing an optional expansion unit

Notes:

- The following illustration shows how to remove an expansion unit from a blade server.
- The illustrations in this document might differ slightly from your hardware.

To remove the expansion unit, complete the following steps:

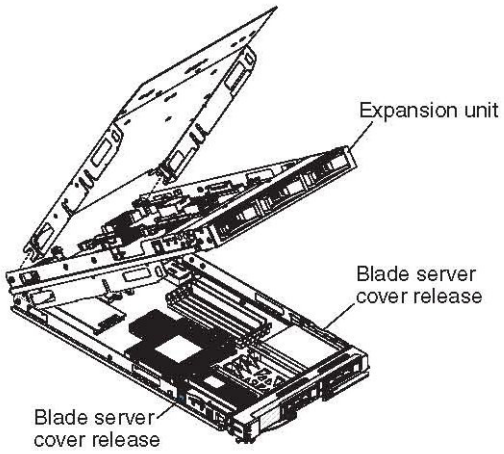


Figure 3-3. Removing an expansion unit

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.
2. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis* on page *15* for instructions).
3. Carefully lay the blade server on a flat, static-protective surface, with the cover side up.
4. Open the blade server cover, if one is installed (see *Opening the blade server cover* on page *16* for instructions).
5. Remove the expansion unit:
   a. Press the blade server cover release on each side of the blade server.
   b. Use the extraction device on the expansion unit, if one is present, to disengage the expansion unit from the system board. These extraction devices can be of several types, including thumbscrews or levers.
   c. Rotate the expansion unit open, as shown in the illustration; then, lift the expansion unit from the blade server.
6. If you are instructed to return the cover or an optional expansion unit, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

3.5 Installing a hot-swap storage drive

The blade server has two storage bays for installing hot-swap storage devices, such as SAS storage drives.

Notes:

- The following illustration shows how to install a hot-swap storage drive in a blade server.
- The illustrations in this document might differ slightly from your hardware.
- You must have a SAS interface card installed to control the storage drives. This interface card comes preinstalled in the blade server.

One storage drive might already be installed in the blade server in storage bay 0. If the blade server is equipped with one storage drive, you can install an additional drive in storage bay 1. These two SAS hard disk drives support RAID 0 and RAID 1 (use to implement and manage a redundant array of independent disks (RAID) level-1 array). See *Configuring a SAS RAID* array on page 41 for information about SAS RAID configuration.

To install a hot-swap hard disk drive, complete the following steps.

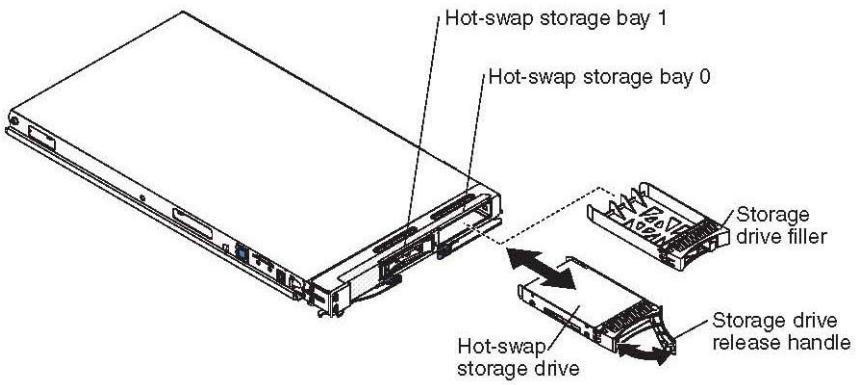


Figure 3-4. Installing a hot-swap storage drive

1. Read the safety information that begins on page vii and *Installation guidelines* on page 13.
2. Identify the blade server storage bay (hot-swap storage bay 0 or hot-swap storage bay 1) in which the hard disk drive will be installed.
3. If a storage-bay filler is installed, remove it from the blade server by lifting the release levers and pulling it away from the blade server.
4. Touch the static-protective package that contains the hard disk drive to any *unpainted* metal surface on the Blade Chassis unit or any *unpainted* metal surface on any other grounded rack component; then, remove the hard disk drive from the package.
5. Open the release lever on the hot-swap hard disk drive and slide the drive into the storage bay until it is firmly seated in the connector.

6. Lock the hard disk drive into place by closing the release lever.

If you have other devices to install or remove, do so now; otherwise, go to *Completing the installation* on page 29.

3.6 Installing memory modules

Use these instructions to install memory modules in the blade server.

Notes:

- The following illustration shows the location of the DIMM connectors on the system board.
- The illustrations in this document might differ slightly from your hardware.

The following notes describe the types of direct inline memory modules (DIMMs) that the blade server supports and other information that you must consider when you install DIMMs:

- The system board has DIMM connectors.
- The server supports two-way memory interleaving.
- The optional DIMMs that are available for the blade server are 512 MB, 1 GB, 2 GB, and 4 GB. Depending on the memory configuration that is set in the Configuration/Setup Utility program, the blade server can support a minimum of 1 GB and a maximum of 24 GB of system memory on the system board.
- When you install memory, you must install a pair of matched DIMMs. Some blade server models come with one DIMM installed in DIMM slot 1. In this case, you must order and install a second matched DIMM in DIMM slot 2. Install the DIMMs in the order shown in the following table.

Pair	DIMM pairs and location
First	DIMM 1 and DIMM 2
Second	DIMM 3 and DIMM 4
Third	DIMM 5 and DIMM 6

Table 3-1. DIMM installation order

- All DIMMs in a pair or group must be the same size, speed, type, technology, and physical design. You can use compatible DIMMs from different manufacturers.
- Install only ECC DDR2 667 DRAM with ECC DIMMs.

- Installing or removing DIMMs changes the configuration information of the blade server. After you install or remove a DIMM, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the blade server, a message indicates that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings** (see *Configuration/Setup Utility menu choices* on page 36 for more information) to save changes.

