Intel® Blade Server Chassis SBCE: Installation and User's Guide

A Guide for Technically Qualified Assemblers of Intel® Identified Subassemblies & Products

Order Number: C26771-006

NOTE

Before using this information and the product it supports, be sure to read the general information in "Safety and regulatory information" on page v.

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Intel Blade Server Chassis SBCE: Installation and User's Guide

Contents

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 computer, 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. See *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at http:\\support.intel.com.

Wichtige Sicherheitshinweise

Lesen Sie zunächst sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und -Servergehäusen auf der Ressourcen-CD oder unter http:\\support.intel.com.

重要安全指导

在执行任何指令之前，请阅读本文档中的所有注意事项及安全声明。参见 Resource CD（资源光盘）和/或 http:\\support.intel.com 上的 *Intel Server Boards and Server Chassis Safety Information*（《Intel 服务器主板与服务器机箱安全信息》）。

Consignes de sécurité

Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez *Intel Server Boards and Server Chassis Safety Information* sur le CD Resource CD ou bien rendez-vous sur le site http:\\support.intel.com.

Instrucciones de seguridad importantes

Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea *Intel Server Boards and Server Chassis Safety Information* en el CD Resource y/o en http:\\support.intel.com.

General Safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- Do not perform any action that causes hazards to the customer, or makes equipment unsafe.
- 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 with a nonconductive clip.
- 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. **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.**

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

- Disconnect all power before performing a mechanical inspection.
- Before you start to work on the machine, unplug the power cord or power-off the wall box that supplies power to the machine and lock the wall box in the off position.
- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools or 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 wet floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of an inspection mirror. The surface is conductive; such touching can cause personal injury and machine damage.

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.
    — 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.

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

CAUTION:
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:

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

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 UL/CB to EN60950 3rd Edition
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 (EMC)

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
Japan:	VCCI Class A ITE (CISPR 22, Class A Limit)
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 notice (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.

Electromagnetic compatibility notices (International)

Europe (CE Declaration of Conformity): This product has been tested in accordance to, 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", NBM-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:

English translation of the previous notice:

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 locations as well as residential areas.
Remarks: Class A device - operated in a commercial area. Class B device - operated in a residential area.	

1 Introduction

Your Intel® Blade Server Chassis SBCE is a high-density, high-performance rack-mounted server system developed for medium-to-large businesses. It has 14 blade bays, making it ideally suited for networking environments that require a large number of high-performance servers in a smaller amount of space. The Blade Server Chassis SBCE provides common resources that are shared by the blade servers, such as power, cooling, system management, network connections, and I/O (diskette drive, CD-ROM drive, ports for USB, keyboard, video, mouse, and network interfaces). The use of common resources reduces the size of the blade servers, minimizes cabling, and reduces the time/likelihood of resources sitting idle.

Performance, ease of use, reliability, and expansion capabilities were key considerations during the design of the Blade Server Chassis SBCE. These design features make it possible for you to customize the system hardware to meet your needs today, while providing flexible expansion capabilities for the future.

This *Installation and User's Guide* provides information to:
- Set up and cable your Blade Server Chassis SBCE
- Start and configure your Blade Server Chassis SBCE
- Install options
- Perform basic troubleshooting of your Blade Server Chassis SBCE

Packaged with the *Installation and User's Guide* are software CDs that help you to configure and manage the Blade Server Chassis SBCE.

This *Installation and User's Guide* and other publications that provide detailed information about your Blade Server Chassis SBCE are provided in Portable Document Format (PDF) on the *Intel® Blade Server Chassis SBCE Resource CD*.

Record information about your Blade Server Chassis SBCE in the following table.

Product name	Intel® Blade Server Chassis SBCE
Product code	_____
Part number	_____
Serial number	_____

The serial number and part number are on labels on the top, front, and rear of the chassis, as shown in the following illustration.

TP00214
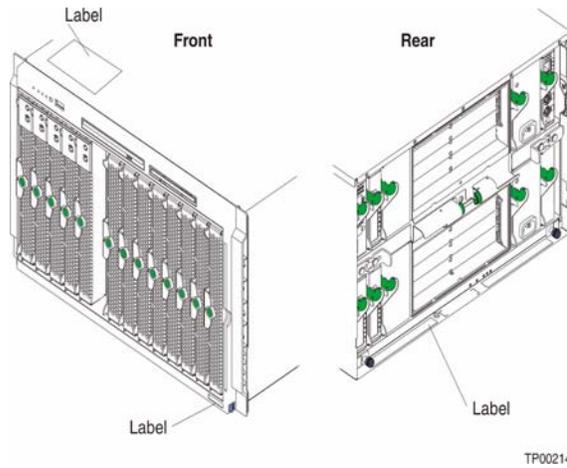
A set of user labels comes with each blade server. Write appropriate identifying information a label and place it on the Blade Server Chassis SBCE bezel just below the blade server, as shown in the following illustration.

