Bull NovaScale Blade 2020

Installation and User's Guide

ORDER REFERENCE
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Bull NovaScale Blade 2020

Installation and User's Guide

Hardware

October 2003

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Trademarks and Acknowledgements

NovaScale Blade Chassis safety and regulatory information

✏ **NOTE**

The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that you are familiar with the computers, functions, terminology, and service information provided in this manual.

Important Safety Instructions
Read all caution and safety statements in this document before performing any of the instructions. Read the manual *NovaScale Blade Series Boards and Chassis Safety Information*.

Consignes de sécurité
Lisez attentivement toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez le manuel *NovaScale Blade Series Boards and Chassis Safety Information*.

Wichtige Sicherhetshinweise
Lesen Sie zunächts sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie auch dem Buch *NovaScale Blade Series Boards and Chassis Safety Information*.

Importanti istruzioni sulla sicurezza
Leggere attentamente tutte le istruzioni sulla sicurezza contenute nel presente documento prima di eseguire qualsiasi operazione. Vedere il manuale *NovaScale Blade Series Boards and Chassis Safety Information*.

Instrucciones de seguridad importantes
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquira de las instrucciones. Vea el documento *NovaScale Blade Series Boards and Chassis Safety Information*.

General Safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
  1. Ensure you can stand safely without slipping.
  2. Distribute the weight of the object equally between your feet.
  3. Use a slow lifting force. Never move suddenly, or twist,when you attempt to lift.
  4. Lift by standing or by pushing up with you leg muscles; this action removes the strain from the muscles in your back. Do not attempt to lift any object that weighs more than 16 kg (35lb) or any object that you think is too heavy for you.
- Do not perform any action that causes hazards to the customer, or makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing, or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing. **Remember:** Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical Safety

CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the server system power cords, telecommunication systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

✏ Important: Observe the following rules when working on electrical equipment.

- Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not protect you when working with live electrical currents.
- Many customers have rubber floor mats (near their equipment) that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.
- Find the emergency power-off (EPO) switch, disconnect switch, or electrical outlet in the room. If an electrical accident occurs, you can quickly turn off the switch or unplug the power cord.
- Do not work alone under hazardous conditions, or near equipment that has hazardous voltages.
- Disconnect all power before:
  - — Performing a mechanical inspection
  - — Working near power supplies
  - — Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box (that supplies power to the machine) and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
  - — Ensure that another person, familiar with the power-off controls, is near you. Remember: another person must be there to switch off the power, if necessary.
  - — Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
  - — Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
- When using testers, set controls correctly and use the approved probe leads and accessories for that tester.
- Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.
- Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of the maintenance information. Use extreme care when measuring high voltages.
- Regularly inspect and maintain your electrical hand tools for safe operational condition.

- Do not use worn or broken tools and testers.
- Never assume that power has been disconnected from a circuit. First, check that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental inspection mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- When the power is on and power supply units, blowers and fans are removed from their normal operating position in a machine, do not attempt to service the units. This practice ensures correct grounding of the units.
- If an electrical accident occurs, use caution:
  - — Switch power off
  - — Send another person to get help/medical aid

Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (IC) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the server, the part, the work mat, and the person handling the part are all at the same charge.

✏ **NOTE**

Use product-specific ESD procedures when they exceed the requirements noted here.

Make sure that the ESD-protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those in the following list, to provide protection that meets the specific service requirement.

✏ **NOTE**

The use of a grounding system is desirable but not required to protect against ESD damage.

Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.

Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.

Use the round ground-prong of the AC plug on AC-operated computers.

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 procedure**s.
- **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. 2. First, attach all cables to devices. 3. Attach signal cables to connectors. 4. Attach power cords to outlet. 5. Turn device ON.	1. Turn everything OFF. 2. First, remove power cords from outlet. 3. Remove signal cables from connectors. 4. Remove all cables from devices.

CAUTION:

If your system has a module containing a lithium battery, replace it only with the same or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace 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.

CAUTION:

When laser products (such as CD-ROMs, DVD-ROM 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.

≥18 kg (37 lbs)

≥32 kg (70.5 lbs)

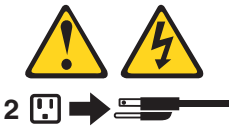
≥55 kg (121.2 lbs)

CAUTION:

Use safe practices when lifting.

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.



CAUTION:

Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.

CAUTION:

Do not place any object weighing more then 82 kg (180lbs.) on top of rack-mounted devices.

CAUTION:

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

CAUTION:

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

Regulatory specifications and disclaimers

Safety compliance:	
USA:	UL 60950 - 3rd Edition/CSA 22.2. No. 60950
Canada:	cUL certified - 3rd Edition/CSA 22.2. No. 60950- for Canada (product bears the single cUL mark for U.S. and Canada)
Europe:	Low Voltage Directive, 73/23/EEC TUV/GS to EN60950 2nd Edition with Amendments, A1 = A2+A3+A4
International:	UL/CB to IEC 60950 3rd Edition UL/CB - EN60 950 3rd Edition UL/CB - EMKO-TSE (74-SEC) 207/94
Australia/New Zealand:	CB Report to IEC 60950, 3rd Edition plus international deviations

Electromagnetic compatibility (ECM)	
USA:	FCC CFR 47 Part 2 and 15, Verified Class A Limit
Canada:	IC ICES-003 Class A Limit
Europe:	EMC Directive, 89/336/EEC EN55022, Class A Limit, Radiated & Conducted Emissions EN55024 ITE Specific Immunity Standard EN61000-4-2 ESD Immunity (Level 2 Contact Discharge, Level 3 Air Discharge) EN61000-4-3 Radiated Immunity (Level 2) EN61000-4-4 Electrical Fast Transient (Level 2) EN61000-4-5 AC Surge EN61000-4-6 Conducted RF EN61000-4-8 Power Frequency Magnetic Fields EN61000-4-11 Voltage Dips and Interrupts EN6100-3-3 Voltage Flicker
Japan:	VCCI Class A ITE (CISPR 22, Class A Limit) IEC 1000-3-2 Limit for Harmonic Current Emissions
Australia/New Zealand:	AS/NZS 3548, Class A Limit
Taiwan:	BSMI Approval
Korea:	RRL Approval
Russia:	GOST Approval
International:	CISPR 22, Class A Limit

Electromagnetic compatibility notices (USA)

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/her own expense.

✏ **NOTE**

Class A device definition: If a Class A device is installed within the is system, then the system is to be considered a Class A system. In this configuration, operation of this equipment in a residential area is likely to cause harmful interference.

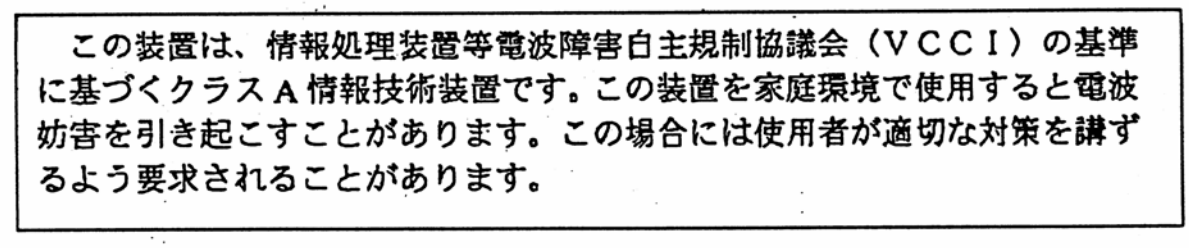
✏ **NOTE**

This product is intended to be installed with CAT5 cable, or equivalent, to minimize electrical interference.

Electromagnetic compatibility notices (International)

Europe (CE Declaration of Conformity): This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

Japan EMC Compatibility:

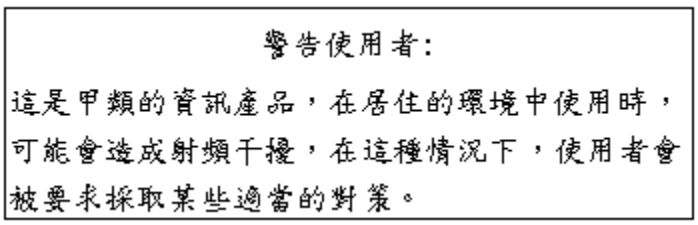

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

English translation of the notice above: This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

ICES-003 (Canada): Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadian des Communications.

English translation of the notice above: This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

BSMI (Taiwan): The BSMI Certification number and the following warning is located on the product safety label which is located visibly on the external chassis.


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。

RRL Korea:

기 종 별	사 용 자 안 내 문
A급 기기	이 기기는 업무용으로 전자파 적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.
B급 기기	이 기기는 가정용으로 전자파 적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

※ 비고
A급 기기 : 업무용 정보통신기기를 말한다.
B급 기기 : 가정용 정보통신기기를 말한다.

English translation of the notice above:

Device	**User's Information**
Class A device	This device complies with RRL EMC and is operated in commercial environment so that distributors or users pay attention to this point. If the product is sold or purchased improperly, please exchange this product to what can be used at home.
Class B device	This device complies with RRL EMC and is operated in a residential area so that it can be used at all other location as well as residential area.
note: Class A device: operated in a commercial area. Class B device: operated in a residential area.	

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Contents

1 Introduction

Your server is a blade-model server that is one of up to 14 blades that can be installed in the NovaScale Blade Chassis. This high-performance blade server is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and reliable data storage.

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

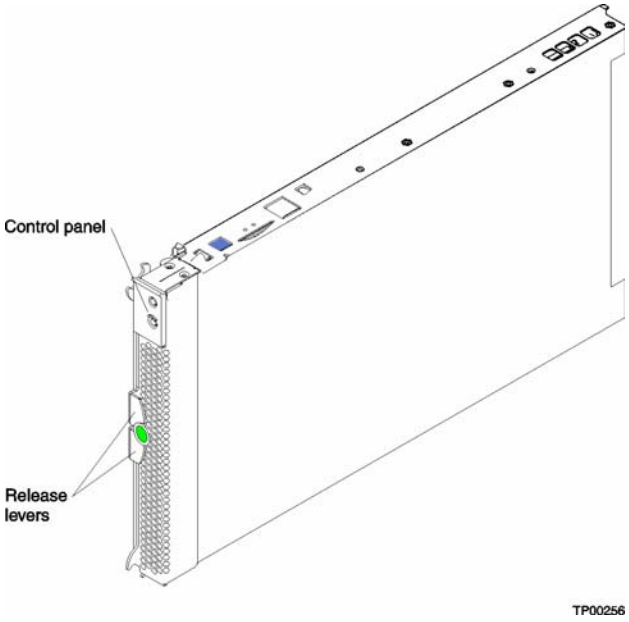
- Set up your blade server
- Start and configure your blade server
- Install options
- Install your operating system
- Perform basic troubleshooting of your blade server

Packaged with the *NovaScale Blade 2020 Installation and User's Guide* are Resource CDs that help you to configure hardware, install device drivers, and install the operating system.

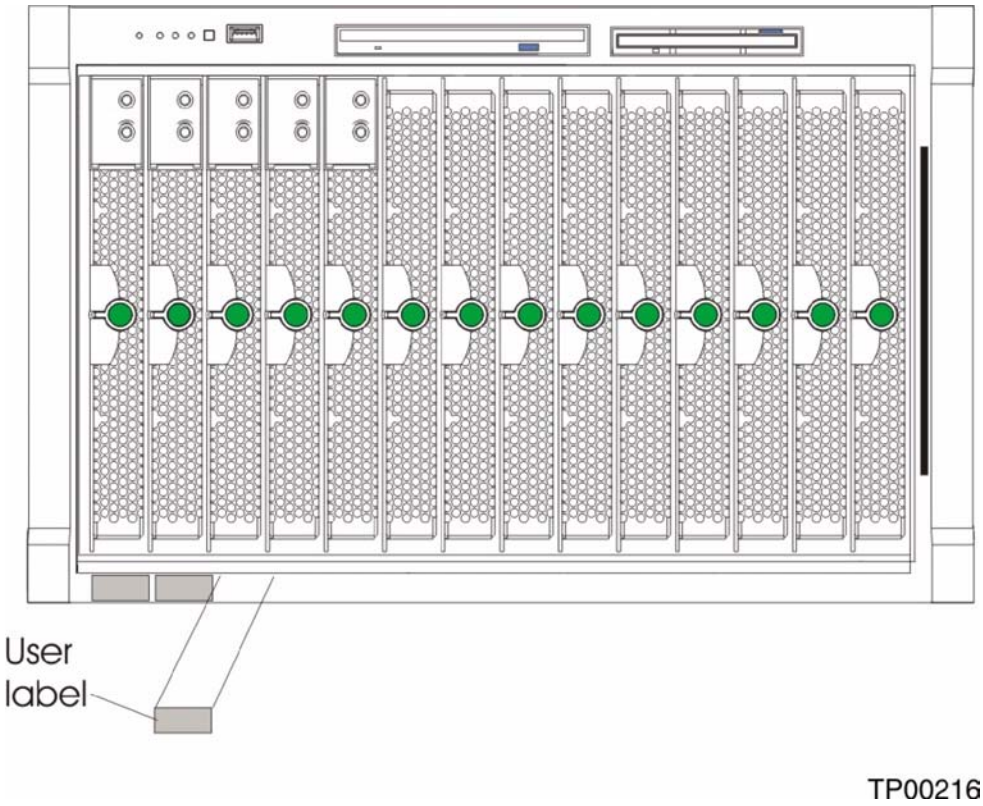
Record information about your NovaScale Blade 2020 in the following table.

Product name	NovaScale Blade 2020
Product code	
Part number	_____
Serial number	_____

The product code, part number, and serial number are on the ID label that is behind the control panel door on the front of the blade server, and on a label on the left side of the blade server that is visible when the blade server is not in the NovaScale Blade Chassis unit.



A set of user labels comes with the blade server. When you install the blade server, in the NovaScale Blade Chassis unit, write whatever identifying information you want on a label and place it on the NovaScale Blade Chassis bezel just below the blade server, as shown in the following illustration.



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

WARNING: Do not ship the NovaScale Blade 2020 server in the NovaScale Blade Chassis. The blade servers must be shipped separately, in the original packaging, to avoid damage.

Related publications

In addition to this *Installation and User's Guide*, the following documentation is provided with your NovaScale Blade 2020:

- *NovaScale Blade Boards and Server Chassis Safety Information (86 A1 05EM)*: This publication contains translated caution and danger statements. To reduce the risk of bodily injury, electrical shock, fire and equipment damage, read this document and observe all warnings and precautions before installing or maintaining your server product.
- *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide (86 A1 04EM)*: This publication contains the information to help you solve NovaScale Blade 2020 problems yourself, and it contains information for service technicians.

Additional publications might be included on the *Resource* CD.

Features and specifications

The following table provides a summary of the features and specifications of your NovaScale Blade 2020 blade server.

✏ **NOTE**

Power, cooling, removable-media drives, external ports, and advanced system management are provided by the NovaScale Blade Chassis.