To install a DIMM, complete the following steps:

1. Read the safety information that begins on page vii and *Installation guidelines* on page 13.

2. Read the documentation that comes with the DIMMs.

3. If the blade server is installed in a Blade Chassis unit, remove it (see *Removing the blade server from the Blade Chassis* on page 15 for instructions).

4. Carefully lay the blade server on a flat, static-protective surface.

5. Open the blade server cover (see *Opening the blade server cover* on page 16 for instructions).

6. If an expansion unit is installed and you are installing DIMMs on the system board, remove the expansion unit (see *Removing an optional expansion* unit on page 17).

7. Locate the DIMM connectors. Determine the connector into which you will install the DIMM.

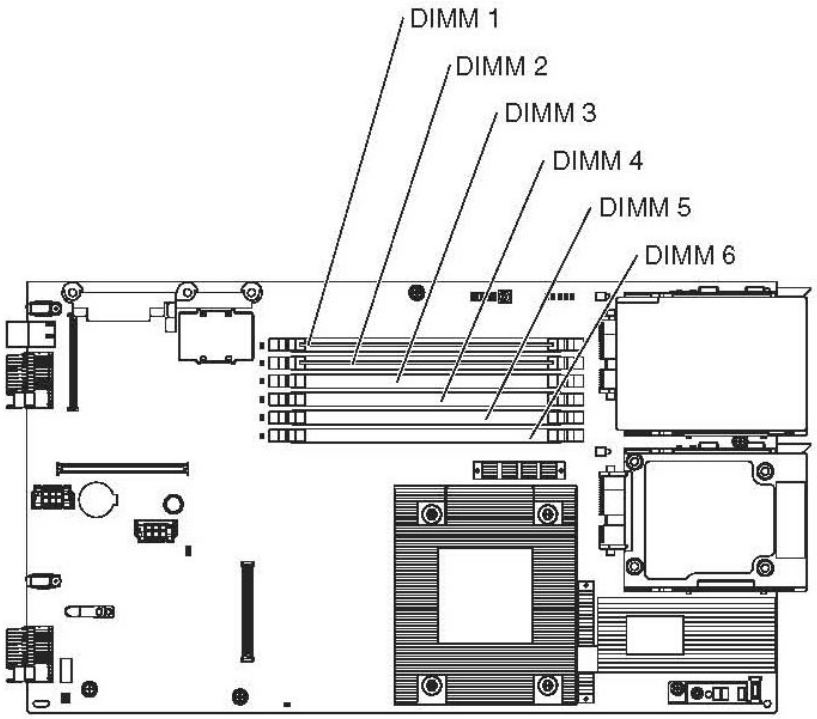


Figure 3-5. DIMM connectors locations

8. Touch the static-protective package that contains the DIMM to any *unpainted* metal surface on the Blade Chassis unit or any *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the DIMM for at least 2 seconds; then, remove the DIMM from its package.

9. To install the DIMMs, repeat the following steps for each DIMM that you install:

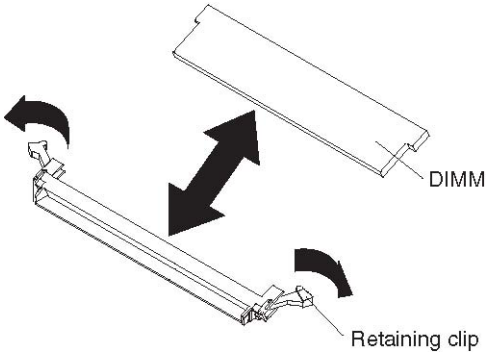


Figure 3-6. Installing a DIMM

   a. Turn the DIMM so that the DIMM keys align correctly with the connector on the system board.
   Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, handle the clips gently.

   b. Make sure that the small tabs on the retaining clips are in the notches on the DIMM. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly installed. Press the DIMM firmly into the connector, and then press the retaining clips toward the DIMM until the tabs are fully seated. When the DIMM is correctly installed, the retaining clips are parallel to the sides of the DIMM.
   Important: If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.

If you have other options to install or remove, do so now; otherwise, go to *Completing the installation* on page *29*.

3.7 Installing a concurrent KVM Feature Card (cKVM)

The blade server provides a connector for installation of an optional concurrent KVM (cKVM) Feature Card.

Use these instructions to install a concurrent KVM (CKVM) card in the blade server.

Notes:

- The following illustration shows how to install a cKVM Feature Card on the system board.
- The illustrations in this document might differ slightly from your hardware.

To install a cKVM card, complete the following steps:

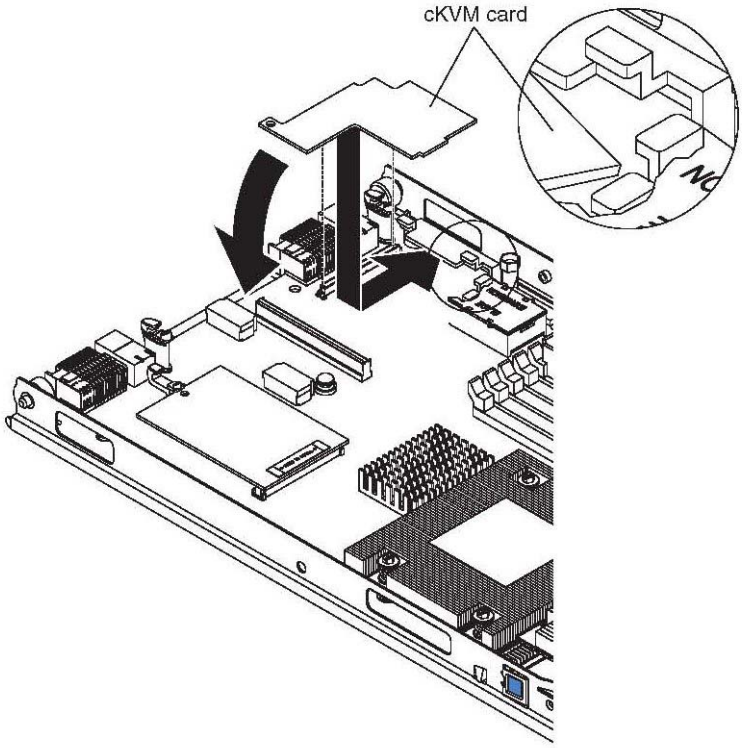


Figure 3-7. Installing a cKVM Feature Card

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.
2. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis* on page *15* for instructions).
3. Carefully lay the blade server on a flat, static-protective surface.
4. Open the blade server cover (see *Opening the blade server cover* on page *16* for instructions).
5. If an expansion unit is installed, remove it (see *Removing an optional expansion* unit on page 17).