TP00216
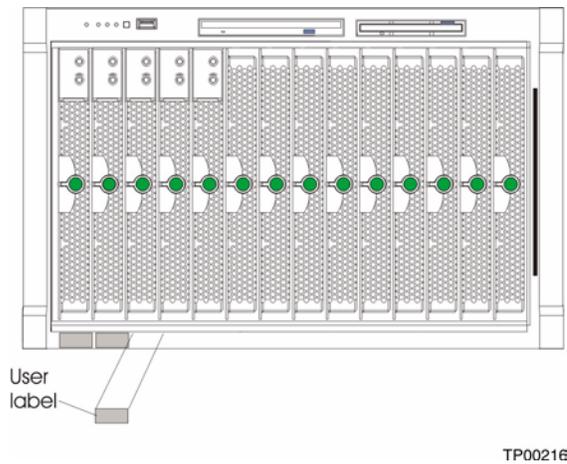
Important:

Do not place the label on the blade server itself and do not block the ventilation holes on the blade server.

Related publications

This *Installation and User's Guide* provides general information about your Blade Server Chassis SBCE, including information about features, how to configure your Blade Server Chassis SBCE, and how to get help.

In addition to this *Installation and User's Guide*, the following documentation is provided in PDF on the *Intel® Blade Server Chassis SBCE Resource CD* that comes with your Blade Server Chassis SBCE:

- *Intel® Server Boards and Server Chassis Safety Information*: This publication contains translated caution and danger statements.

- *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide*: This publication contains information to help you solve SBCE problems yourself. It contains necessary information for service technicians.

- *Intel® Blade Server Chassis SBCE Rack Installation Instructions*: This publication contains instructions for installing the Blade Server Chassis SBCE in a rack.

Additional publications might be included on the *Intel® Blade Server Chassis SBCE Resource CD*.

Shipping notices

Do not ship the SBCE chassis with blade servers installed. Ship the Blade Server Chassis SBCE and blade servers separately, in the original packaging, to avoid damage.

Features and specifications

The following table provides a summary of the features and specifications for your Blade Server Chassis SBCE.

Table 1. Features and specifications

Media tray (on front):	I/O modules:	Acoustical noise emissions:

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

Module bays (on rear):
- Four hot-plug 220-volt power module bays
- Two hot-swap management module bays
- Four hot-plug I/O module bays
- Two hot-swap blower bays

Blade bays (on front):

14 hot-plug blade bays

Redundant cooling:

Two variable-speed hot-swap blowers

Power modules:
- Standard: Two 1800-watt or greater 220-volt (200-240 V AC) hot-swap power modules
  - power modules 1 and 2 supply 12 V to all modules and to blade bays 1 through 6
  - power modules 1 and 2 provide redundancy to each other
- Maximum: Four, 1800-watt or greater
  - Power modules 1 and 2 supply 12 V to all modules and to blade bays 1 through 6
  - Power modules 3 and 4 supply 12 V to blade bays 7 through 14
  - Power modules 1 and 2 provide redundancy to each other
  - Power modules 3 and 4 provide redundancy to each other

I/O modules:
- Standard: None
- Maximum: Four

Management module:
- Standard: One hot-plug management module providing the following features:
  - System-management functions for the Blade Server Chassis SBCE
  - Video port (analog)
  - PS/2* keyboard port
  - PS/2 mouse port
  - 10/100 Mb Ethernet remote management connection
- Maximum: Two hot-plug management modules, one active, one redundant

Upgradeable microcode:
- Management module firmware
- I/O module firmware (not all I/O module types)
- Blade server service processor firmware

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

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

Size:
- Height: 304.2 mm (12.25 in. or 7 U)
- Depth: 711.2 mm (28 in.)
- Width: 444 mm (17.5 in.)
- Weight:
  - Fully configured with modules and blades: Approx. 108.86 kg (240 lb.)
  - Fully configured without blades: Approx. 44.91 kg (99 lb.)

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

Environment:
- Air temperature:
  - Blade Server Chassis SBCE on: 10º to 35ºC (50º to 95ºF). Altitude: 0 to 914 m (3000 ft)
  - Blade Server Chassis SBCE on: 10º to 32ºC (50º to 89.6ºF). Altitude: 0 m to 2134 m (0 ft to 7000 ft).
  - SBCE off: -40º to 60º C (-40º to 140º F).
- Humidity:
  - Server on or off: 8% to 80%

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

Heat output:

Approximate heat output in British thermal units (Btu) per hour
- Minimum configuration: 1461 Btu/hour (428 watts)
- Maximum configuration:
  - 4 1800-watt power supplies: 13,654 Btu/hour (4000 watts)
- For all other power supplies, see the documentation that comes with the power supply.

Notes:

1. For details about the Blade Server Chassis SBCE port specifications, see "Input/output connectors" on page 50.
2. For information on which types of I/O modules can be installed in which I/O-module bays, see "I/O modules" on page 13.
3. 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 Blade Server Chassis SBCE uses USB for internal communication with these devices.