Microprocessor:

Supports up to 2 microprocessors

- Intel® Xeon™ 2.6 GHz or faster
- 512 KB ECC L2 cache

Memory:

- Four double data rate (DDR) PC1600 sockets
- Minimum: 512 MB
- Maximum: 4 GB
- Type: 2-way interleaved, DDR, PC2100, ECC SDRAM registered Chipkill* DIMMs only

  ✏ **NOTE**

  PC2100 DIMMs are backward-compatible and can function in the PC1600 sockets
- Supports 256 MB, 512 MB, and 1 GB dual inline memory modules (DIMMs)

Drives:

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

Size:

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

Integrated functions:

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

Predictive Failure Analysis (PFA) alerts:

- Microprocessor
- Memory
- Hard disk drives

Environment:

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

Electrical input:

- Input voltage: 12 V DC

✏ **NOTE**

The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The NovaScale Blade Chassis unit uses USB for internal communications with these devices.

Notices and statements used in this book

The caution and danger statements used in this book also appear in the multilingual Safety Information book.

The following notices and statements are used in the documentation:

- **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.

What your NovaScale Blade 2020 offers

The design of your blade server takes advantage of advancements in memory management and data storage. Your blade server includes:

- Innovative Technology

  Proven innovative technologies to build powerful, scalable, reliable Intel processor-based servers. This technology includes features such as Light Path Diagnostics*, Predictive Failure Analysis (PFA) and Advanced System Management.

- **Impressive performance using the latest microprocessor technology**

  Your blade server supports up to two Intel® Xeon™ microprocessors.

- **Large system memory**

  The memory bus in your blade server supports up to 4 GB of system memory. The memory controller provides error correcting code (ECC) support for up to four industry-standard 2.5 V, 184-pin, double-data-rate (DDR), PC2100, registered synchronous dynamic random-access memory (SDRAM) with error correcting code (ECC) DIMMs.

- **Light Path Diagnostics**

  The Light Path Diagnostics feature provides LEDs to assist in isolating problems with the blade server. A light on the blade server control panel is lit if an unusual condition or a problem occurs. If this happens, you can look at the LEDs on the system board to locate the source of the problem.

- **Integrated network environment support**

  Your blade server comes with two integrated Gigabit Ethernet controllers. Each Ethernet controller has an interface for connecting to 10/100/1000-Mbps networks through an Ethernet switch module on the NovaScale Blade Chassis unit. The blade server automatically selects between 10BASE-T and 100/1000BASE-TX environments. Each controller provides full-duplex

(FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN). The controllers support Wake on LAN technology.

- **I/O expansion**

  Your blade server comes with two connectors on the system board for I/O expansion options, such as the Fibre Channel Expansion Card, for adding more network communication capabilities to the blade server.

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 stored on your blade server; that your blade server is available when you want to use it; and that should a failure occur, you can easily diagnose and repair the failure with minimal inconvenience.

The following is a list of some of the RAS features that your blade server supports:

- Advanced Configuration and Power Interface (ACPI)
- Automatic error retry or recovery
- Automatic server restart
- Built-in monitoring for temperature, voltage, and hard disk drives
- Chipkill* memory
- Customer-upgradeable basic input/output system (BIOS) code
- Diagnostic support of Ethernet controllers
- Error codes and messages
- Error correcting code (ECC) protection on the L2 cache
- ECC memory
- Failover Ethernet support
- Hot-swap drives on optional SCSI storage expansion unit
- Light Path Diagnostics feature
- Power-on self-test (POST)
- Predictive Failure Analysis (PFA) alerts
- Processor serial number access
- Service processor that communicates with the NovaScale Blade Chassis management module to enable remote blade server management
- SDRAM with serial presence detect (SPD) and vital product data (VPD)
- System error logging
- Vital product data (VPD) (includes information stored in nonvolatile memory for easier remote viewing)
- Wake on LAN capability

Important shipping notices

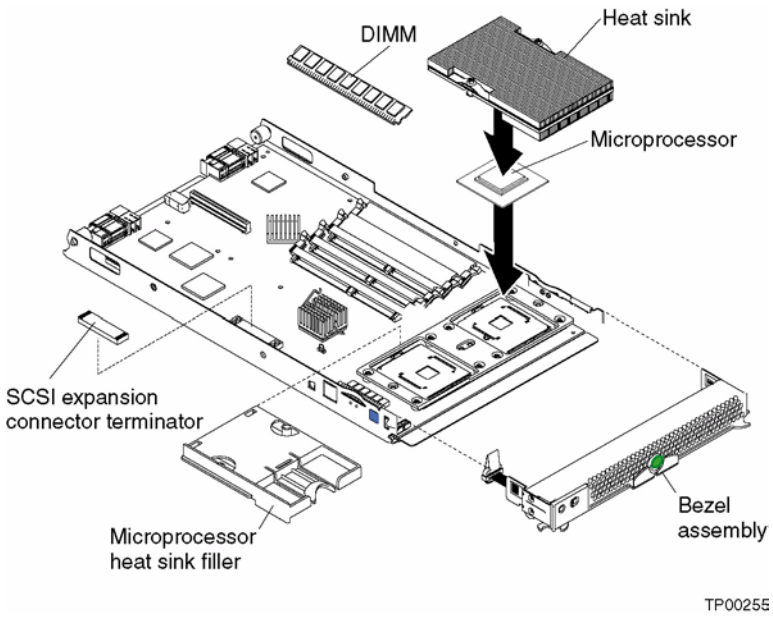
Do not ship the NovaScale Blade 2020 server in the NovaScale Blade Chassis. It must be shipped separately, in the original packaging to avoid damage.

Major components of the NovaScale Blade 2020 blade server

The following illustration shows the locations of major components in your blade server. You need to remove the blade server from the NovaScale Blade Chassis and remove the blade server cover to see the components.

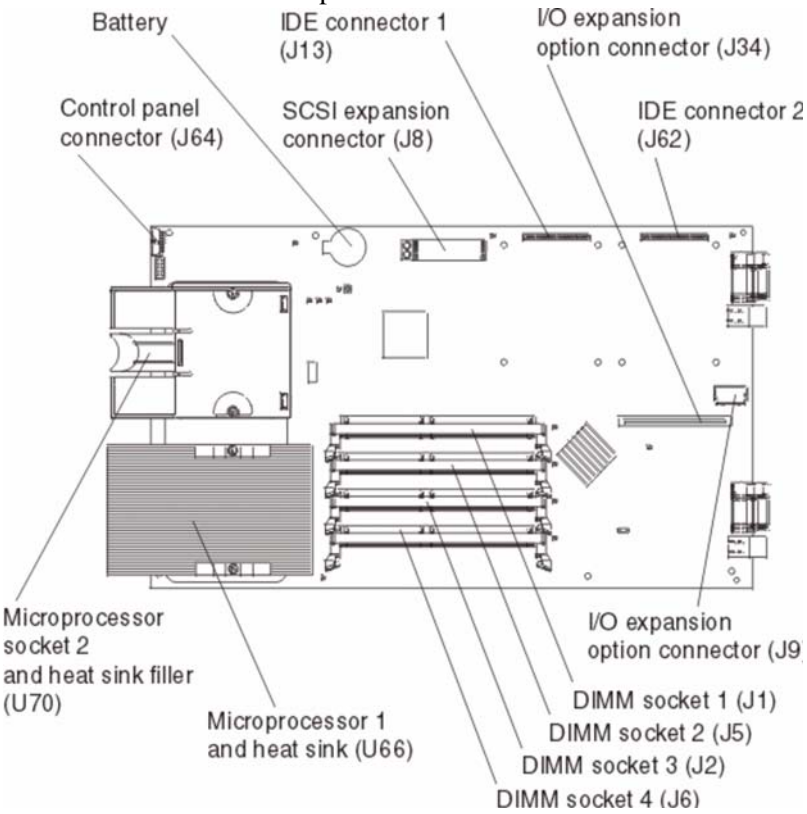
✏ NOTE

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



System board illustration

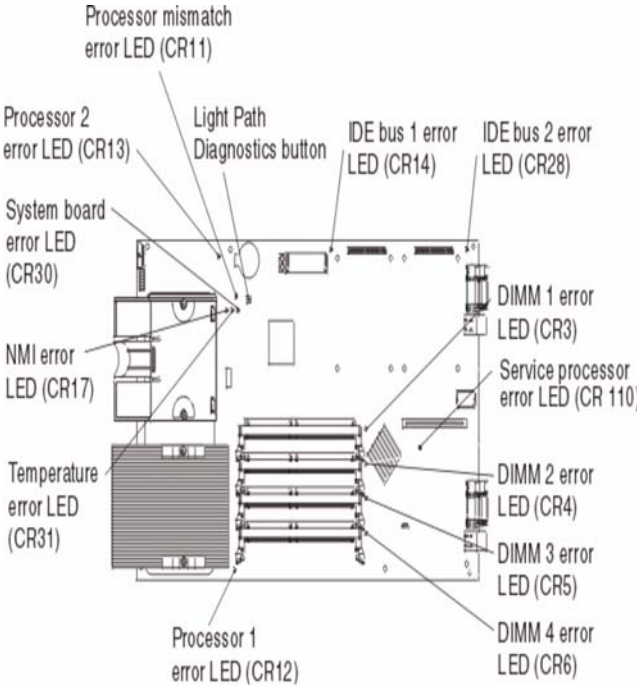
The following illustration shows the location of the system-board components, including connectors for user-installable options.



✏ The SCSI expansion connector requires a terminator on it unless an expansion option is connected to it.

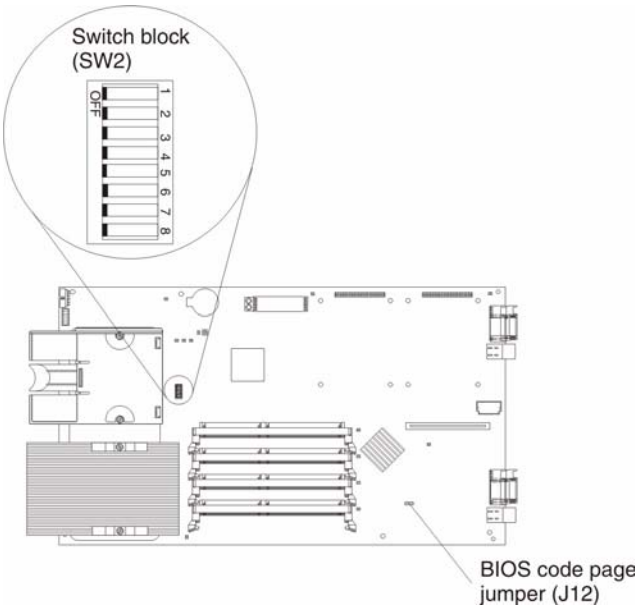
System board LED locations

The following illustration shows the location of the LEDs on the system board. You might need to refer to this illustration when solving problems with the blade server. You need to remove the blade server from the NovaScale Blade Chassis unit, open the cover, and press the Light Path Diagnostics button to light any error LEDs that were turned on during processing. The LEDs will remain lit for a maximum of 25 seconds.



Switches and jumpers

The following illustration shows the location of the switches and jumpers on the system board.



Switches

Table 1. describes the function of each switch on the switch block.

Table 1. Switches 1-8

Switch number	Default value	Switch description
8	Off	Power-on password override. Changing the position of this switch bypasses the power-on password check the next time the blade server is turned on and starts the Configuration/Setup Utility program so that you can change or delete the power-on password. You do not need to move the switch back to the default position after the password is overridden. See “Using passwords” on page 42 for additional information about the power-on password.
7	Off	Reserved
6	Off	Reserved.
5	Off	Power-on override. When toggled to On, this switch forces the blade server to turn on, overriding the power-on button.
1 to 4	Off	Reserved.

Jumpers

When the BIOS code page jumper (J12) is moved from pins 1 and 2 to pins 2 and 3, you can start the blade server from a backup BIOS page. The default position is pins 1 and 2. See the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for complete details.

✏ NOTE

If you start the blade server from the backup page because the primary BIOS page has become damaged, you need to flash the primary BIOS code.

2 Blade server 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.

Turning on the blade server

After you connect the NovaScale Blade Chassis unit to ac power, 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) to start the server.

  Notes:

  1. After you plug the power cords of your NovaScale Blade Chassis unit into the electrical outlets, wait until the power-on LED on the blade server flashes slowly before pressing the blade server power-control button. During this time, the service processor in the NovaScale Blade Chassis management module is initializing; therefore, the power-control button on the blade does not respond.
  2. While the blade server is powering up, the power-on LED on the front of the server is lit. See “Blade server controls and LEDs” on page 12 for the power-on LED states.

- If a power failure occurs, the NovaScale Blade Chassis unit and then the blade server can start automatically when power is restored (if the blade server is configured through the NovaScale Blade Chassis management module to do so).
- You can turn on the blade server remotely by means of the service processor in the NovaScale Blade Chassis management module.
- If your operating system supports the Wake on LAN feature and the blade server power-on LED is flashing slowly, the Wake on LAN feature can turn on the blade server under the following conditions:
  - The Wake on LAN feature has not been disabled through the management module Web interface.
  - If the blade server was previously turned on, the operating system was shut down properly.

Turning off the blade server

When you turn off the blade server, it is still connected to ac power through the NovaScale Blade Chassis unit. 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 NovaScale Blade Chassis unit.

Shut down your operating system before you turn off the blade server. See your operating-system documentation for information about shutting down the operating system. Improper shutdown of a blade server will not allow that blade server to be restarted using Wake on LAN.

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). This starts an orderly shutdown of the operating system, if this feature is supported by your operating system.

  ✏ **NOTE**

  After turning off the blade server, wait at least 5 seconds before you press the power-control button to turn on the blade server again.

- 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.

✏ **NOTE**

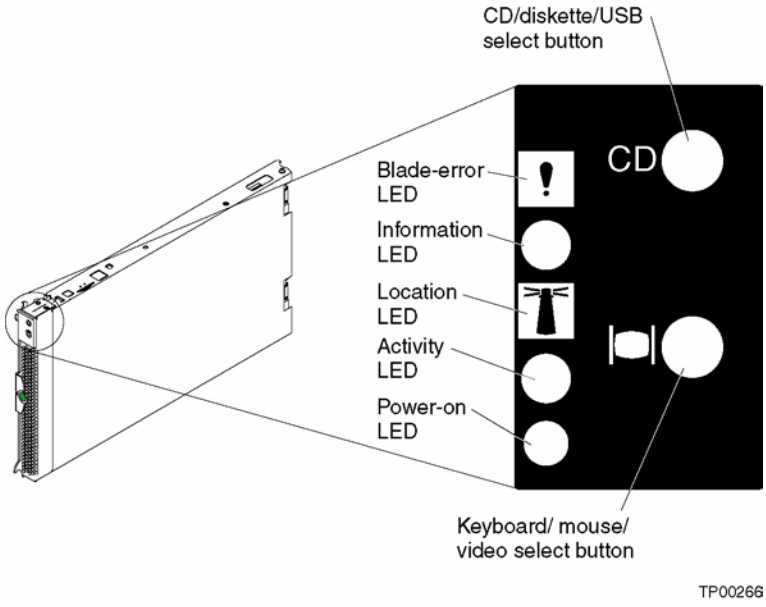
After turning off the blade server, wait at least 30 seconds for it to stop running before you remove the blade server from the NovaScale Blade Chassis unit.

Blade server controls and LEDs

This section describes the controls and light-emitting diodes (LEDs) on your blade server.

✏ **NOTE**

The control panel door is shown in the closed (normal) position in this illustration.



CD/diskette/USB select button: Press this button to associate the CD-ROM drive, diskette drive, and USB port with this blade server. The LED on this button flashes while the request is being processed, then is steady when the ownership of the CD-ROM drive, diskette drive, and USB port has been transferred to this blade server. It can take approximately 20 seconds for the operating system in this blade server to recognize the CD-ROM drive, diskette drive, and USB port.