6. If an I/O expansion card or a high-speed expansion card is installed, remove it.
7. Touch the static-protective package that contains the cKVM Feature Card to any *unpainted* metal surface on the Blade Chassis or any *unpainted* metal surface on any other grounded rack component; then, remove the card from the package.
8. Locate the cKVM connector and orient the cKVM Feature Card.
9. Slide the right side of the card (the side of the card that is away from the cKVM connector) between the two tabs at the right side of the expansion card bracket; then, gently pivot the card into the connector.

Note:
For device-driver and configuration information needed to complete the installation of the cKVM Feature Card, see the documentation that comes with the card.

10. If you removed a small-form-factor expansion card or a high-speed expansion card in step 5, reinstall it (see *Installing I/O-expansion card* on page *23*).

If you have other options to install or remove, do so now; otherwise, go to *Completing the installation* on page *29*.

3.8 Installing I/O-expansion cards

The following sections describe how to install an I/O expansion card in the blade server.

If the Blade Chassis supports I/O expansion, you can add an I/O expansion card to the blade server. An I/O expansion card provides additional connections for communicating on a network.

The blade server supports various types of I/O expansion cards. The following notes describe information that you must consider when installing I/O-expansion cards:

- Some expansion cards are available as both small-form-factor cards and combo form-factor (vertical) cards (CFFv).
- The system board can support two I/O expansion cards: 1 CFFv and the high-sped expansion card (CFFh).
- If an expansion unit is installed, you cannot install a high-speed expansion card in the blade server; however, some expansion units do support installation of additional I/O expansion cards. See the documentation for your expansion unit for information.

Make sure that the Blade Chassis and the I/O modules to which the I/O expansion card is mapped support the network-interface type of the I/O expansion card. All other expansion cards that are installed in other blade servers in the Blade Chassis must also be compatible with these I/O modules. In this example, you can then install two Ethernet switch modules, two pass-thru modules, or one Ethernet switch module and one pass-thru module. Because pass-thru modules are compatible with a variety of I/O expansion cards, installing two pass-thru modules would enable the use of several different types of compatible I/O expansion cards in blade servers within the same Blade Chassis.

3.8.1 Installing an I/O expansion card

Use these instructions to install an I/O expansion card, such as a SAS connectivity card, and a high-speed expansion card, such as a high-speed expansion card (CFFh), in the blade server. The illustrations show installing a SAS connectivity card and a high-speed expansion card on the system board; installing the cards in an expansion unit is similar.

Before you install the I/O expansion card in a blade server, consider the following expansion card, blade server, and other related device information:

- The appearance of your blade server or system boards might be different from the illustrations in this document.
- Depending on the model of blade server in which the I/O expansion card is being installed, the specific location of connectors and other components might be different from the illustrations in this document.

Make sure that the Bull Chassis unit and the I/O modules to which the I/O expansion card is mapped support the network-interface type of the I/O expansion card. For example, if you add an Ethernet expansion card to a blade server in a Blade Chassis, the I/O modules in I/O-module bays 3 and 4 on the Bull Blade Chassis-Standard must both be compatible with the expansion card. All other expansion cards that are installed in other blade servers in the Blade Chassis unit must also be compatible with these I/O modules. In this example, you can then install two Ethernet switch modules, or two pass-thru modules. Because pass-thru modules are compatible with a variety of I/O expansion cards, installing two pass-thru modules enables the use of several types of compatible I/O expansion cards in blade servers within the same Blade Chassis.

The following illustration shows how to install an I/O expansion card.

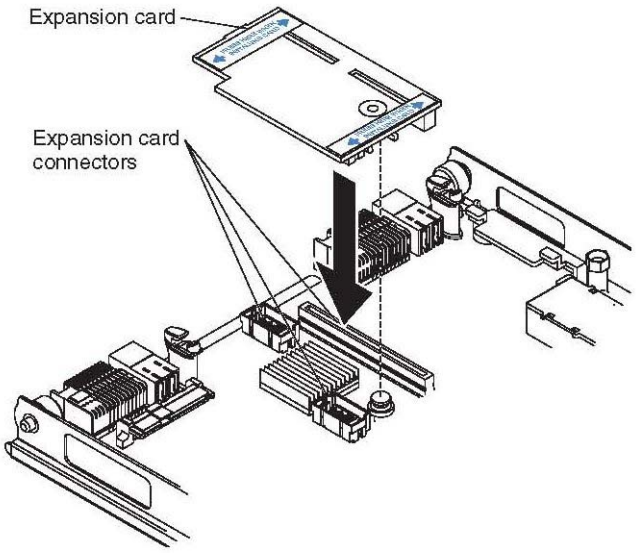


Figure 3-8. Installing an I/O expansion card

To install an I/O expansion card, complete the following steps:

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.
2. Turn off the blade server.
3. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis* on page *15* for instructions).
4. Open the blade server cover (see *Opening the blade server cover* on page *16* for instructions).
5. If an expansion unit is installed, remove it (see *Removing an optional expansion* unit on page 17).
6. If the system board in the blade server contains an I/O expansion card, such as a high-speed expansion card, remove the expansion card that is blocking access to these connectors.
7. Touch the static-protective package that contains the expansion card to any *unpainted* metal surface on the Blade Chassis or any *unpainted* metal surface on any other grounded rack component for at least 2 seconds.
8. Remove the I/O expansion card from its static-protective package.
9. Locate the three I/O expansion-card connectors on the system board in the blade server. Note that two of these card connectors are identical.
10. Align the I/O expansion card over the system board in the blade server, so that the three connectors on the reverse side of the card are correctly aligned above the three matching expansion card connectors on the system board in the blade server.
    ATTENTION: When you apply pressure to both sides of the expansion card to seat it in the blade server in step, press the card gently, so that you do not damage it.
11. To correctly seat the I/O expansion card in the blade server, press down firmly on all four corners of the card. The two labels on the top ends of the card are blue touch points on the I/O expansion card. One of these labels contains the following statement: **PRESS TO INSTALL**. The I/O expansion card is automatically secured to the system board through the retention clip that is located on the reverse side of the card.

Note:
The retention clip is permanently attached to the reverse side of the I/O expansion card. Do *not* attempt to remove the retention clip.

12. If you removed an expansion card that was blocking access to the three I/O expansion-card connectors on the blade-server system board, reinstall the expansion card.
13. Reinstall the cover on the blade server. For instructions, see the *Installation and User's Guide* that comes with your blade server. Turn on the blade server.

Note:
For device-driver and configuration information to complete the installation of the I/O expansion card, see the documentation that comes with the expansion card.

If you have other devices to install or remove, do so now; otherwise, go to "*Completing the installation*" on page *29*.

3.8.2 Installing a high-speed expansion card

Notes:

- High-speed expansion cards are *not* supported by all Blade Chassis types. See your Blade Chassis documentation for compatibility. If an expansion unit is installed on the blade server, you cannot install a high-speed expansion card on the blade server, it must be installed on the expansion unit.
- The illustrations in this document might differ slightly from your hardware.

The following illustration shows how to install a high-speed expansion card.

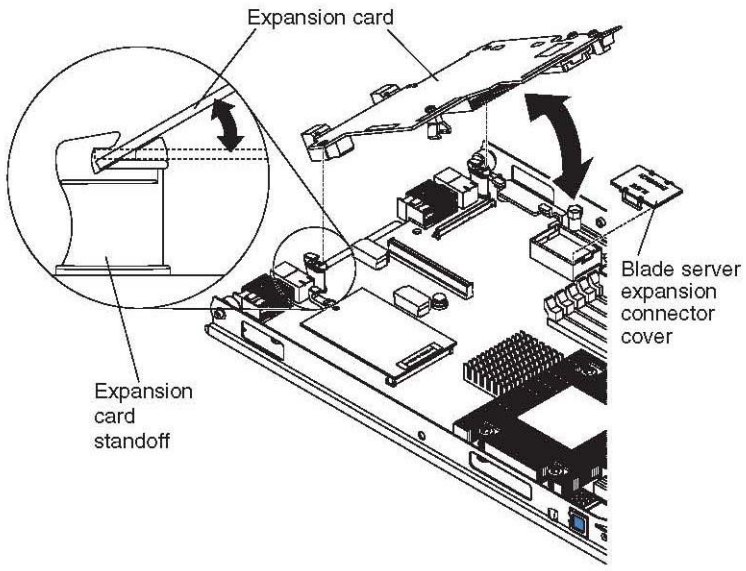


Figure 3-9. Installing a high-speed expansion card

To install a high-speed expansion card, complete the following steps:

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.
2. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis* on page 15 for instructions).
3. Carefully lay the blade server on a flat, static-protective surface.

4. Open the blade server cover (see *Opening the blade server cover* on page 16 for instructions).
5. Locate the blade-expansion connector and remove the cover, if one is installed.
6. Touch the static-protective package that contains the expansion card to any *unpainted* metal surface on the Blade Chassis or any *unpainted* metal surface on any other grounded rack component; then, remove the expansion card from the package.
7. Orient the expansion-card and slide the slot at the back end of the card onto the pins on the expansion card standoff; then, gently pivot the card into the blade-expansion connector.
8. Firmly press on the indicated locations to seat the expansion card.

Note:
For device-driver and configuration information to complete the installation of the expansion card, see the documentation that comes with the expansion card.

9. If you have other options to install or remove, do so now; otherwise, go to *Completing the installation* on page 29.

3.9 Installing an optional expansion unit

Note:
If a high-speed expansion card is installed on the blade server system board, you cannot install an expansion unit.

The following illustration shows how to install an expansion unit on a blade server.

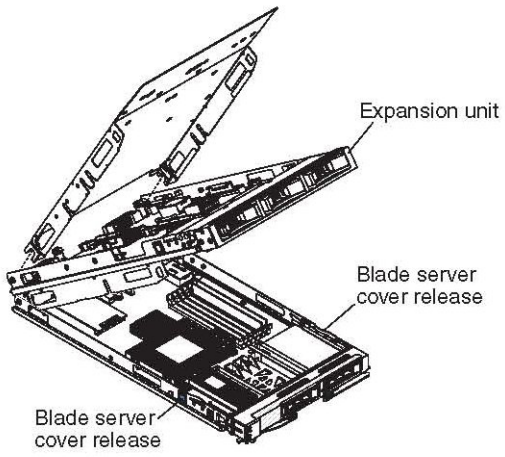


Figure 3-10. Installing an expansion unit on a blade server

To install an expansion unit, complete the following steps:

1. Read the safety information that begins on page vii and *Installation guidelines* on page *13*.

2. If the blade server is installed in a Blade Chassis, remove it (see *Removing the blade server from the Blade Chassis*" on page *15* for instructions).

3. Remove the protective covers from the blade expansion connectors, if they are present.

4. Touch the static-protective package that contains the expansion unit to any *unpainted* metal surface on the Blade Chassis or any *unpainted* metal surface on any other grounded rack component; then, remove the expansion unit from the package.

5. Orient the expansion unit as shown in the illustration.

6. Lower the expansion unit so that the slots at the rear slide down onto the cover pins at the rear of the blade server.

7. Close the expansion unit (see the documentation for the expansion unit for information and instructions):

    a. If the expansion unit has an extraction device, pivot the expansion unit closed; then, use the extraction device to fully seat the expansion unit on the system board. These extraction devices can be of several types, including thumbscrews or levers.

    b. If the expansion unit has no extraction device, pivot the expansion unit closed; then, press the expansion unit firmly into place until the blade-cover releases click.