Blade-error LED: When this amber LED is lit, it indicates that a system error has occurred in the blade server.

Information LED: When this amber LED is lit, it indicates that information about a system error for this blade server has been placed in the NovaScale Blade Chassis system error log.

Location LED: When this blue LED is lit, it has been turned on remotely by the system administrator to aid in visually locating the blade server. The location LED on the NovaScale Blade Chassis unit will be on also.

Activity LED: When this green LED is on, it indicates that there is hard-disk-drive or network activity.

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

- Flashing rapidly - The service processor on the blade server is handshaking with the NovaScale Blade Chassis management module.
- Flashing slowly - The blade server has ac power but is not turned on.
- Lit continuously - The blade server has ac power and is turned on.

Keyboard/mouse/video select button: Press this button to associate the keyboard port, mouse port, and video port with this blade server. The LED on this button flashes while the request is being processed, then is steady when the ownership of the keyboard, mouse, and video has been transferred to this blade server.

You can also press keyboard keys in the following sequence to switch KVM control between blade servers:

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

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

Notes:

1. The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The NovaScale Blade Chassis unit uses USB for internal communication with these devices.
2. It can take approximately 20 seconds to switch the keyboard, video, and mouse or the CD-ROM drive, diskette drive, and USB port to the blade server.
3. Although the keyboard attached to the NovaScale Blade Chassis unit is a PS/2-style keyboard, communication with it is through a USB bus. When you are running an operating system that does not have USB drivers, such as in the following instances, the keyboard responds very slowly.
    - Running the blade server integrated diagnostics
    - Running a BIOS update diskette on a blade server
    - Updating the diagnostics on a blade server
4. If you install Microsoft Windows 2003 on the blade server while it is not the current owner of the keyboard, video, and mouse, a delay of up to one minute occurs the first time you switch the keyboard, video, and mouse to the blade server. During this one-time-only delay, the blade server Device Manager enumerates the keyboard, video, and mouse and loads the device drivers. All subsequent switching takes place in the normal keyboard-video-mouse switching time frame.

5. The blade-error LED, information LED, and location LED can be turned off through the NovaScale Blade Chassis management-module Web interface.

Power-control button: This button is located behind the control panel door. Press this button to manually turn the blade server on or off.

✏ **NOTE**

This button has effect only if local power control is enabled for the blade server. Local power control is enabled and disabled through the NovaScale Blade Chassis management module Web interface.

3 Installing options

This chapter provides instructions for adding options to your blade server. Some option-removal instructions are provided in case you need to remove one option to install another.

Installation guidelines

Before you begin to install options in your blade server, read the following information:

- Read the safety information beginning on page iii and the guidelines in "Handling static-sensitive devices." This information will help you work safely with your blade server and options.
- Back up all important data before you make changes to disk drives.
- Before you remove a hot-swap blade server from the NovaScale Blade Chassis unit, you must shut down the operating system and turn off the blade server. You do not have to shut down the NovaScale Blade Chassis unit itself.

System reliability considerations

To help ensure proper cooling and system reliability, make sure that all microprocessor sockets always contain either the microprocessor heat sink filler or a microprocessor and heat sink.

Handling static-sensitive devices

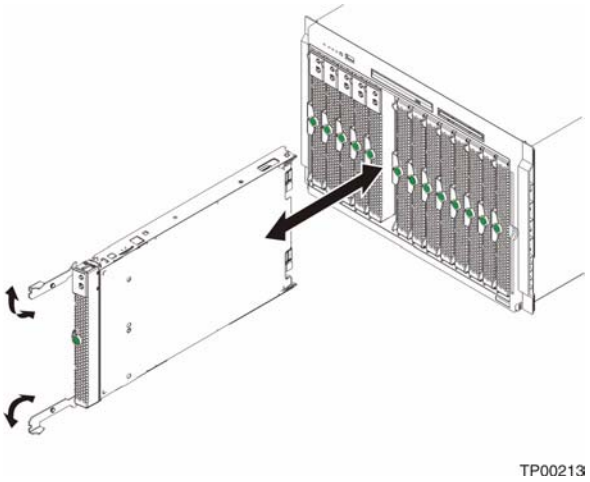
Attention: Static electricity can damage electronic devices and your system. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

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

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the system unit for at least two seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your system unit without setting it down. If it is necessary to set the device down, place it in its static-protective package. Do not place the device on your blade server cover or on a metal table.
- Take additional care when handling devices during cold weather because heating reduces indoor humidity and increases static electricity.

Removing the blade server from the NovaScale Blade Chassis unit

The following illustration shows how to remove the blade server from the NovaScale Blade Chassis unit.



Attention:

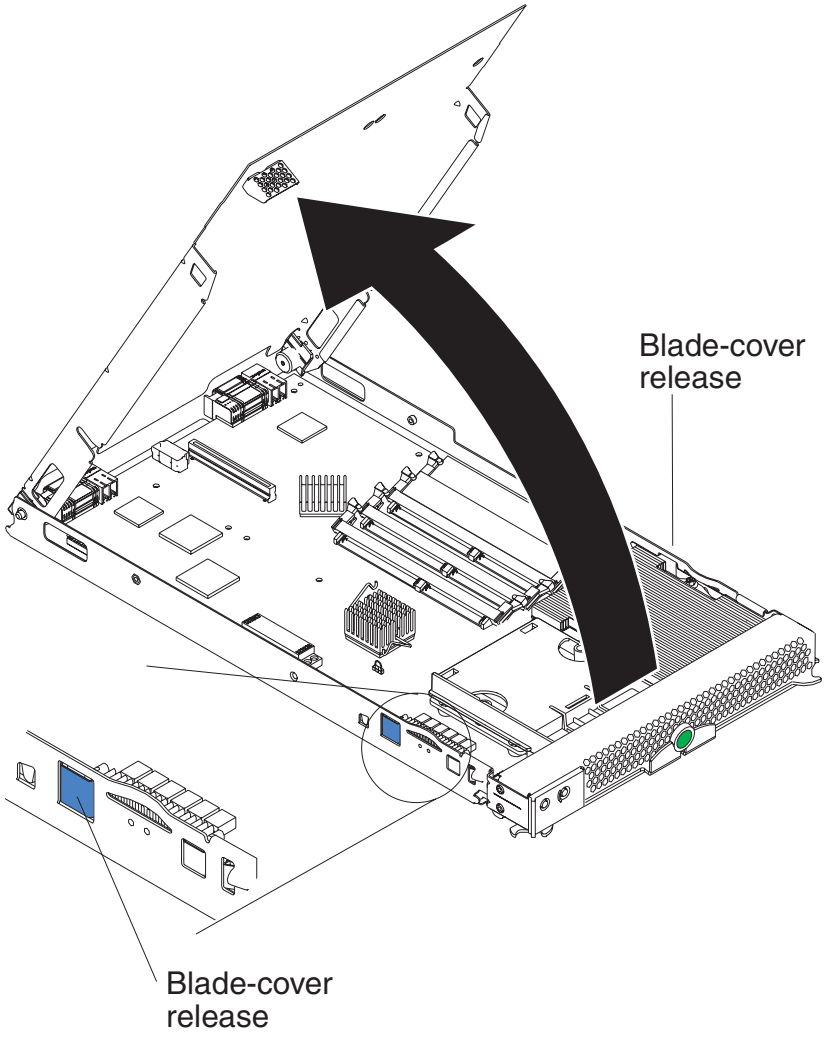
- To maintain proper system cooling, do not operate the NovaScale Blade Chassis unit for more than one minute without either a blade or a filler blade installed in each blade bay.
- Note the bay number. Reinstalling a blade server into a different bay than the one from which it was removed could have 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.

Complete the following steps to remove the blade server:

1. Press the power-control button (behind the blade server control panel door) to shut down the operating system and turn off the blade server. Wait at least 30 seconds, until the drives stop spinning, before proceeding to the next step. See “Blade server controls and LEDs” on page 12 for more information about the location of the power-control button.
2. Open the two release levers 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. Spring-loaded doors further back in the bay move into place to cover the bay temporarily.
4. Place either a filler blade or another blade in the bay within one minute. The recessed spring-loaded doors will move out of the way as you insert the blade or filler blade.

Opening the blade server cover

The following illustration shows how to open the cover on the blade server.



Complete the following steps to open the blade server cover:

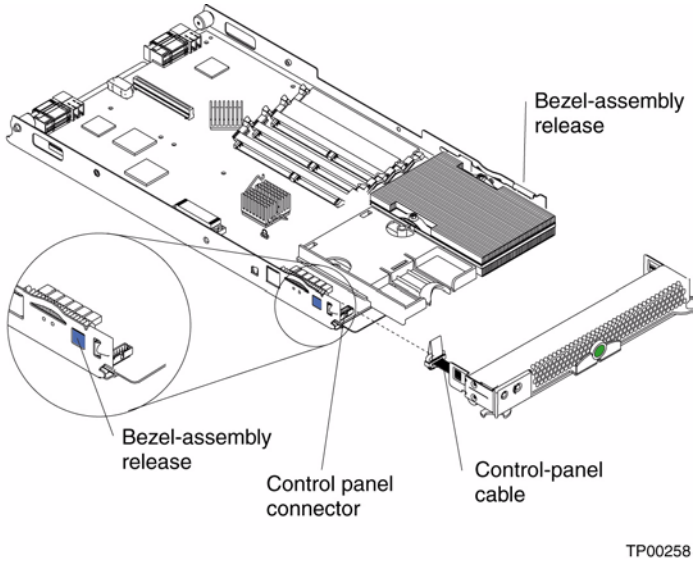
1. Review the information in “NovaScale Blade Chassis safety and regulatory information” beginning on page iii and “Installation guidelines” on page 15.
2. Carefully lay the blade server down on a flat, non-conductive surface, with the cover side up.
3. Press the blade-cover release on each side of the blade server and lift the cover open, as shown in the illustration.
4. Lay the cover flat, or lift it from the blade server.

CAUTION:

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

Removing the blade server bezel assembly

To install certain options you must first remove the blade server bezel assembly. The following illustration shows how to remove the bezel assembly from a blade server.



Complete the following steps to remove the blade server bezel assembly:

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Open the blade server cover.
3. Press the bezel-assembly release and pull the bezel assembly away from the blade server chassis approximately 1.2 cm (0.5 inch).
4. Disconnect the control-panel cable from the control-panel connector.
5. Pull the bezel assembly away from the blade server chassis.
6. Store the bezel assembly in a safe place.

Installing IDE hard disk drives

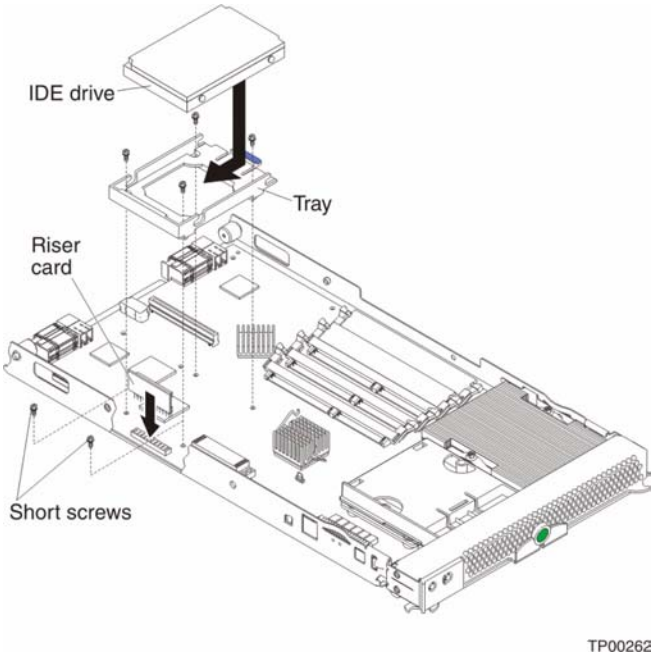
Your blade server has two connectors on the system board for installing optional 2.5-inch IDE hard disk drives. Each IDE connector is on a separate bus. Some models come with at least one IDE hard disk drive already installed.

Two IDE drives can be used to implement and manage RAID level-1 under both the Linux and Microsoft Windows 2003 operating systems.

✏ Important

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

Attention: To maintain proper system cooling, do not operate the NovaScale Blade Chassis unit for more than 1 minute without either a blade or a filler blade installed in each blade bay.



Complete the following steps to install a 2.5-inch IDE hard disk drive.

✏ NOTE

Do not install a drive into IDE connector 2 if you intend to also install an I/O expansion option. The I/O expansion option occupies the same area as the second IDE drive.

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit. See "Removing the blade server from the NovaScale Blade Chassis unit" on page 16 for instructions.
3. Carefully lay the blade server on a flat, non-conductive surface.
4. Open the blade server cover. See "Opening the blade server cover" on page 16 for instructions.
5. Insert the riser card from the option kit into an IDE connector on the blade server system board.

   Important: Drives must be installed in the following order: IDE connector 1 first, then IDE connector 2.
6. Place the hard disk drive tray from the option kit over the riser card as shown in the illustration, aligning the tray with the screw holes on the system board. Two of the screw holes have screws in them.
7. Remove the tray temporarily; then, remove the two screws from the screw holes on the system board and replace the tray. Secure the tray to the system board with screws from the kit.
8. Set any jumpers or switches on the drive.

   Important: Both IDE drives must be set to Master.

   Attention: Do not press on the top of the hard disk drive. Pressing the top could damage the drive.

9. Place the hard disk drive into the tray and push it, from the rear edge of the drive, into the connector on the riser card until the drive moves past the lever at the back of the tray. The drive clicks into place.
10. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 32.

Installing memory modules

You can increase the amount of memory in your blade server by installing memory-module options. When you install memory, you must install a pair of matched dual inline memory modules (DIMMs).

Notes:

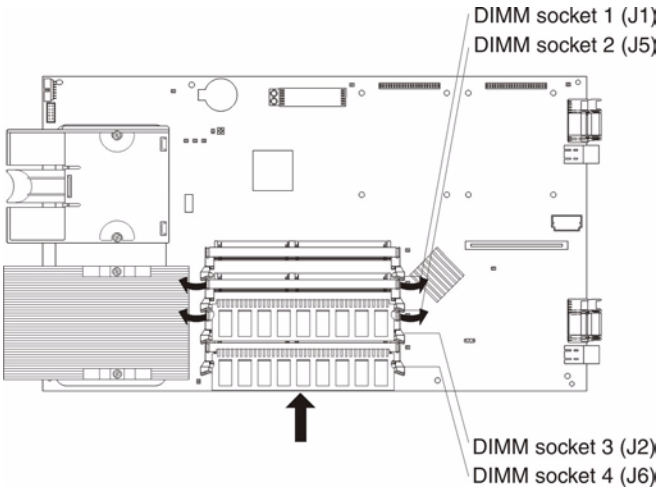
1. The system board contains four DIMM connectors and supports two-way memory interleaving.
2. The DIMM options available for your blade server are 256 MB, 512MB, and 1GB. Your blade server supports a minimum of 512 MB and a maximum of 4GB of system memory.