The connectors on the expansion unit automatically align with and connect to the connectors on the system board.

If you have other expansion units to install, do so now; otherwise, go to *Completing the installation* on page *29*.

3.10 Completing the installation

To complete the installation, complete the following tasks. Instructions for each task are in the following sections.

1. Reinstall the expansion unit, if you removed it to install other options (see *Installing an optional expansion unit* on page *27* for information on installing an expansion unit).

2. Close the blade server cover, unless you installed an optional expansion unit that has its own cover (see *Closing the blade server cover* on page *30*).

Statement 21:

CAUTION:
Hazardous energy is present when the blade is connected to the power source. Always replace the blade cover before installing the blade.

3. Reinstall the blade server into the Blade Chassis (see *Installing the blade server in a Blade Chassis* on page 31).

4. Turn on the blade server (see *Turning on the blade server* on page *11*).

5. For certain options, run the blade server Configuration/Setup Utility program (see *Chapter 4, Configuring the blade server*, on page *35*).

Note:
If you have just connected the power cords of the Blade Chassis to electrical outlets, you must wait until the power-on LED on the blade server flashes slowly before you press the power-control button.

3.10.1 Closing the blade server cover

Attention:
You cannot insert the blade server into the Blade Chassis until the cover is installed and closed or an expansion unit is installed. Do not attempt to override this protection.

The following illustration shows how to close the blade server cover.

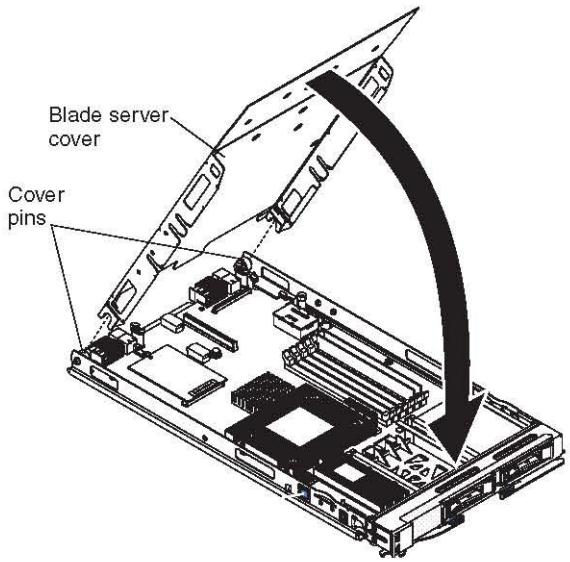


Figure 3-11. Closing the blade server cover

To close the blade server cover, complete the following steps:

1. Read the safety information that begins on page vii and "*Installation guidelines*" on page *13*.

2. Lower the cover so that the slots at the rear slide down onto the pins at the rear of the blade server, as shown in the illustration. Before you close the cover, make sure that all components are installed and seated correctly and that you have not left loose tools or parts inside the blade server.

3. Pivot the cover to the closed position, as shown in the illustration, until it clicks into place.

3.10.2 Installing the blade server in a Blade Chassis

The following illustration shows how to install a blade server into a Blade Chassis. The appearance of your Blade Chassis might be different, see the documentation for your Blade Chassis for additional information.

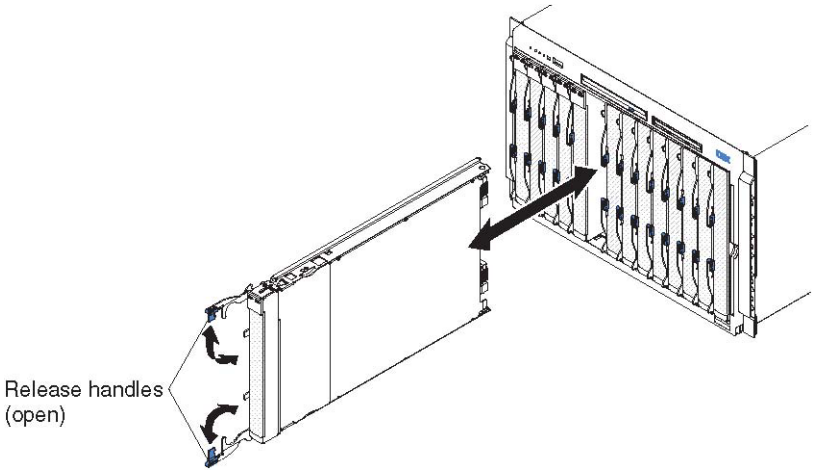


Figure 3-12. Installing the blade server in a Blade Chassis

Statement 21:

CAUTION:
Hazardous energy is present when the blade is connected to the power source. Always replace the blade cover before installing the blade.

1. Read the safety information that begins on page vii and "*Installation guidelines*" on page *13* through "Handling static-sensitive devices" on page 14.
2. If you have not done so already, install any options that you want, such as SAS drives or memory, in the blade server.
3. Select the bay for the blade server; at least one blade bay is required.

Notes:

- When any blade server or option is in any blade bays 7 through 14, power modules must be present in all four power-module bays. For additional information, see the *Installation and User's Guide* that comes with the Blade Chassis.
- To help ensure proper cooling, performance, and system reliability, make sure that each blade bay on the front of the Blade Chassis contains a blade server, expansion unit, or blade filler. Do not operate a Blade Chassis for more than 1 minute without a blade server, expansion unit, or blade filler in each blade bay.

4. Make sure that the release handles on the blade server are in the open position (perpendicular to the blade server).

5. Slide the blade server into the blade bay until it stops.

6. Push the release handles on the front of the blade server to the closed position.

7. Turn on the blade server (see *Turning on the blade server* on page *11* for instructions).

8. Make sure that the power-on LED on the blade server control panel is lit continuously, indicating that the blade server is receiving power and is turned on.

9. If you have other blade servers to install, do so now.

If you reinstall a blade server that you removed, you must install it in the same blade bay from which you removed it. Some blade server configuration information and update options are established according to bay number. Reinstalling a blade server into a different blade bay from the one from which it was removed can have unintended consequences, and you might have to reconfigure the blade server.

If this is the initial installation for the blade server in the Blade Chassis, you must configure the blade server through the Configuration/Setup Utility program and install the blade server operating system. See *Updating the blade server configuration* on page *32* and *Chapter 5*, "*Installing the operating system*," on page *43* for details.

If you have changed the configuration of the blade server or if you are installing a different blade server from the one that you removed, you must configure the blade server through the Configuration/Setup Utility, and you might have to install the blade server operating system. Detailed information about these tasks is available in the *Installation and User's Guide*.

3.10.3 Updating the blade server configuration

When the blade server starts for the first time after you add or remove an internal option, you might receive a message that the configuration has changed. The Configuration/Setup Utility program automatically starts so that you can save the new configuration settings. See *Using the Configuration/Setup Utility program* on page *35* for more information about the Configuration/Setup Utility program.

Some options have device drivers that you must install. See the documentation that comes with each option for information about installing device drivers.

The blade server operates as a symmetric multiprocessing (SMP) server, regardless of how many microprocessors are installed. For optimum performance, you must upgrade the operating system to support SMP. See *Chapter 5*, *Installing the operating system*, on page *43* for details. and your operating-system documentation for additional information.

3.10.4 Input / output connectors and devices

The input/output connectors that are available to the blade server are supplied by the Blade Chassis. See the documentation that comes with the Blade Chassis for information about the input/output connectors.

The blade server has two selection buttons on the control panel: the media tray select button and the keyboard/video/mouse select button. See *Blade server controls and LEDs* on page *9* for information about these buttons and their functions.

The Ethernet controllers on the blade server communicate with the network through the Ethernet-compatible I/O modules on the Blade Chassis. Network signals to and from the blade server or any expansion cards are automatically routed to a same-network-interface I/O module through circuitry in the Blade Chassis.

Chapter 4. Configuring the blade server

This chapter describes the configuration requirements for the blade server. Before you continue, make sure that the blade server has the latest version of firmware code. For additional information, see *Firmware updates* on page *40*.

The following configuration programs come with the blade server:

- **Configuration/Setup Utility program**
  The Configuration/Setup Utility program is part of the basic input/output system (BIOS). Use it to change system settings, such as interrupt requests (IRQ), date and time, and password. See *Using the Configuration/Setup Utility program* for more information.
- **LSI Logic Configuration Utility program**
  The LSI Logic Configuration Utility program is part of the BIOS. Use it to set the device scan order and to set the SAS controller ID. See *Using the LSI Logic Configuration Utility program* on page *42* for more information.
- **Preboot Execution Environment (PXE) boot agent utility program**
  The PXE boot agent utility program is part of the BIOS. Use it to select the boot protocol and other boot options and to select a power-management option. For information about using this utility program, see *Using the PXE boot agent utility program* on page *39*.

4.1 Using the Configuration/Setup Utility program

To start the Configuration/Setup Utility program, complete the following steps:

1. Turn on the blade server (see *Turning on the blade server* on page *11*).
2. Immediately give the blade server control of the Blade Chassis shared keyboard, video, and mouse ports.
   - If you are managing the blade server by using the Blade system console, press the KVM select button on the blade server (see *Blade server controls and LEDs* on page *9* for information).
   - If you are managing the blade server from a remote location, see the Management Module documentation for information and instructions.
3. When the Configuration/Setup utility message appears, press F1.
4. Follow the instructions on the screen.

4.1.1 Configuration/Setup Utility menu choices

The following choices are on the Configuration/Setup Utility main menu. Depending on the version of the BIOS, some menu choices might differ slightly from these descriptions.

- **System Summary**
  Select this choice to display configuration information, including the type, speed, and cache sizes of the microprocessors and the amount of installed memory. When you make configuration changes through other choices in the Configuration/Setup Utility program, the changes are reflected in the system summary; you cannot change settings directly in the system summary.
  - **Processor Summary**
    Select this choice to view information about the microprocessors installed in the blade server.
  - **USB Device Summary**
    Select this choice to view information about the USB devices installed in the blade server.
- **System Information**
  Select this choice to display information about the blade server. When you make configuration changes through other options in the Configuration/Setup Utility program, some of those changes are reflected in the system information; you cannot change settings directly in the system information.
  - **Product Data**
    Select this choice to view the machine type and model of the blade server, the serial number, and the revision level or issue date of the BIOS and diagnostics code that are stored in electrically erasable programmable ROM (EEPROM).
- **Devices and I/O Ports**
  Select this choice to view or change assignments for devices and input/output (I/O) ports.
  You can also enable or disable the integrated SAS and Ethernet controllers, all standard ports (such as serial), and the I/O-expansion card. **Enable** is the default setting for all controllers. If you disable a device, it cannot be configured, and the operating system will not be able to detect it (this is equivalent to disconnecting the device). If you disable the Ethernet controller, the blade server will have no Ethernet capability.
  With an optional Blade Storage Expansion Unit 3 (BSE3), you can control all of the SAS hard disk drives in the host blade server. Set **BSE3 Controls All Blade SAS HDD** to **Enable** to control all of the hard disk drives in the host blade server.
  - **Remote Console Redirection**
    Select this choice to enable Serial over LAN (SOL) and to set remote console communication parameters.
  - **Video**
    Select this choice to view information about the integrated video controller.
  - **System MAC Addresses**
    Select this choice to set and view the MAC addresses for the Ethernet controllers on the blade server.

Note:
MAC addresses are displayed only for those devices with PXE enabled.

- **Date and Time**
  Select this choice to set the system date and time, in 24-hour format (*hour:minute:second*).
- **System Security**
  Select this choice to set a power-on password. See *Using passwords* on page *39* for more information about passwords.
- **Start Options**
  Select this choice to view or change the start options. Changes in the start options take effect when you start the blade server.
  - **Startup Sequence Options**
    Select this choice to view the startup device sequence that is set for the blade server.