   Install DIMMs in the following order:

Pair	DIMM connectors
First	3 and 4 (J2, J6)
Second	1 and 2 (J1, J5)

   Both DIMMs in a pair must be the same size, speed, type, and technology. You can mix compatible DIMMs from various manufacturers on the Tested Memory list.
3. The second pair does not have to be DIMMs of the same size, speed, type, and technology as the first pair.
4. Install only 2.5 V, 184-pin, double-data-rate (DDR), PC2100, registered synchronous dynamic random-access memory (SDRAM) with error correcting code (ECC) DIMMs. These DIMMs must be compatible with the latest PC2100 SDRAM Registered DIMM specification, which is available from http://www.jedec.org/ on the World Wide Web.
5. PC2100 DIMMs are backward-compatible and work in the PC1600 sockets.
6. Installing or removing DIMMs changes the configuration information for the blade server. Therefore, after installing or removing a DIMM, you must change and save the new configuration information by using the Configuration/Setup Utility program. When you restart the blade server, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings**. See “Configuration/Setup Utility menu choices” on page 39 for more information.

The following illustration shows how to install DIMMs on the system board.



Before you begin, read the documentation that comes with your option.

Complete the following steps to install a DIMM:

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit. See "Removing the blade server from the NovaScale Blade Chassis unit" on page 16 for instructions.
3. Carefully lay the blade server on a flat, non-conductive surface.
4. Open the blade server cover. See "Opening the blade server cover" on page 16 for instructions.
5. Locate the DIMM connectors on the system board. Determine the connectors into which you will install the DIMMs. (See note 3 on page 20)
6. Touch the static-protective package that contains the DIMM option to any *unpainted* metal surface on the chassis or any *unpainted* surface on any other grounded rack component. Then, remove the DIMM from the package.
7. To install the DIMMs, repeat the following steps for each DIMM that you install:
   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. Insert the DIMM by pressing the DIMM along the guides into the connector. Be sure that the retaining clips snap into the closed positions.

      Important: If there is a gap between the DIMM and the retaining clips, the DIMM has not been properly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
8. If you have other options to install or remove, do so now; otherwise, go to "Completing the installation" on page 32.

Installing an additional microprocessor

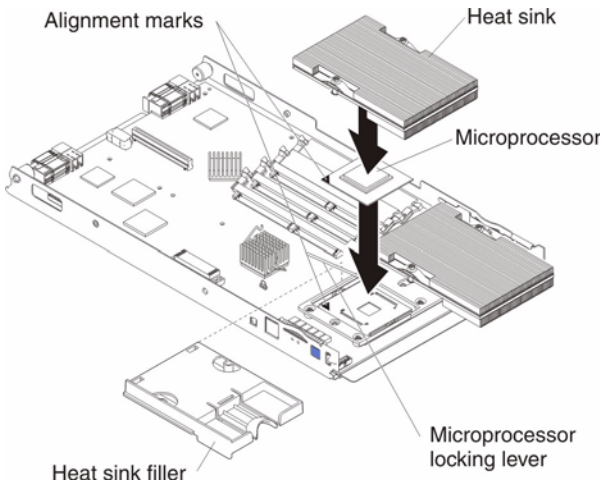
Your blade server supports two microprocessors. With two microprocessors, your blade server can operate as a symmetric multiprocessing (SMP) server. With SMP, certain operating systems and application programs can distribute the processing load between the microprocessors. To use SMP, obtain an SMP-capable operating system.

Attention: To ensure proper server operation when you install an additional microprocessor, use microprocessors that have the same cache size and type, and the same clock speed. Internal and external clock frequencies must be identical.

Notes:

1. Thoroughly review the documentation that comes with the microprocessor, so that you can determine whether you need to update the blade server BIOS code. Contact your Support Representative for more information.
2. The microprocessor sockets in this server contain built-in termination for the microprocessor bus; therefore, terminator cards are not required for empty microprocessor sockets. However, for proper air flow, an empty microprocessor socket must contain a microprocessor heat sink filler, sometimes called a microprocessor baffle.
3. The microprocessor speeds are automatically set for this server; therefore, you do not need to set any microprocessor frequency-selection jumpers or switches.

The following illustration shows how to install the second microprocessor on the system board.



Complete the following steps to install an additional microprocessor:

1. Review the information in"NovaScale Blade Chassis safety and regulatory information" beginning on page iii and “Installation guidelines” on page 15.
2. Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit. See “Removing the blade server from the NovaScale Blade Chassis unit” on page 16 for instructions.
3. Carefully lay the blade server on a flat, non-conductive surface.
4. Open the blade server cover (see “Opening the blade server cover” on page 16 for instructions).

5. Remove the bezel assembly (see “Removing the blade server bezel assembly” on page 18 for instructions).
6. Locate the microprocessor socket on the system board.
7. Remove the heat-sink filler.
8. Install the microprocessor:
   a. If the socket has a protective plastic sheet over the pin holes, remove the plastic sheet.
   b. Touch the static-protective package containing the new microprocessor to any *unpainted* metal surface on the chassis or any *unpainted* surface on any other grounded rack component; then, remove the microprocessor from the package.
   c. Pull out and lift up on the microprocessor-locking lever to unlock the microprocessor socket.
   d. Center the microprocessor over the microprocessor socket. Align the triangle on the corner of the microprocessor with the triangle on the corner of the socket and carefully press the microprocessor into the socket.

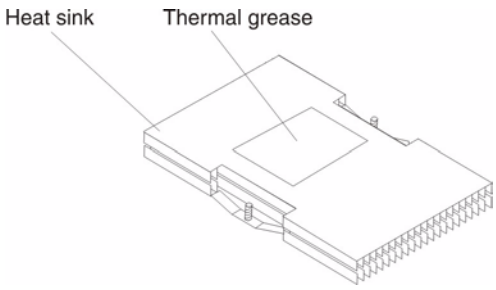
      Attention:

      - Do not use excessive force when pressing the microprocessor into the socket.
      - Make sure that the microprocessor is oriented and aligned correctly in the socket before you try to close the lever.

   e. Carefully close the lever to secure the microprocessor in the socket.
9. Install a heat sink on the microprocessor:
   a. Remove the plastic protective cover from the bottom of the heat sink.

      Notes:

      1) Do not set the heat sink down after you remove the plastic cover.



      2) Do not touch the thermal grease on the bottom of the heat sink. Touching the thermal grease will contaminate it. If the thermal grease on the microprocessor or heat sink becomes contaminated, contact your service technician.

   b. Align and place the heat sink on top of the microprocessor in the retention bracket, grease side down. Press firmly on the heat sink.
   c. Using a screwdriver, secure the heat sink to the retention bracket on the system board using the two captive mounting screws. Press firmly on the screws and tighten them, alternating between them. Do not overtighten the screws.

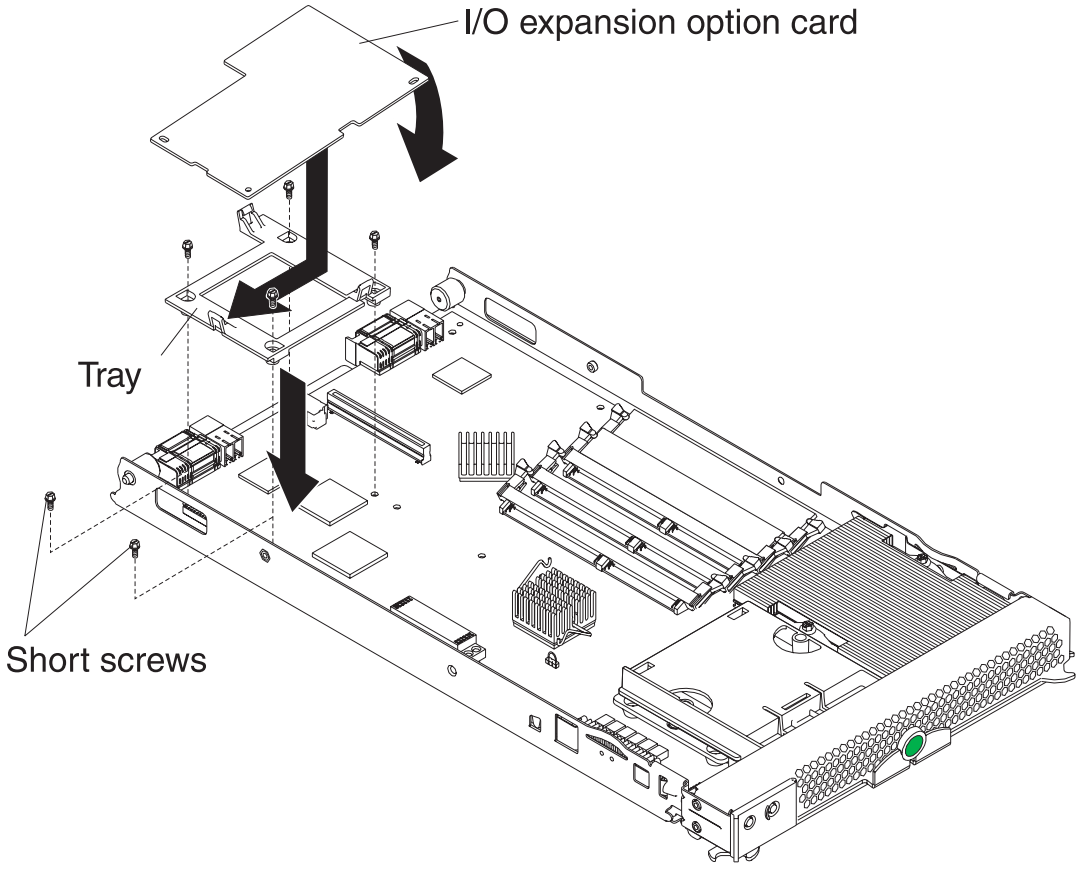
10. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 32.

Installing an I/O expansion option

You can add an I/O expansion option to your blade server to give the blade two additional network connections for communicating on a network.

Attention: When you add an I/O expansion option, you must make sure that the switch modules in switch module bays 3 and 4 on the NovaScale Blade Chassis unit are for the same interface. For example, if you add the Fibre Channel Expansion Card option to your blade server, the modules in switch module bays 3 and 4 on the NovaScale Blade Chassis unit must be Fibre Channel switches, such as the 2-Port Fibre Channel Switch Module, and all other I/O expansion options installed on other blade servers in the NovaScale Blade Chassis unit must also be Fibre Channel interfaces.

The following illustration shows how to install an I/O expansion option on the blade server. The option is installed near IDE connector 2.



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Complete the following steps to install an I/O expansion option:

1. Review the information in “NovaScale Blade Chassis safety and regulatory information” beginning on page iii and “Installation guidelines” on page 15.

2. Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit (see “Removing the blade server from the NovaScale Blade Chassis unit” on page 16 for information).
3. Carefully lay the blade server on a flat, non-conductive surface.
4. Open the cover (see “Opening the blade server cover” on page 16 for instructions).
5. If an IDE hard disk drive is in IDE connector 2, remove the drive and tray (save the screws that secured the tray to the system board); otherwise, remove the two screws near IDE connector 2 that secure the system board to the chassis, as shown in the illustration.
6. Install the I/O expansion option:
   a. Install the I/O expansion option tray. Secure the tray to the system board with the screws from the option kit, as shown in the illustration.
   b. Orient the I/O expansion option as shown in the illustration.
   c. Slide the notch in the narrow end of the option into the raised hook on the tray; then, gently pivot the wide end of the option into the I/O expansion option connectors, as shown in the illustration.

   ✏ **NOTE**

   For device driver and configuration information to complete the installation of the I/O expansion option, see the documentation that comes with the option. Some documentation might also be on the *Resource* CD that comes with the NovaScale Blade Chassis unit.
7. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 32.

Installing a SCSI storage expansion unit

To use SCSI hard disk drives with your blade server, install a SCSI storage expansion unit, such as the SCSI Storage Expansion Unit, on the blade server. You will then be able to install two 3.5-inch, hot-swap, SCSI, 1-inch (26 mm) slim-high hard disk drives in the expansion unit, for use by the blade server. The SCSI Storage Expansion Unit contains a SCSI controller that supports embedded mirroring, which is similar to RAID level 1.

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

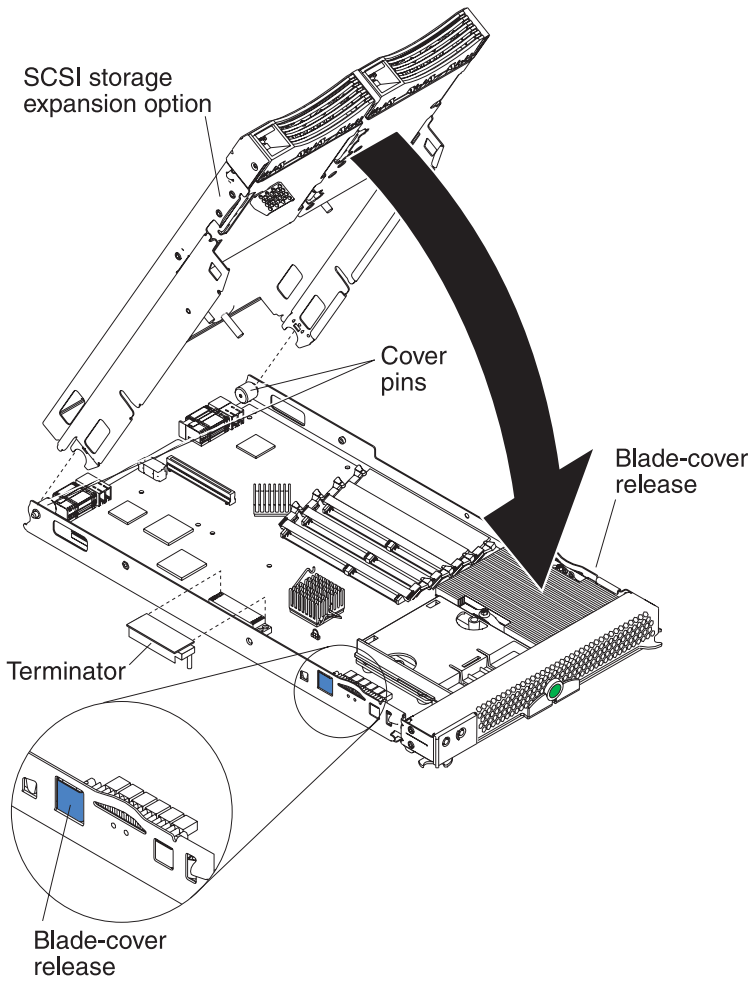
✏ **Important**

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

Notes:

1. After you install the SCSI storage expansion unit on your blade server, the blade server and expansion unit are a unit that occupies two blade bays in the NovaScale Blade Chassis unit.
2. To ensure proper cooling and system reliability, make sure that each of the SCSI hard disk drive bays on the SCSI storage expansion unit contains either a hot-swap SCSI hard disk drive or a filler panel.

The following illustration shows how to install the SCSI storage expansion unit on the blade server.



Complete the following steps to install the SCSI storage expansion unit:

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit (see "Removing the blade server from the NovaScale Blade Chassis unit" on page 16 for instructions).
3. Carefully lay the blade server on a flat, non-conductive surface.
4. Remove the blade server cover.
   a. Open the blade server cover (see "Opening the blade server cover" on page 16 for instructions) and lift it off the blade server.
   b. Store the cover in a safe place.
5. Locate the SCSI connector on the system board and remove the terminator from the connector.
6. Install the SCSI storage expansion unit:
   a. Orient the storage expansion unit as shown in the illustration.

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

c. Pivot the storage expansion unit closed and press it firmly into place until the cover-release latches click. The connector on the expansion unit automatically aligns with and plugs into the SCSI expansion connector (J8) on the system board.

7. Insert the combined blade and expansion unit into two adjacent NovaScale Blade Chassis bays.

✏ NOTE

When any blade or option is in blade bay 7 through 14, power modules must be present in power bays 1 and 2, *and* power modules must be present in power bays 3 and 4.

8. Turn on the blade server.
9. If you have not already done so, install the LSI device drivers for your operating system. LSI device drivers are on the *Resource* CD that comes with the NovaScale Blade Chassis.

With the storage expansion unit installed on your blade server, you can install up to two hot-swap SCSI hard disk drives in the option and configure them for embedded mirroring (RAID level1). Each SCSI device must have a unique SCSI ID. This ID enables the SCSI controller in the expansion option to identify the device and ensure that different devices on the same SCSI channel do not attempt to transfer data simultaneously. The SCSI IDs for the hard disk drives in the expansion unit are permanent (not configurable). Table 2. lists the SCSI IDs for the hard disk drives that are installed in the expansion unit. See “Installing a SCSI hot-swap hard disk drive” for instructions for installing hard disk drives.

Device	SCSI ID
Drive bay 1	0
Drive bay 2	1

Table 2. SCSI IDs for hot-swap hard disk drives in the expansion unit

✏ NOTE

SCSI ID 7 is usually reserved for the SCSI controller.

Use the Configuration/Setup Utility program in the blade server to enable or disable the SCSI controller in the storage expansion unit. See the documentation that comes with the storage expansion unit for information about configuring the storage expansion unit and SCSI hard disk drives.

Installing a SCSI hot-swap hard disk drive

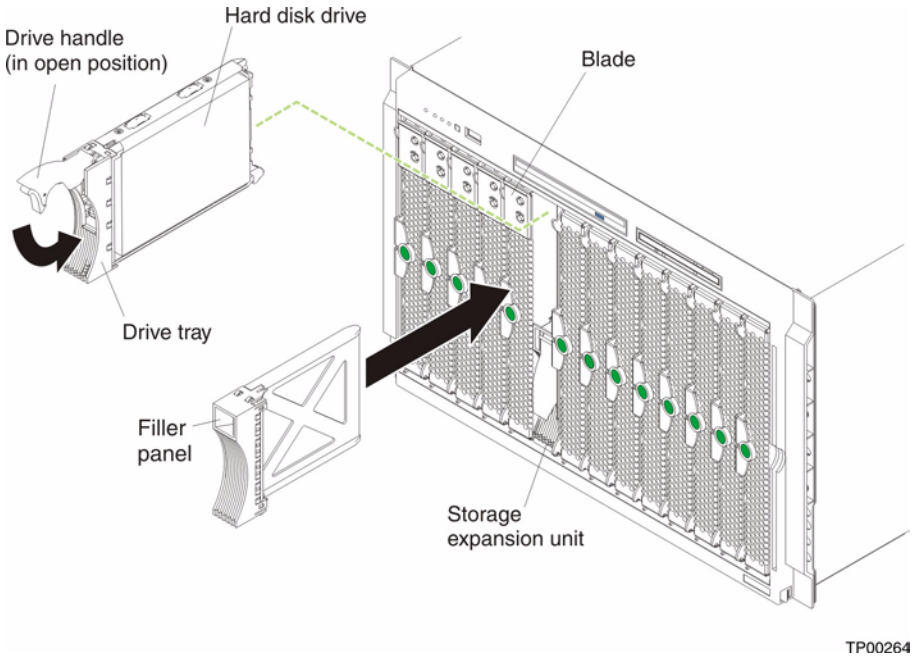
If you have installed a SCSI storage expansion unit on the blade server, you can install up to two SCSI hot-swap hard disk drives in the bays in the expansion unit.

If a hot-swap hard disk drive in the expansion unit fails, you can replace it without turning off the blade server. Therefore, you have the advantage of continuing to operate your blade server while a hard disk drive in this unit is removed or installed.

Each hot-swap drive has two indicator LEDs. If the amber hard disk drive status LED for a drive is lit continuously, that drive is faulty and must be replaced.

Each hot-swap drive that you plan to install must be mounted in a hot-swap-drive tray. The drive must have a Single Connector Attachment (SCA) connector. Hot-swap-drive trays come with hot-swap drives.

The following illustration shows how to install a SCSI hot-swap hard disk drive.



Complete the following steps to install a drive in a storage expansion unit.

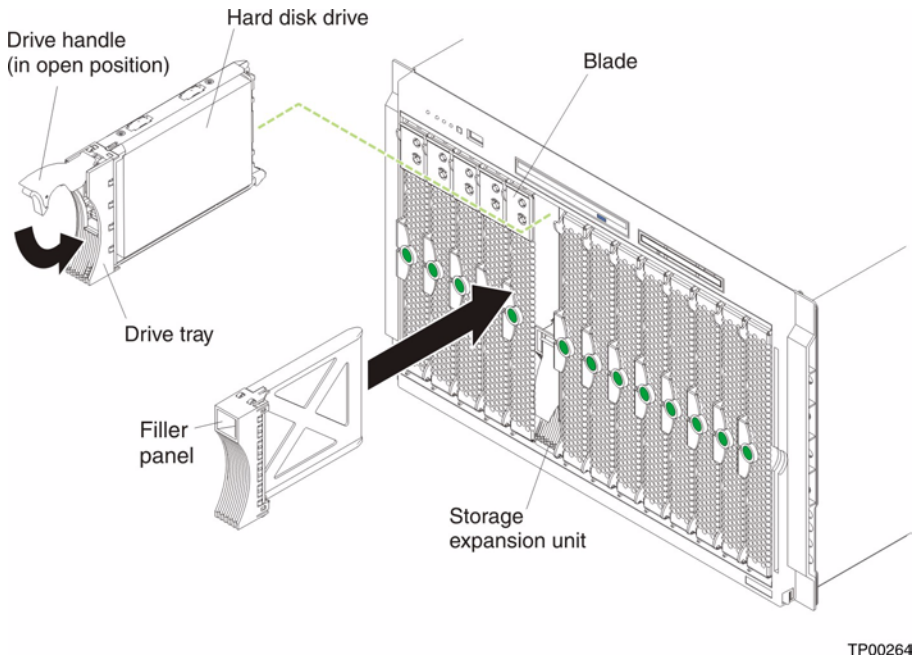
Attention: To maintain proper system cooling, do not operate the NovaScale Blade Chassis unit for more than one minute without either a drive or a filler panel installed in each storage expansion unit bay.

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Remove the filler panel from one of the empty hot-swap bays by inserting your finger into the depression at the top of the filler panel and pulling it away from the expansion unit.
3. Install the hard disk drive:
   a. Ensure that the tray handle is open (that is, perpendicular to the drive).
   b. Align the drive assembly with the guide rails in the bay.
   c. Gently push the drive assembly into the bay until the drive stops.
   d. Push the tray handle to the closed (locked) position.
   e. Check the hard disk drive LEDs to verify that the hard disk drive is operating properly.
      - If the amber hard disk drive status LED for a drive is lit continuously, that drive is faulty and needs to be replaced.
      - If the green hard disk drive activity LED is flashing, the drive is being accessed.

See the documentation that comes with the expansion unit for information about configuring the expansion unit and SCSI hard disk drives.

Replacing a SCSI hot-swap hard disk drive

If a hard disk drive in the storage expansion unit fails, you can replace it without turning off the blade server.



Complete the following steps to replace a drive in a storage expansion unit hot-swap bay.

Attention: To maintain proper system cooling, do not operate the NovaScale Blade Chassis unit for more than one minute without either a drive or a filler panel installed in each storage expansion unit bay.

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Locate the defective drive (look for an amber status LED on the front of the drive).
3. Make sure the drive has stopped spinning.
4. Move the handle on the drive to the open position (perpendicular to the drive), and pull the hot-swap drive assembly from the bay.
5. Within 1 minute, install the replacement hard disk drive in the hot-swap bay (see "Installing a SCSI hot-swap hard disk drive" on page 27 for instructions).

Replacing the battery

This product was designed with your safety in mind. The lithium battery must be handled correctly to avoid possible danger. If you replace the battery, you must adhere to the following instructions.

If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration. Batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative, to be recycled or disposed of in a proper manner.

✏ **NOTE**

After you replace the battery, you must reconfigure your blade server and reset the system date and time.

CAUTION:

When replacing the lithium battery, replace 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.

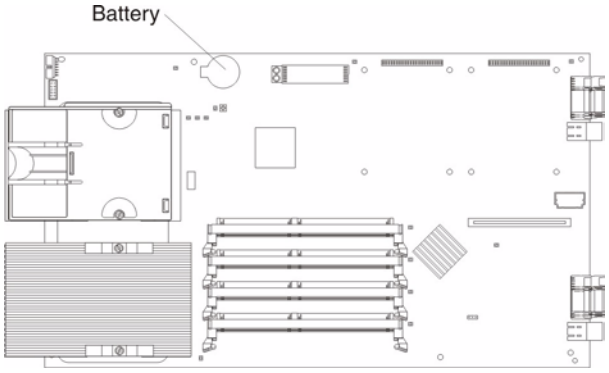
Do not:

- 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.

Complete the following steps to replace the battery:

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. Follow any special handling and installation instructions supplied with the battery.
3. Turn off the blade server and remove the blade from the NovaScale Blade Chassis unit (see "Removing the blade server from the NovaScale Blade Chassis unit" on page 16 for instructions).
4. Open the blade server cover (see "Opening the blade server cover" on page 16 for instructions).
5. Locate the battery on the system board.

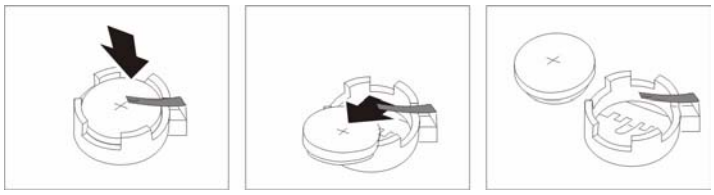


6. Remove the battery:
   a. Use one finger to lift the battery clip over the battery.

b. Use one finger to slightly slide the battery out from its socket. The spring mechanism will push the battery out toward you as you slide it from the socket.

c. Use your thumb and index finger to pull the battery from under the battery clip.

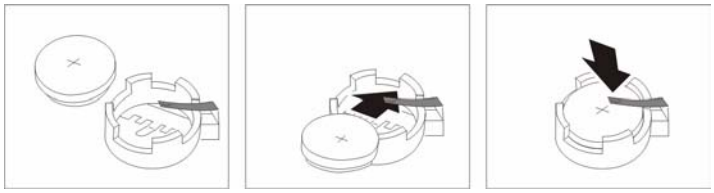
d. Ensure that the battery clip is touching the base of the battery socket by pressing gently on the clip.



7. Insert the new battery:

   a. Tilt the battery so that you can insert it into the socket, under the battery clip.

   b. As you slide it under the battery clip, press the battery down into the socket.



8. Close the blade server cover (see “Closing the blade server cover” on page 33).

CAUTION:

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

9. Reinsert the blade server into the bay in the NovaScale Blade Chassis unit.
10. Turn on the blade server.
11. Start the blade server Configuration/Setup Utility program and set configuration parameters as needed. See “Using the Configuration/Setup Utility program” on page 39 for information.

Completing the installation

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

1. Reinstall the blade server bezel assembly if you removed it.
2. Close the blade server cover (unless you installed the SCSI storage expansion unit option).

CAUTION:

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

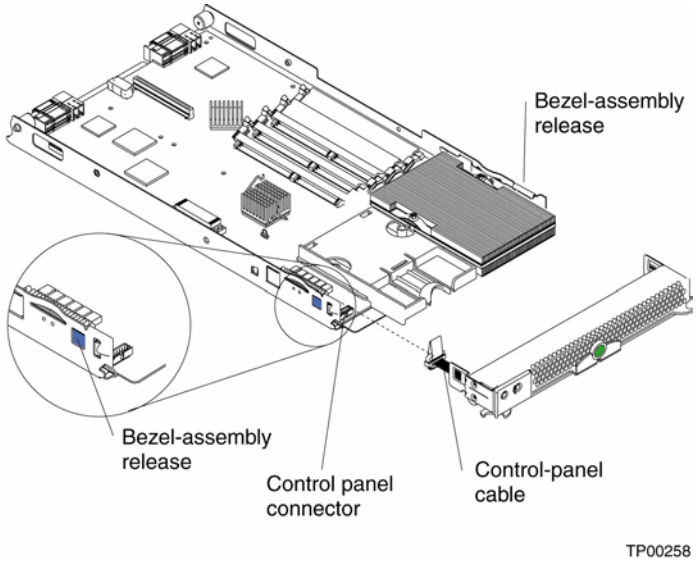
3. Reinstall the blade server into the NovaScale Blade Chassis unit.
4. Turn on the blade server.
5. For certain options, run the blade server Configuration/Setup Utility program.

✏ NOTE

If you have just plugged the power cords of your NovaScale Blade Chassis unit into electrical outlets, you will have to wait until the power-on LED on the blade server flashes slowly before pressing the power-control button on a blade server.

Installing the blade server bezel assembly

The following illustration shows how to install the bezel assembly on the blade server.



Complete the following steps to install the blade server bezel assembly.

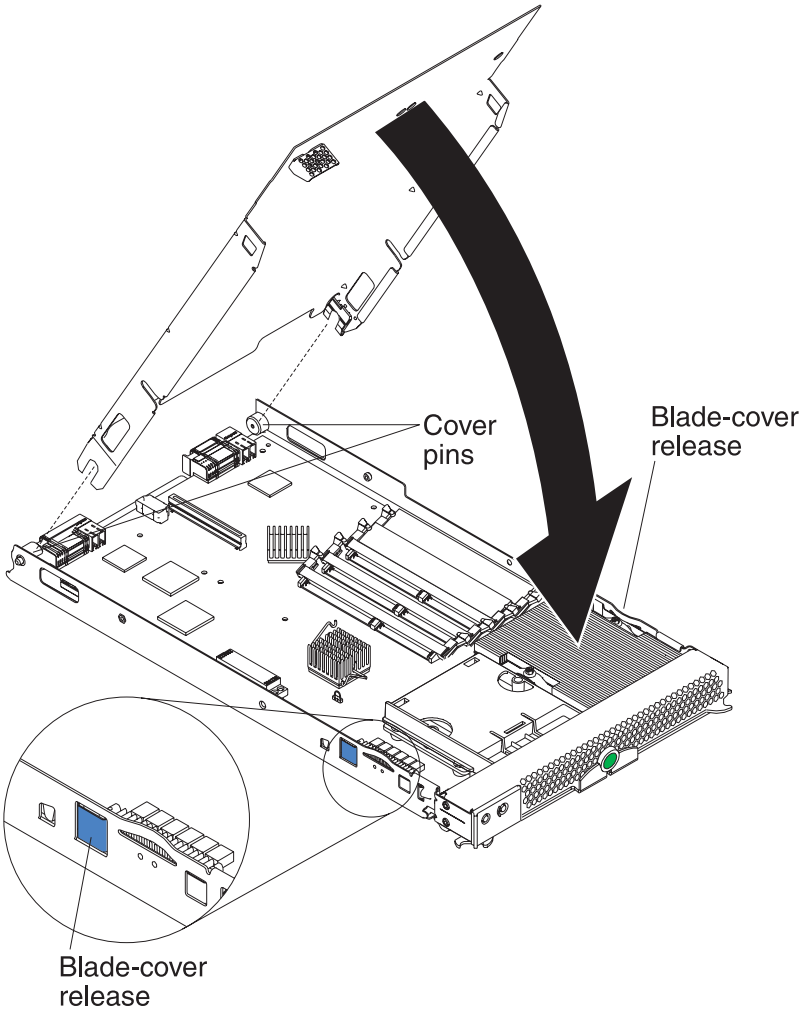
1. Review the information in “NovaScale Blade Chassis safety and regulatory information” beginning on page iii and “Installation guidelines” on page 15.
2. Connect the control-panel cable to the control-panel connector on the system board.