Note:
To set the startup sequence, which is the order in which the blade server checks devices to find a boot record, you must use the management-module Web interface.

You can set keyboard operating characteristics, such as whether the blade server starts with the keyboard number lock on or off. You can enable the blade server to run without a diskette drive or keyboard.

You can enable or disable the PXE option for all of the Ethernet controllers in the blade server. The default settings enable the PXE option for the two Ethernet controllers on the system board.

If you enable the boot fail count, the BIOS default settings will be restored after three consecutive failures to find a boot record.

You can enable a virus-detection test that checks for changes in the boot record when the blade server starts.

- **Advanced Setup**
  Select this choice to change settings for advanced hardware features.

Important:
The blade server might malfunction if these settings are incorrectly configured. Follow the instructions on the screen carefully.

- **Memory Settings**
  Select this choice to manually enable a pair of memory connectors.
  If a memory error is detected during POST or memory configuration, the blade server automatically disables the failing memory pair of memory connectors and continues operating with reduced memory. After the problem is corrected, you must enable the memory connectors. Use the arrow keys to highlight the pair of memory connectors that you want to enable, and use the arrow keys to select **Enable**.

To maintain optimum system operation in the event of a memory failure, you can set memory configuration to sparing. Memory sparing removes the failed memory from the system configuration and activates a hot spare memory pair of DIMMs to replace the failed memory pair of DIMMs. Before you can enable the memory sparing, at least two pairs of DIMMs must be installed in the blade server that adhere to the special requirements that are described in *Installing memory modules* on page *19*. Set **Memory Configuration** to **Flat** to disable memory mirroring and sparing.

- **Microprocessor Options**
  Select this menu item to disable the microprocessor cache or to set the microprocessor cache to use the write-back or write-through method. Write-back caching generally provides better system performance.
  You can also select this menu item to enable or disable hyper-threading and adjust microprocessor performance settings. If hyper-threading is enabled, it is active only if it is supported by your operating system.
- **PCI Bus Control**
  Select this choice to view and set interrupts for PCI devices and to configure the master-latency-timer value for the blade server.
- **Baseboard Management Controller (BMC) Settings**
  You can select this menu item to enable or disable and set the timeouts for the POST and OS loader watchdog timers and view BMC version information.
  - **BMC Network Configuration**
    Select this choice to set the network addresses of the BMC.
  - **BMC System Event Log**
    Select this choice to view and clear BMC event log entries.

- **Save Settings**
  Select this choice to save the changes that you have made in the settings.
- **Restore Settings**
  Select this choice to cancel the changes that you have made in the settings and restore the previous settings.
- **Load Default Settings**
  Select this choice to cancel the changes that you have made in the settings and restore the factory settings.
- **Exit Setup**
  Select this choice to exit from the Configuration/Setup Utility program. If you have not saved the changes that you have made in the settings, you are asked whether you want to save the changes or exit without saving them.

4.1.2 Using passwords

From the **System Security** choice, you can set, change, and delete a power-on password.

If you set a power-on password, you must type the power-on password to complete the system startup and to have access to the Configuration/Setup Utility menu.

You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password. Keep a record of your password in a secure place.

If you forget the power-on password, you can regain access to the blade server in by removing the blade server battery and then reinstalling it or by using the power-on password override switch (see the *Problem Determination and Service Guide* on the *Resource DVD* for instructions).

4.2 Installing the operating system

If you have already configured the blade server hardware, download the latest operating-system installation instructions from the Bull Support Web site: http://www.bull.com/support/.

4.3 Using the PXE boot agent utility program

Use the Preboot Execution Environment (PXE) boot agent utility program to select the boot protocol and other boot options and to select a power-management option.

Notes:

- The blade server does not support Remote Program Load (RPL) selection for the boot protocol option.
- Enabling PXE might reduce the number of optional expansion modules that your blade server can manage.

To start the PXE boot agent utility program, complete the following steps:

1. Turn on the server.
2. When the `Broadcom NetXtreme Boot Agent vX.X.X` prompt is displayed, press Ctrl+S. You have 2 seconds (by default) to press Ctrl+S after the prompt is displayed.
   If the PXE setup prompt is not displayed, use the Configuration/Setup Utility program to set the **Enable Ethernet PXE/DHCP** option.
3. Use the arrow keys or press Enter to select a choice from the menu.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

4.4 Firmware updates

Bull periodically provides BIOS code, service processor (BMC) firmware, and diagnostic firmware updates available for the blade server. Before you install the blade server in a Blade Chassis, go to http://www.bull.com/support/ to download the latest firmware for the blade server. Install the updates, using the instructions that are included with the downloaded files.

Important:
To avoid problems and to maintain system performance, always make sure that the BIOS code, service processor (BMC) firmware, and diagnostic firmware levels are consistent for all blade servers within the Blade Chassis.

4.5 Configuring the Gigabit Ethernet controllers

One Ethernet controller is integrated on the blade server system board. Each controller provides a 1000 Mbps full-duplex interface for connecting to one of the Ethernet-compatible I/O modules in I/O-module bays 1 and 2, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN). The Ethernet controller on the system board is routed to a different I/O module in I/O-module bay 1 or bay 2. The routing from an Ethernet controller to an I/O-module bay varies according to the blade server type and the operating system that is installed.

You do not have to set any jumpers or configure the controllers for the blade server operating system. However, you must install a device driver to enable the blade server operating system to address the Ethernet controllers. For device drivers and information about configuring the Ethernet controllers, see the *Resource DVD* that comes with the blade server.

Important:
To support failover on the blade server Ethernet controllers, the Ethernet switch modules in the Blade Chassis must have identical configurations.

4.6 Configuring a SAS RAID array

Use this information to configure a SAS RAID array.

Configuring a SAS RAID array applies only to a blade server in which two SAS storage drives are installed.

You can use two SAS storage drives in the blade server to implement and manage RAID level-0 (striping) or RAID level-1 (mirror) arrays (see http://www.support.bull.com for information. For the blade server, you must configure the SAS RAID by using the LSI Configuration Utility program.