3. Carefully slide the bezel assembly onto the blade as shown in the illustration, until it clicks into place.

Closing the blade server cover

Important: The blade server cannot be inserted into the NovaScale Blade Chassis unit until the cover is installed and closed, or a SCSI storage expansion unit is installed. Do not attempt to override this protection.

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



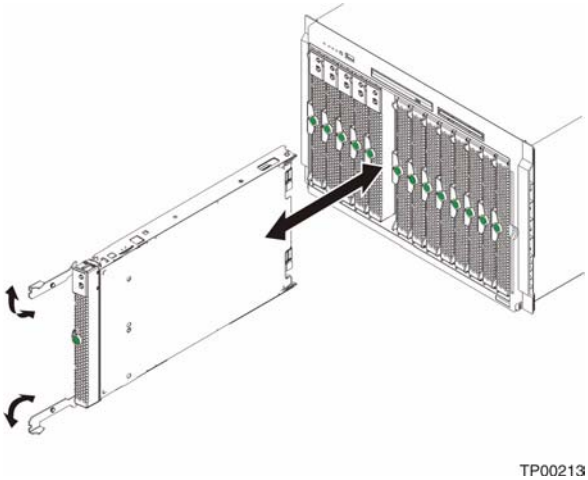
TP00265

Complete the following steps to close the blade server cover:

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" beginning on page iii and "Installation guidelines" on page 15.
2. If you removed the blade bezel assembly, replace it now. See "Installing the blade server bezel assembly" on page 32 for instructions.

3. 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 closing the cover, check that all components are installed and seated correctly and that you have not left loose tools or parts inside the blade server.
4. Pivot the cover to the closed position as shown in the illustration, until it clicks into place.

Installing the blade server in the NovaScale Blade Chassis unit



Complete the following steps to install a blade in the NovaScale Blade Chassis unit.

CAUTION:

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

1. Review the information in "NovaScale Blade Chassis safety and regulatory information" on page iii and "Installation guidelines" on page 15 through "Handling static-sensitive devices" on page 15.
2. If you have not done so already, install any options needed, such as disk drives or memory, in the blade server.
3. Select the bay for the blade server.

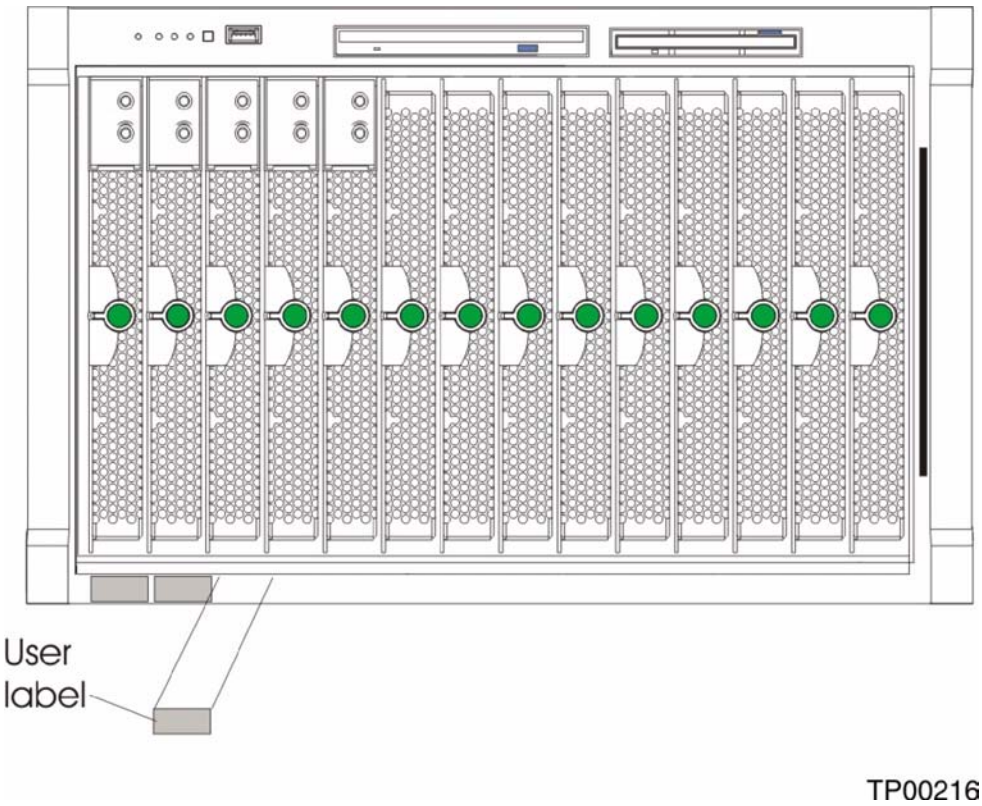
   Notes:

   a. If the blade server has a SCSI storage expansion unit installed on it, the blade server and expansion option require two adjacent bays.

   b. When any blade or option is in blade bay 7 through 14, power modules must be present in power bays 1 and 2, *and* power modules must be present in power bays 3 and 4.

   c. To help ensure proper cooling, performance, and system reliability, make sure that each of the blade bays on the front of the NovaScale Blade Chassis unit has a blade server, expansion unit, or filler blade installed. Do not operate the NovaScale Blade Chassis unit for more than one minute without either a blade server, expansion unit, or filler blade installed in each blade bay.

4. Ensure that the release levers on the blade server are in the open position (perpendicular to the blade).
5. Slide the blade server into the bay until it stops. The spring-loaded doors further back in the bay that cover the bay opening move out of the way as you insert the blade server.
6. Push the release levers on the front of the blade server closed.
7. Turn on the blade server. See “Turning on the blade server” on page 11 for instructions.
8. Verify that the power-on LED on the blade control panel is lit continuously, indicating that the blade server is receiving power and is turned on.
9. If desired, write identifying information on one of the user labels that come with the blade server; then, place the label on the NovaScale Blade Chassis bezel just below the blade server, as shown in the following illustration.



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

10. If you have other blades to install, do so now.

Attention: If you reinstall a blade that you removed, you must install it in the same 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 bay than the one from which it was removed could have unintended consequences and you might need to reconfigure the blade server.

If this is the initial installation for a blade server in the NovaScale Blade Chassis unit, you need to configure the blade server with the blade server Configuration/Setup Utility and install the blade server operating system. See “Updating your blade server configuration” and Chapter 5, “Installing the operating system,” on page 47 for details.

Updating your blade server configuration

When you start your blade server for the first time after you add or remove an internal option or an external SCSI device (if the storage expansion unit has been installed), you might see a message telling you that the configuration has changed. The blade server Configuration/Setup Utility program automatically starts so that you can save the new configuration information. See “Using the Configuration/Setup Utility program” on page 39 for more information about the Configuration/Setup Utility program.

Some options have device drivers that you need to install. See the documentation that comes with your option for information about installing any required device drivers.

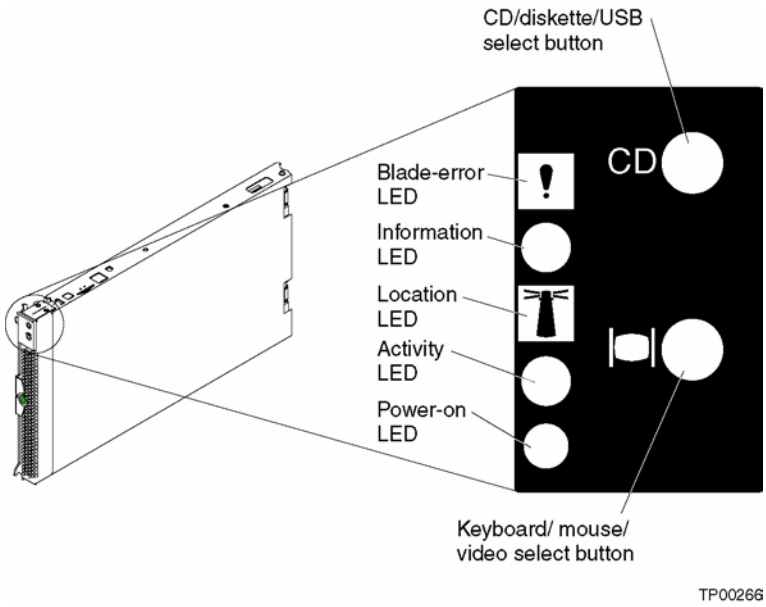
If you populate a blade server with two microprocessors, your blade server can now operate as an SMP server. Therefore, you might need to upgrade your operating system to support SMP. See Chapter 5, “Installing the operating system,” on page 47 and your operating-system documentation for additional information.

Input/output connectors and devices

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

The blade server has two selection buttons on the control panel:

and



- To switch the keyboard, video, and mouse to the blade server, press the button.
- To switch the CD-ROM, diskette drive, and USB port to the blade server, press the CD button.

If there is no response when you press a select button, you can use the management module Web interface to see if local power control has been disabled on the blade server.

Notes:

1. The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The NovaScale Blade Chassis unit uses USB for internal communication with these devices.
2. It can take approximately 20 seconds for the operating system in the switched-to blade server to recognize the CD-ROM drive, diskette drive, and USB port, or the keyboard, video, and mouse.
3. If you install Microsoft Windows 2003 on the blade server while it is not the current owner of the keyboard, video, and mouse, the first time the blade server requests ownership after the operating system has been installed, it can take up to one minute for the operating system to recognize the devices (this is a one-time-only occurrence).

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

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4 Configuring your blade server

The following configuration programs are provided with your blade server:

- **Configuration/Setup Utility program**

  This is part of the basic input/output system (BIOS) code in your blade server. Use it to change interrupt request (IRQ) settings, set the date and time, and set passwords. See “Using the Configuration/Setup Utility program” for more information.

- **PXE Boot Agent Utility program**

  The Preboot eXecution Environment (PXE) boot agent utility program is part of the BIOS code in the blade server. Use it to select the boot protocol and other boot options, to display the PXE setup prompt or to disable it, to set the prompt display duration, and to select a power management option. For information about using this utility, see “Using the PXE Boot Agent Utility program” on page 42.

Using the Configuration/Setup Utility program

This section provides the instructions to start the Configuration/Setup Utility program and descriptions of the menu choices.

Starting the Configuration/Setup Utility program

Complete the following steps to start the Configuration/Setup Utility program:

1. Turn on the blade server and watch the monitor screen.
2. When the message `Press F1 for Configuration/Setup` appears, press F1.
3. Follow the instructions that appear on the screen.

Configuration/Setup Utility menu choices

The following choices are on the Configuration/Setup Utility main menu. Depending on the version of the BIOS code in your blade server, 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 options in the Configuration/Setup Utility program, the changes are reflected in the system summary; you cannot change settings directly in the system summary.

  This choice is on the full and limited Configuration/Setup Utility menus.

- **System Information**

  Select this choice to display information about your 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.

  This choice is on the full Configuration/Setup Utility main menu.

— **Product Data**

Select this choice to view the product code and part number of your blade server, the serial number, and the revision level or issue date of the BIOS and diagnostics code 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.

  Select this choice to enable or disable the integrated IDE and Ethernet controllers.

  — The default setting is **Enable** for the IDE and Ethernet controllers. If you select **Disable**, the system will not configure the disabled device, and the operating system will not detect the device. (This is equivalent to unplugging the device.)

  — If the on-board IDE controller is disabled and no other controller and mass storage device are installed, operating-system startup cannot occur.

- **Date and Time**

  Select this choice to set the system date and time, in 24-hour format (*hour:minute:second*). This choice is on the full Configuration/Setup Utility main menu only.

  You can set a time to be added or subtracted from the system time that is sent to the service processor each time the blade server is started. Use the number keys to type the hours and minutes and + or – to add or subtract from the system time. If you want the system clock time to be the same as the service processor clock time, leave the value set at its default of 0.

- **System Security**

  Select this choice to set a power-on password. See “Using passwords” on page 42 for more information about the password.

- **Start Options**

  Select this choice to view or change the start options. This choice appears only on the full Configuration/Setup Utility main menu. Start options take effect when you start your 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 NovaScale Blade Chassis 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 Preboot eXecution Environment (PXE) option for either of the integrated Gigabit Ethernet controllers. The default setting for this menu item is **Enabled**, which enables the PXE option for the selected controller. To disable this option for a Gigabit Ethernet controller, select **Disabled**.

  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 server might malfunction if these options are incorrectly configured. Follow the instructions on the screen carefully.

  — **System Partition Visibility**

  Select this choice to specify whether the System Partition is to be visible or hidden.

  — **Memory Settings**

  Select this choice to manually enable a pair of memory DIMMs.

  If a memory error is detected during POST or memory configuration, the blade server automatically disables the failing memory pair and continues operating with reduced memory capacity. After the problem is corrected, you must manually enable the memory connectors. Use the arrow keys to highlight the rows representing the pair that you want to enable; then, use the arrow keys to select **Enable**.

  — **CPU Options**

  Select this choice to enable or disable the microprocessor cache. In addition, you can set the microprocessor cache mode to write-back (WB) or write-through (WT). Write-back caching generally provides better system performance.

  — **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.

  — **Integrated System Management Processor Settings**

  Select this choice to enable or disable the **Reboot on System NMI** option on the menu. If you enable this option, the blade server will automatically restart 60 seconds after the service processor issues a non-maskable interrupt (NMI) to the blade server.

- **Error Logs**

  Select this choice to view or clear the POST error log.

  — Select **POST Error Log** to view the three most recent error codes and messages that the system generated during POST.

  From the **POST Error Log** menu, select **Clear event/error logs** to clear the Error log.

- **Save Settings**

  Select this choice to save the changes you have made in the settings.

- **Restore Settings**

  Select this choice to cancel the changes you have made in the settings and restore the previous settings.

- **Load Default Settings**

  Select this choice to cancel the changes 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 you have made in the settings, you are asked whether you want to save the changes or exit without saving them.

Using passwords

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

Power-on password

If you set a power-on password, you must type the power-on password to complete the system startup, and you have access to the full 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 through one of the following methods:

- Remove the blade server battery and then reinstall it (see “Replacing the battery” on page 29).
- Change the position of the power-on password override switch (switch 8 on switch block 2 on the system board) to bypass the power-on password check the next time the blade server is turned on. You can then start the Configuration/Setup Utility program and change the power-on password. You do not need to move the switch back to the previous position after the password is overridden. See “Switches and jumpers” on page 9 for the location of switch block 2.

  ✏ **NOTE**

  Shut down the operating system, turn off the blade server, and remove the blade server from the NovaScale Blade Chassis unit to access the switches.

Using the PXE Boot Agent Utility program

This program is a built-in, menu-driven configuration utility program that you can use to:

- Select the boot protocol and other boot options
- Select whether to display the PXE setup prompt and the display duration
- Select a power management option

✏ **NOTE**

The RPL selection for the Boot Protocol option is not supported for this server.