If an optional expansion unit is installed, you can use it to control all of the SAS storage drives that are installed in the blade server. Enable this feature by using the **Device and I/O Ports** choice in Configuration/Setup Utility program (see Configuration/Setup Utility menu choices on page 36 for information and instructions).
Important: You must create the RAID array *before* you install the operating system on the blade server.

You can use the LSI Logic Configuration Utility program to configure the SAS storage drives and the SAS controller. To start the LSI Logic Configuration Utility, complete the following steps:

1. Turn on the blade server (make sure that the blade server is the owner of the keyboard, video, and mouse). See *Turning on the blade server* on page 11.
2. When the message Press **Ctrl-C** to start LSI Logic Configuration Utility is displayed, press **F1**. If an administrator password has been set, you must type the administrator password to access the full LSI Logic Configuration Utility menu.
3. Follow the instructions on the screen to modify the SAS storage drive and SAS controller settings.

4.7 Using the LSI Logic Configuration Utility program

You can use the LSI Logic Configuration Utility program to perform the following tasks:

- Set the SAS device scan order.
- Set the SAS ID for the controller.
- Manage the SAS RAID configuration.

To start the LSI Logic Configuration Utility program, complete the following steps:

1. Turn on the blade server, and make sure that the blade server is the owner of the keyboard, video, and mouse.
2. When the `<<<Press Ctrl-C to start LSI Logic Configuration Utility>>>` prompt is displayed, press Ctrl-C.
3. Use the arrow keys to select the controller from the list of adapters; then, press Enter.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter. If you select **RAID Properties, SAS Topology** or **Advanced Adapter Properties**, additional screens are displayed.

Chapter 5. Installing the operating system

To install the operating system on a blade server, download the latest operating-system installation instructions from the Bull Support web site: http://www.bull.com/support/ and install the operating system.

Important:

- The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, and removable-media drives. The Blade Chassis uses USB for internal communication with these devices.
- Some operating systems, enable you to select the type of mouse that is being used. If you are offered this choice, select USB instead of PS/2. Although the mouse might be a PS/2-style device, communication with the mouse is through an internal USB bus in the Blade Chassis; therefore, the operating system in the blade server must recognize the mouse as a USB device.

Chapter 6. Solving problems

This chapter provides basic information about the diagnostic tools that are available to help you solve some common problems that might occur while you are setting up the blade server.

If you install the blade server in the Blade Chassis and the blade server does not start, perform the following actions:

- Make sure that the Blade Chassis is correctly connected to a power source.
- Reseat the blade server in the Blade Chassis (see *Installing the blade server in a Blade Chassis* on page *31*).
- If the power-on LED is flashing slowly, turn on the blade server (see *Turning on the blade server* on page *11*).
- If you have just added a new optional device or component, make sure that it is correctly installed and compatible with the blade server and its components. If the device or component is not compatible, remove it from the blade server, reinstall the blade server in the Blade Chassis, and then restart the blade server.

If the blade server does not start after you have performed the preceding actions, see the *Problem Determination and Service Guide* for your blade server on the *Resource DVD*.

6.1 Diagnostic tools overview

The following tools are available to help you diagnose and solve hardware-related problems:

- **POST beep codes**
  The power-on self-test beep codes can indicate the detection of a problem.
  - One beep indicates successful completion of POST
  - Repeating long beeps indicate a memory error. Make sure that all DIMMs are correctly installed.
  - Additional beep codes are listed in "Diagnostics" in the *Problem Determination and Service Guide* for your blade server.
- **POST error codes**
  The POST error codes indicate the detection of a problem. See the *Problem Determination and Service Guide* for more information.
- **Troubleshooting tables**
  Use the troubleshooting tables to find solutions to problems that have identifiable symptoms. These tables are in the *Problem Determination and Service Guide* for your blade server.

- **Diagnostic programs and error messages**
  Real Time Diagnostics tests the major components of the Blade Chassis, including the management modules, I/O modules, removable-media drives, and the blade servers, while the operating system is running. See the *Problem Determination and Service Guide* for more information.

Note:
If you are unable to find the system error logs in the blade-server firmware code, view the system event log in the Blade management module.

- **Light path diagnostics**
  Use light path diagnostics LEDs on the system board to diagnose system errors. If the system-error LED on the system LED panel on the front or rear of the Blade Chassis is lit, one or more error LEDs on the Blade Chassis components also might be lit. These LEDs help identify the cause of the problem. Blade server error LEDs are described in the *Problem Determination and Service Guide* for your blade server.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just more information about our products, Bull provides a wide variety of sources to assist you. This appendix indicates where to go for additional information about Bull and Bull products, what to do if you experience a problem with your Bull Blade system, and who to call for service if 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 http://www.support.bull.com and check for information to help you solve the problem.

You can solve many problems without outside assistance by following the troubleshooting procedures that are provided in your system and software documentation. Most 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, refer to the appropriate software documentation.

If you have not been able to solve the problem yourself, contact your Bull Support Representative.

Using the documentation

Information about your Bull Blade system and pre-installed software, if any, is available in the documentation that comes with your system. The documentation can include printed documents, online documents, 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. Bull 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.support.bull.com and select your system.

Appendix B. Notices

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from Bull.

Maximum memory may require replacement of the standard memory with an optional memory module.

Bull makes no representation or warranties regarding non-Bull products and services, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

Bull makes no representations or warranties with respect to non-Bull products. Support (if any) for the non-Bull products is provided by the third party, not Bull.

Some software may differ from its retail version (if available), and may not include user manuals or all program functionality.

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. Bull encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed.

Notice:

This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: **このマークは EU 諸国およびノルウェーにおいてのみ適用されます。**

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE)のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために様々の製品に貼られています。

Remarque:

Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local Bull representative.

Electronic emission notices

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d’Industrie Canada

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

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Bull cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-Bull option cards.

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

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Taiwanese Class A warning statement

警告使用者:
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Chinese Class A warning statement

声　　明

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

Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に
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