Starting the PXE Boot Agent Utility program

Complete the following steps to start the PXE Boot Agent Utility program:

1. Turn on the server.
2. When the `Initializing Intel Boot Agent Version X.X (Dev Build XXX)` prompt appears, press Ctrl+S.

Notes:

a. If the PXE setup prompt does not display, use the Configuration/Setup Utility program to set the enable Ethernet PXE/DHCP option.

b. By default, you have 2 seconds after the prompt appears on the screen to press Ctrl+S.

3. Use the arrow keys or press "enter" to select a choice from the menu.
   - Press Esc to return to the previous menu.
   - Press the F4 key to exit.
4. Follow the instructions on the screen to change the settings of the selected items; then, press "enter".

Updating the service processor firmware

The service processor in your blade server provides the following features:

- Continuous health monitoring and control
- Configurable notification and alerts
- Event logs that are timestamped, saved in nonvolatile memory, and can be attached to e-mail alerts
- Remote graphics console redirection
- Point-to-point protocol (PPP) support
- Remote power control
- Remote firmware update and access to critical server settings
- Around-the-clock access to the blade server, even if the server is turned off

At some time, you might need to flash the service processor to apply the latest firmware. Use the NovaScale Blade Chassis management module Web interface to flash the service processor. The Web interface is described in the *NovaScale Blade Chassis Installation and User's Guide*, order number 86 A1 06EM.

Configuring the Gigabit Ethernet controllers

Two Ethernet controllers are integrated on the blade server system board. Each controller provides a 1000-Mbps full-duplex interface for connecting to the Ethernet switch modules, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN).

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

✏ NOTE

Enumeration of the Ethernet controllers is operating-system dependent. For example, the Ethernet controller located nearer the top of the blade server, whose communications are routed through Ethernet switch module 1, is designated as the first connection (or Local Area Connection) by Microsoft Windows 2003, but is designated as the second connection (or eth1)

by Red Hat* Linux* Version 9.0. The Ethernet controller located nearer the bottom of the blade server, whose communications are routed through Ethernet switch module 2, is designated as the second connection (or Local Area Connection 2) by Microsoft Windows 2003 but is designated as the first connection (or eth0) by Red Hat Linux Version 9.0. You can verify the designations through your operating system settings or by testing:

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

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

Your Ethernet controllers support failover, which provides automatic redundancy for your Ethernet controllers. You can configure either one of the integrated Ethernet controllers as the primary Ethernet controller. If you have configured the controllers for failover and the primary link fails, the secondary controller takes over. When the primary link is restored, the Ethernet traffic switches back to the primary Ethernet controller. (See your operating system device driver documentation for information about configuring for failover.)

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

NovaScale Blade 2020 BIOS Update Procedures

The procedure to update the NovaScale Blade 2020 BIOS is as follows:

1. Extract all bios files to a floppy diskette. Depending upon the version, you may be required to accept the licensing agreement in order to extract the files.
2. Insert the "NovaScale Blade 2020 BIOS Flash Disk" into drive A.
3. Start up or restart the NovaScale Blade 2020 Blade Server that is to be updated.
4. The system will boot off of the disk and present a window which allows you to flash various options. Choose "1 - Update POST/BIOS".
5. You will be asked if you would like to move the current POST/BIOS image to the backup ROM location. If you select 'Y', the current code will be flashed into the backup bank immediately.
6. If the current system POST/BIOS supports the Asset Tag feature, you will be asked if you would like to change it. If you select 'Y', you will be able to enter a new number.
7. You will then be asked if you would like to save the current code to a disk. If you select 'Y', you need to have a formatted disk already available, or specify a fully qualified path and file name.
8. At this point, the image will be loaded from the disk, and you will be asked to choose which language you wish to use during POST and in Setup. If you select a choice other than English, the selected language will be merged into the image. There is also an option to Quit the flash update on this menu.
9. After this completes the system will update the flash ROM with the new code. When this is complete you will be prompted to remove the disk and select return to reboot the system.

10. Once the system has restarted, confirm the version change by checking the BIOS revision shown under the "Firmware VPD " tab in the Management Module web interface. See the "Firmware VPD " section in the Management Module User's Guide.

NovaScale Blade 2020 Diagnostic Update Instructions

The procedure to update the NovaScale Blade 2020 Diagnostic flash code is as follows:

1. Extract all Diagnostic files to a floppy diskette. The Diagnostic code does not fit on one floppy disk, therefore two diskettes are required.
2. Insert the bootable "NovaScale Blade 2020 BIOS Flash Disk" into drive A. This is the same diskette used to flash the system bios.
3. Start up or restart the NovaScale Blade 2020 Blade Server that is to be updated.
4. The system will boot from the diskette and present a window which allows you the option to flash various components. Choose "2 - Update Diagnostic".
5. The system will prompt you to enter the first diskette containing the diagnostic code. Insert the "Diagnostics Flash Update Diskette 1 of 2" into drive A and select "enter".
6. After loading the image from the first diskette, the system will prompt you to insert the second diskette containing diagnostics code. Insert the "Diagnostics Flash Update Diskette 2 of 2" into drive A and select "enter".
7. After the second image is loaded from diskette, the system will ask you to wait while the images are flashed into ROM. When this is complete you will be prompted to remove the diskette and select "enter" to restart the system.
8. 8Once the system has restarted, confirm the version change by checking the Diagnostics revision shown under the "Firmware VPD " tab in the Management Module web interface. See the "Firmware VPD " section in the Management Module User's Guide.

NovaScale Blade 2020 Integrated System Management Processor Update Procedures

The procedure to update the NovaScale Blade 2020 System Management Processor is as follows:

1. Extract the latest files to a floppy diskette. Depending upon the version, you may be required to accept the licensing agreement in order to extract the files.
2. Insert the diskette into drive A, and restart the system. If your system does not boot from the diskette, use POST/BIOS setup to configure the disk drive as a boot device.
3. Start up or restart the NovaScale Blade 2020 Blade Server that is to be updated.
4. The system will boot and present a window which allows you the option to 0-Exit or 1-Update System Management Processor. Choose "1 - Update System Management Processor".
5. Select ""enter" to continue the flash update.
6. The system will continue the flash update and will display a progress indicator during the procedure. After the flash of the new code is complete, you will be prompted to remove the disk and select "Return" to reboot the system.

7. Once the system has restarted, confirm the version change by checking the System Management Processor revision shown under the "Firmware VPD " tab in the Management Module web interface. See the "Firmware VPD " section in the Management Module User's Guide.

✏ **NOTE**

The system management processor may also be updated remotely by the using the firmware update feature within the chassis management module web interface. See the Management Module User's Guide for more information.

5 Installing the operating system

This section outlines quick installation procedures for local operating system installations only.

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

Some operating systems, such as Red* Hat Linux* 9.0, permit you to select the type of mouse being used. If offered this choice, select USB instead of PS/2. Although the mouse is a PS/2-style device, communication with the mouse is through an internal USB bus in the chassis; therefore, the operating system in your blade server must recognize the mouse as a USB device.

✏ NOTE

- The operating system in the blade server must provide USB support for the blade server to recognize and use the keyboard, mouse, CD-ROM drive, and diskette drive. The NovaScale Blade Chassis unit uses USB for internal communication with these devices.
- It can take approximately 20 seconds to switch the keyboard, video, and mouse or the CD-ROM drive, diskette drive, and USB port to the blade server.
- Although the keyboard attached to the NovaScale Blade Chassis unit is a PS/2-style keyboard, communication with it is through a USB bus. When you are running an operating system that does not have USB drivers, such as in the following instances, the keyboard responds very slowly.
  - — Running the blade server integrated diagnostics
  - — Running a BIOS update diskette on a blade server
  - — Updating the diagnostics on a blade server
- If you install Microsoft Windows Server 2003 on the blade server while it is not the current owner of the keyboard, video, and mouse, a delay of up to one minute occurs the first time you switch the keyboard, video, and mouse to the blade server. During this one-time-only delay, the blade server Device Manager enumerates the keyboard, video, and mouse and loads the device drivers. All subsequent switching takes place in the normal keyboard-video-mouse switching time frame.

Microsoft* Windows* Server 2003 Enterprise Edition installation instructions

Complete the following steps to perform a basic installation of Microsoft Windows Server 2003 Enterprise Edition.

- On the blade server on which you are installing the operating system, press the CD select button to associate that blade server with the CD, diskette, and USB port. Then, press the KVM select button to associate that blade server with the keyboard, monitor, and mouse.

- Insert the Microsoft Windows Server 2003 Enterprise Edition CD into the CD-ROM drive. The blade server on which the installation will take place starts from the CD. The message "Setup is inspecting your blade server's hardware configuration" is displayed.
- If the blade server has a small computer system interface (SCSI) storage expansion unit installed, press F6 to install a SCSI or redundant array of independent disks (RAID) device driver. If the blade server does not have a SCSI storage expansion unit installed, continue with step 5. Prior to proceeding to step 5, extract the LSI drivers from the system resource cd.
- In the Setup window, specify a controller and press the S key to specify any additional devices you might want.
- When you are prompted to insert the manufacturer's hardware support diskette to install the onboard LSI SCSI controller, insert the diskette that contains the LSI Logic PCI SCS/FC device driver into the diskette drive and press Enter.
- Select the LSI Logic PCI SCSI/FC MPI Miniport device driver and press Enter.
- Specify any additional CD-ROM drives you want to use and press Enter.
- When the Setup window opens, press Enter to install Microsoft Windows Server 2003 Enterprise Edition.
- In the Licensing Agreement window, read the licensing agreement and press the Page Down key to scroll to the bottom of the window. Then, click "<F8> I Agree". All hard disk drives and drive partitions that are available on the blade server are displayed.
- Select one of the following partitioning options:
  - To create a partition on a hard disk drive in the blade server, highlight non-partitioned space for that hard disk drive, and press the C key. You are prompted to indicate how much available space you want to allocate from the non-partitioned drive. Type the amount of space (in MB) and press Enter.
  - To permanently delete a partition, to allow enough room to create new partitions, press the D key when the message "Are you sure you want to delete this partition?" is displayed. Press Enter. The same message is displayed again. Press the L key to permanently delete the partition.
  - To permanently delete a partition, to allow enough room to create new partitions, press the D key when the message "Are you sure you want to delete this partition?" is displayed. Press Enter. The same message is displayed again. Press the L key to permanently delete the partition.
  - When you are prompted to choose a file system, select NTFS file system unless you will configure the blade server for dual boot with an operating system that does not support NT File System (NTFS). The formatting process will take up to 20 minutes.
- The blade server restarts, and the setup wizard installs Microsoft Windows Server 2003 Enterprise Edition. When the installation is complete, the Welcome window opens.
- Click Next. Setup automatically installs device drivers and configures your blade server devices. This process takes several minutes to complete. Depending on the optional hardware that may be installed, it may be necessary to install device drivers from the appropriate resource cd for the installed item.

- In the Regional Settings and Language Options window, make the appropriate modification and click Next.

✏ NOTE

To modify your regional settings after you have installed Microsoft Windows Server 2003 Enterprise Edition, click Control Panel -> Regional Options and make the appropriate modification.

- In the Personalize Your Software window, in the Name field, type your name, and in the Organizations field, type the organization name. Click Next.

✏ NOTE

The names you type will be used as default blade server names. Applications that you install on the blade server will use the same information for the product registration and document identification.

- When you are prompted for the CD-Key, type the CD-Key in the applicable fields. Click Next
- In the Name and Administrator Password window, type the blade server name and password that you want and click Next. (Notice that Setup uses the organization name that you specified earlier as a suggested name for the blade server.)

✏ NOTE

Passwords are case sensitive. Use a combination of uppercase and lowercase letters with at least one number for your password.

Select or deselect the components you want to include in the installation process. To install a component, select the check box Next to the component. Components that you do not select will not be installed. Click Next.

In the Time Zone window, set the current time and zone. To change the date, click the button to the right of the date. To change the time, highlight the value you want to change and type the correct value, or use the Up Arrow and Down Arrow keys to make your selection. Click Next.

✏ NOTE

NOTE: Microsoft Windows Server 2003 Enterprise Edition performs many tasks that are dependent on accurate blade server time and date settings. Be sure to select the correct time zone for the blade server location to avoid problems.

Microsoft Windows Server 2003 Enterprise Edition will automatically install networking components. If prompted in the Networking Settings window, select either Typical or Custom Settings. If you are prompted, type the appropriate network information. Click Next. Disregard if not prompted for network settings and accept default settings. The network may be configured at a later time once the system installation has been completed.

In the Workgroup window or Windows Domain window, select one of the following options:

— No, this computer is not on a network, or it is a network without a domain.

— Yes, make this computer a member of the following domain

— Type the workgroup or domain name in the applicable field and click Next.

Setup installs and configures the remaining operating-system components according to the options you specified. The status is displayed in the Installing Component window. This process will take several minutes. Setup finishes copying the files and displays the status in the Performing Final Tasks window. This process takes several minutes.

- Remove the CD from the CD-ROM drive and click Finish. The blade server restarts.
- Press Ctrl+Alt+Delete and log on. The Server Wizard starts to help you set up and configure any additional server components on the blade server.

Red Hat* Linux* 9.0 Server installation instructions

Complete the following steps to perform a basic installation of Red Hat Linux 9.0 Server.

- On the blade server on which you are installing the operating system, press the CD select button to associate that blade server with the CD, diskette, and USB port. Then, press the KVM select button to associate that blade server with the keyboard, monitor, and mouse.
- Insert the Red Hat Linux 9.0 Server CD into the CD-ROM drive. The blade server on which the installation will take place starts from the CD.
- Select "Okay" to test media. At least

  ✏ **NOTE**

  NOTE: Do not switch the KVM from the blade server until the installation has proceeded to installing the packages after the About to Install window; otherwise, the mouse will lose functionality.
- Select "Graphical Mode" to begin
- Select "Okay" to test media. You must test at least one cd in order to proceed. If the media tests okay, proceed with the installation. select "Continue" to proceed.

  In the Welcome to Red Hat Linux Version 9.0 window, if you are using the NovaScale Blade 2020 blade server with SCSI hot-swap hard disk drives, load the Red Hat Linux 9.0 drvblock.img. The image may be obtained from your support representative or may be obtained from the NovaScale Blade 2020 resource CD. Copy the image to a diskette and insert the diskette into the diskette drive when the "Devices" window is displayed.
- In the "Language Selection" window, select the languages in which you want to install the operating system, and click Next.
- In the "Set Root Password" window, type and confirm your root password. Use the root password only for administration. Enter the root password for the system and click "Next" when finished.
- In the "Package Group Selection" window, select the Graphical User Interface (GUI) of choice. Select the package (application) groups that you want to install. Select Kernel Development if you are planning to recompile kernels at a later time.

- In the "About to Install" window note the caution. **Caution: Once you click "Next" the installation program will begin. This process can not be undone. If you have decided not to continue with this installation, this is the last point at which you can safely abort the installation process.** Click "Next".
- In the "Installing Packages " window, Red Hat Linux 9.0 starts the installation process.
- In the "Boot Disk Creation " window, insert a boot diskette into your floppy drive and select "Yes". Click "Next" to create a boot diskette.
- After completion of the boot diskette, installation is complete. Click next to reboot the system.
- Log in as root user

Automatic Server Restart (ASR) feature

Automatic Server Restart (ASR) is a feature that is used to recover from operating system hangs. This feature utilizes ASR hardware and the ASR software agent. The ASR hardware is a software timer that is under the control of the H8 server management controller on the NovaScale Blade 2020.

The ASR hardware is disabled on boot-up and remains disabled until the ASR software is installed. The ASR software agent is only available for Microsoft* Windows* on the NovaScale Blade 2020 product code and is comprised of an SMBus driver, one or more DLLs, and an ASR executable.

Once the ASR software is installed, it enables the ASR hardware and sets the ASR hardware timer to expire in 255 seconds. Every 10 seconds thereafter, the ASR software wakes up, resets the timer to 255 seconds and returns to sleep mode. This will continue as long as the operating system (OS) and the ASR agent are running. If the operating system should hang for any reason, there will be no ASR agent to reset the timer. Without the ASR agent to reset the timer, the timer will expire. The H8 server management controller monitors the OS and resets the server when the OS hangs. The net effect is a reboot of the system when the operating system hangs for any reason.

The timer is set to 255 seconds to allow enough time for the server to do a core dump before the ASR hardware restarts the server. Some operating systems can be set to dump memory when a hang or crash condition is detected. Otherwise, crash information is lost when the server is rebooted during the crash dump.

When the user performs a controlled or graceful shutdown of the OS on the NovaScale Blade 2020, the ASR software disables the ASR hardware before exiting. This action ensures that ASR hardware does not restart the server if the server is only "downed" into a subordinate OS (such as MS-DOS*).

ASR Install and Uninstall Instructions

The ASR agent software package is located on the NovaScale Blade 2020 Resource CD. The latest ASR agent can also be downloaded from the Intel Business Link Support site. Contact your support representative for additional details.

To install the ASR agent under Microsoft* Windows*:

1.Execute the ASR installation program.
2.Follow the directions that appear on the screen.

Note: If the Microsoft* Windows* Hardware Wizard starts up before or during the installation of the ASR agent (because it has detected the System Management hardware) then close the Hardware Wizard by clicking the "Cancel" button. The actions of the Hardware Wizard are not needed.

To uninstall the ASR agent under Microsoft* Windows*:

1.Execute the ASR installation program with the following command line parameters: /a /U. For example: ATP400A.EXE /a /U
2.Follow the directions that appear on the screen

6 Solving problems

This section provides basic troubleshooting information to help you solve some common problems that might occur while setting up your blade server.

If you cannot locate and correct the problem using the information in this section, see the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide*, order number 86 A1 04EM, for more information.

Diagnostic tools overview

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

- **POST beep codes**

  The power-on self-test beep codes indicate the detection of a problem.

  — One beep indicates successful completion of POST.
  — More than one beep indicates that POST detected a problem. Error messages also appear during startup if POST detects a hardware-configuration problem.

  See "POST beep code descriptions" and the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for more information.

- **Troubleshooting chart**

  This chart lists problem symptoms and steps to correct the problems. See the "Troubleshooting chart" on page 56 for more information.

- **Diagnostic programs and error messages**

  The system diagnostic programs are provided in ROM. These programs test the major components of your blade server.

  ✏ **NOTE**

  See the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for more information.

- **Light Path Diagnostics feature**

  Use the Light Path Diagnostics feature to identify system errors quickly.

POST beep code descriptions

POST emits one beep to signal successful completion. If POST detects a problem during startup, other beep codes might occur. You can use the following beep code descriptions to help identify and resolve problems that are detected during startup.

✏ **NOTE**

See the "Solving problems" section of the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for more information about the POST beep codes.

One beep

Indicates successful completion of POST.

Repeating long beeps

Indicates that a memory error has occurred. Ensure that all DIMMs are correctly installed.

One long beep and two short beeps

Indicates that a video error has occurred and the BIOS code cannot initialize the video screen to display any additional information.

Table 3. POST beep code descriptions

Beep code	Descriptions of the POST beep codes
1-1-4	BIOS ROM checksum in-progress or failure. **Action:** 1. Move the BIOS code page jumper (J12) to pins 2 and 3 to boot from the backup BIOS code page. 2. Restart the blade server and flash the BIOS code. 3. Move the BIOS code page jumper back to pins 1 and 2 and restart the blade server. If the problem remains, contact your Support Representative.
All other beep codes	1. Verify that the system memory modules are installed correctly. 2. Turn off the blade server; then, restart the blade server. If the problem remains, contact your Support Representative.

POST error messages

The following table provides an abbreviated list of the error messages that might appear during POST.

✏ NOTE

See the "Solving problems" section of the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for more information about the POST error messages.

Table 4. Abbreviated list of POST error messages

POST message	Failing device or problem found	Suggested action
161	Real-time clock battery has failed	Replace the battery yourself or call for service.
162	Change in device configuration	Verify that your optional devices are turned on and installed correctly.
163	Time of day has not been set	Set the correct date and time.
289	Failing DIMM was disabled	Verify that your memory is correct for your blade server and that it is installed properly.

Table 4. Abbreviated list of POST error messages (continued)

POST message	Failing device or problem found	Suggested action
301 303	Keyboard and keyboard controller	Ensure that the keyboard cable is connected and nothing is resting on the keyboard keys.
962	Parallel port configuration error	Start the Configuration/Setup program and verify that the parallel-port setting is correct.
11*xx*	Serial port error	Verify that the serial cable is connected correctly.
1162	Serial port configuration conflict	Start the Configuration/Setup program and ensure that the IRQ and I/O port assignments needed by the serial port are available.
1800	PCI adapter hardware interrupt	Start the Configuration/Setup program and verify that the interrupt resource settings are correct.
2400 2462	Video controller and memory	Verify that the monitor is connected correctly.
00019*xxx*	Processor *x* is not functioning or failed the built-in test	Verify that processor *x* is installed correctly. If the problem remains, replace processor *x*.
00180*xxx*	A PCI adapter requested a resource that is not available	Start the Configuration/Setup program and ensure that the resources needed by the PCI adapter are available.
01295085	ECC-checking hardware test failed	Have the system board serviced.
012980*xx* 012981*xx*	Data for processor *x*	Download and install the latest system BIOS code level.
01298200	Microprocessor speed mismatch	Install microprocessors with identical speeds.
I9990305	POST could not find an operating system.	Install your operating system.

Troubleshooting chart

The following table lists problem symptoms and suggested solutions. See the *NovaScale Blade 2020 Hardware Maintenance Manual and Troubleshooting Guide* for more detailed troubleshooting charts. If you cannot find the problem in the troubleshooting charts, run the diagnostic programs. If you have run the diagnostic test programs, or if running the tests does not reveal the problem, contact your Support Representative.

Table 5. Troubleshooting charts

Device	Suggested action
Monitor Note: The monitor remains blank until directed to a blade server that is powered on; this is normal behavior.	
The monitor goes blank when you direct it to a working blade server, or goes blank when you start some application programs in the blade servers.	Verify that the monitor cable is connected to the video port on the NovaScale Blade Chassis management module. Some monitors have their own self-tests. If you suspect a problem with your monitor, see the information that comes with the monitor for adjusting and testing instructions. If you still cannot find the problem, try using the monitor with another blade server. If the problem persists, see the *NovaScale Blade Chassis Hardware Maintenance Manual and Troubleshooting Guide*.
The screen is blank.	Verify that: 1. The system power cord is plugged into the NovaScale Blade Chassis power module and a working electrical outlet. 2. The monitor cables are connected properly. 3. The monitor is turned on and the brightness and contrast controls are adjusted correctly. Important: In some memory configurations, the 3-3-3 beep code might sound during POST followed by a blank display screen. If this occurs and the Boot Fail Count feature in the Start Options of the Configuration/Setup Utility program is set to Enabled (its default setting), you must restart the server three times to force the system BIOS to reset the CMOS values to the default memory configuration (memory connector or bank of connectors Enabled) If the items above are correct and the screen remains blank, contact your Support Representative.
Only the cursor appears.	Verify that the keyboard, video, and mouse on the NovaScale Blade Chassis unit have not been switched to another blade server. If the problem remains, contact your Support Representative.

Table 5. Troubleshooting charts (continued)

Device	Suggested action
The screen is wavy, unreadable, rolling, distorted, or has screen jitter.	If the monitor self-tests show the monitor is working properly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) Then move the device and the monitor at least 305 mm (12 in.) apart. Turn on the monitor. **Notes:** 1. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.). 2. Some monitor cables might cause unpredictable problems. If the problem remains, contact your Support Representative.
Wrong characters appear on the screen.	If the wrong language is displayed, update the firmware or operating system with the correct language in the blade server that has ownership of the monitor. If the problem remains, contact your Support Representative.
Mouse	
The mouse does not work.	• Make sure that the mouse cable is securely connected to the NovaScale Blade Chassis management module, and that the keyboard and mouse cables are not reversed. • Verify that the mouse works correctly with other blade servers. • Verify that the mouse is recognized as a USB device, not PS2, by your blade server. Although the mouse is a PS2-style device, communication with the mouse is through an internal USB bus in the NovaScale Blade Chassis chassis. Some operating systems permit you to select the type of mouse during installation of the operating system. Select USB. If the problem remains, contact your Support Representative.

Table 5. Troubleshooting charts (continued)

Device	Suggested action
Power	
The blade server does not turn on.	Verify that: 1. The power LED on the front of the NovaScale Blade Chassis unit is on. 2. The LEDs on all the NovaScale Blade Chassis power modules are on. 3. If the blade server or attached storage expansion unit is in blade bay 7-14, power modules are in power bays 1, 2, 3 and 4. 4. The power-on LED on the blade server control panel is blinking slowly. • If the power LED is blinking rapidly and continues to do so, the blade server is not communicating with the management module; reseat the blade server. • If the power LED is off, the blade bay is not receiving power or the blade server is defective; call for service. 5. Local power control for the blade server is enabled (use the NovaScale Blade Chassis management module Web interface to verify), or the blade server was instructed through the management module to turn on. If you just installed an option in the blade server, remove it, and restart the blade server. If the blade server now turns on, you might have installed more options than the power to that blade bay supports. Try another blade server in the blade bay. If the problem remains, contact your Support Representative.

Table 5. Troubleshooting charts (continued)

Device	Suggested action
Memory problems	
The amount of system memory displayed is less than the amount of physical memory installed.	Verify that: • The memory modules are seated properly. • You have installed the correct type of memory. • If you changed the memory, you updated the memory configuration with the Configuration/Setup Utility program. • All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank when it detected a problem or a DIMM bank could have been manually disabled. Look in the POST error log for error message 289: • If the DIMM was disabled by a system-management interrupt (SMI), replace the DIMM. • If the DIMM was disabled by the user or by POST: 1. Start the Configuration/Setup Utility program. 2. Enable the DIMM. 3. Save the configuration and restart the server. • If you continue to get this error, replace the DIMM. If the problem remains, contact your Support Representative.
Microprocessor problems	
The blade server emits a continuous tone during POST.	The startup (boot) microprocessor is not working properly. Verify that the startup microprocessor is seated properly. If it is, replace the startup microprocessor. If the problem remains,contact your Support Representative.
Network connection problems	
One or more blade servers are unable to communicate with the network.	Verify that: • The switch modules for the network interface being used are installed in the correct NovaScale Blade Chassis bays and are configured and operating correctly. See the *NovaScale Blade Chassis Hardware Maintenance Manual and Troubleshooting Guide* for details. • The settings in the switch module are appropriate for the blade server (settings in the switch module are blade-specific). If you installed an I/O expansion option, verify that: • The option is designed for the blade server. • You followed the installation instructions that came with the option. • The option is installed correctly. • You have not loosened any other installed options or cables. • You updated the configuration information in the Configuration/Setup Utility program. Whenever memory or an option is changed, you must update the configuration. If the problem remains, contact your Support Representative.

Table 5. Troubleshooting charts (continued)

Device	Suggested action
Option problems	
An option that was just installed does not work.	Verify that: • The option is designed for the blade server. • You followed the installation instructions that came with the option. • The option is installed correctly. • You have not loosened any other installed options or cables. If the problem remains, contact your Support Representative.
An option that used to work does not work now.	Verify that all of the option hardware and cable connections are secure. If the option comes with its own test instructions, use those instructions to test the option. If the problem remains, contact your Support Representative.
Service processor problems	
Service processor in the management module reports a general monitor failure.	Disconnect the NovaScale Blade Chassis unit from all electrical sources, wait for 30 seconds, reconnect the NovaScale Blade Chassis unit to the electrical sources, and restart the server. If a problem remains, contact your Support Representative.

Light Path Diagnostics feature overview

If the system-error LED on the system LED panel on the front or rear of the NovaScale Blade Chassis unit is lit, one or more error LEDs on the NovaScale Blade Chassis components also might be on. These LEDs help identify the cause of the problem.

Identifying problems using the Light Path Diagnostics

This section provides the information to identify, using the Light Path Diagnostics, problems that might arise during installation.

To locate the actual component that caused the error, you must locate the lit error LED on that component.

For example:

A blade error has occurred and you have noted that the blade server blade-error LED is lit on the blade server control panel. You then:

1. Remove the blade server from the NovaScale Blade Chassis unit.
2. Place the blade server on a flat, non-conductive surface.
3. Remove the cover from the blade server.
4. Press and hold the Light Path Diagnostics button to relight the LEDs that were lit before you removed the blade server from the NovaScale Blade Chassis unit. The LEDs will remain lit for as long as you press the button, to a maximum of 25 seconds.

See “System board LED locations” on page 9 for the location of the Light Path Diagnostics button and error LEDs, then see the “Light Path Diagnostics table”

Light Path Diagnostics table

Use the following table to help determine the cause of the error and the action you should take.

Table 6. Light Path Diagnostics

Lit LED	Cause	Action
None	An error has occurred and cannot be isolated, or the service processor has failed.	An error has occurred that is not represented by a Light Path Diagnostics LED. Check the system error log for more information about the error.
DIMM *x* error	A memory error occurred.	Replace the DIMM indicated by the lit DIMM failure LED. If the problem remains, have the blade server serviced.
Processor *x* error	The microprocessor has failed.	Verify that the microprocessor indicated by the lit LED is installed correctly. (See “Installing an additional microprocessor” on page 22 for installation instructions). If the problem remains, have the microprocessor replaced.
Temperature error	The system temperature has exceeded a threshold level.	1. Check to see if a blower on the NovaScale Blade Chassis unit has failed. If it has, replace the fan. 2. Make sure the room temperature is not too high. (See “Features and specifications” on page 4 for temperature information.) If the problem remains, have the blade server serviced.
Voltage error	The integrated VRM on the blade server system board has failed.	Replace the blade server cover, reinsert the blade server in the NovaScale Blade Chassis unit, and then restart the server. If the problem remains, have the blade server serviced.
IDE bus *x* error	The IDE bus indicated by the error LED has failed.	Have the blade server serviced.
NMI error	The system board has failed.	1. Replace the blade server cover, reinsert the blade server in the NovaScale Blade Chassis unit, and then restart the server. 2. Check the system error log for information about the error. If the problem remains, have the blade server serviced.

Table 6. Light Path Diagnostics (continued)

Lit LED	Cause	Action
CPU mismatch	The processors do not match.	Verify that microprocessors 1 and 2 have the same cache size and type, and the same clock speed. Internal and external clock frequencies must be identical. If the problem remains, have the blade server serviced.

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