Notices and statements used in this 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 Blade Server Chassis SBCE offers

The design of your Blade Server Chassis SBCE takes advantage of advancements in server technology. It provides up to 14 functionally separate servers and their shared resources in a single unit/chassis. Your Blade Server Chassis SBCE combines:

- **Innovative technology**

  Proven innovative technologies to build powerful, scalable, reliable Intel-processor-based servers. The technology includes features such as Predictive Failure Analysis* (PFA) and Real Time Diagnostics*.

- **Expansion capabilities**

  You can add blade servers to the Blade Server Chassis SBCE as needed, up to a maximum of 14 blade servers.

  > ━ **NOTE**
  > When any blade server or option is in blade bay 7 through 14, 4 power modules are required.

  Some blade servers have connectors for options that add capabilities to the blade server, such as an I/O expansion card to add a network interface, or a storage expansion unit to add SCSI hard disk drives.

- **Hot-swap/Hot-plug capabilities**

  The front bays on the Blade Server Chassis SBCE are hot-plug blade bays. The rear switch and management bays on the Blade Server Chassis SBCE are hot-plug module bays. You can add, remove or replace blade servers, management modules, or I/O modules in hot-plug bays without removing power from the SBCE by first ensuring the module is not in use by the system (i.e., with no active software or applications running). The rear blower and power supply bays on the Blade Server Chassis SBCE are hot-swap module bays. You can add, remove or replace the power or blower modules from the Blade Server Chassis SBCE without first removing power from the Blade Server Chassis SBCE.

  Attention: To maintain proper system cooling, each unoccupied bay must contain a filler blade or filler module.

- **Redundancy capabilities**

  The redundant components in the rear of your Blade Server Chassis SBCE enable continued operation if one of the components fails.
    - Power modules and blowers: Normally, the redundant power modules and blowers share the load. If one of the power modules or blowers fails, the non-failing power module or blower handles the entire load. You can then replace the failed blower or power module without shutting down the Blade Server Chassis SBCE.
    - Management modules: Only one management module will be active at a time. If the active management module fails, the secondary, or redundant, management module becomes the active management module, containing current SBCE configuration and status information. You can then replace the failed management module without shutting down the Blade Server Chassis SBCE.

- **Redundant network connection capabilities**

  Configuring a pair of Ethernet switch modules in I/O-module bays 1 and 2, identically, provides support for Ethernet failover configured on blade servers. If the I/O expansion options in your blade servers can be configured for failover, configuring a pair of switch modules in I/O-module bays 3 and 4, identically, provides support for the failover configured on the I/O expansion options.

  Other network-interface I/O expansion options, such as the Intel@ Server FC Expansion SBFCM, can have similar capability for redundant network connections. See the documentation that comes with your I/O expansion and switch module options for more information about configuring for redundant network connections.

- **System management capabilities**

  Your Blade Server Chassis SBCE comes with a service processor in the management module. This service processor, in conjunction with the system-management firmware that is provided with your Blade Server Chassis SBCE and the service processor in each blade server, enables you to remotely manage the SBCE components, and the blade servers. The management module also multiplexes the USB, keyboard, mouse, and video ports across the multiple blade servers.

  The service processor in each blade server provides blade server system monitoring, event recording, and alert capability.

  See Chapter 4, "Configuring your Blade Server Chassis SBCE," on page 37 for more information.

- **Network environment support**

  Your Blade Server Chassis SBCE supports up to two Ethernet compatible I/O modules (switch modules), for blade server communication with the network. Each I/O module provides one internal connection to each blade server, up to 14 internal connections per I/O module.

  The Blade Server Chassis SBCE also supports two additional switch modules, for a total of four switch modules. The two additional switch modules support the network interface on the optional I/O expansion card installed on one or more blade servers in the Blade Server Chassis SBCE.

  ### ⟹ NOTE
  The two additional I/O modules must be compatible with the network interface on the optional I/O expansion cards in the blade servers.

  Each of these two additional I/O modules provides one internal connection to the optional I/O expansion card, up to 14 internal connections per I/O module.

Reliability, availability, and serviceability

Three of the most important features in server design are reliability, availability, and serviceability (RAS). These factors 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 Chassis SBCE supports:

- Shared key components, such as power, cooling, and I/O
- All components serviced from the front or rear of the chassis
- Automatic error retry and recovery
- Automatic restart after a power failure
- Built-in monitoring for blower, power, temperature, and voltage
- Built-in monitoring for module redundancy
- Error codes and messages
- Fault-resistant startup
- Remote system management through the management module
- Remote management module firmware upgrade
- Remote upgrade of blade server service processor microcode
- Built-in self-test (BIST)
- Predictive Failure Analysis (PFA) alerts
- Redundant components
  — Cooling fans (blowers)
  — Power modules
- Hot-swap components
  — Cooling fans (blowers)
  — Power modules
- Hot-plug components
  — Blade servers
  — Media tray
  — I/O Modules
  — Management modules
- System error logging
- Automatic system inventory at startup

Major components of the Blade Server Chassis SBCE

The following illustration shows the locations of major components in your Blade Server Chassis SBCE.
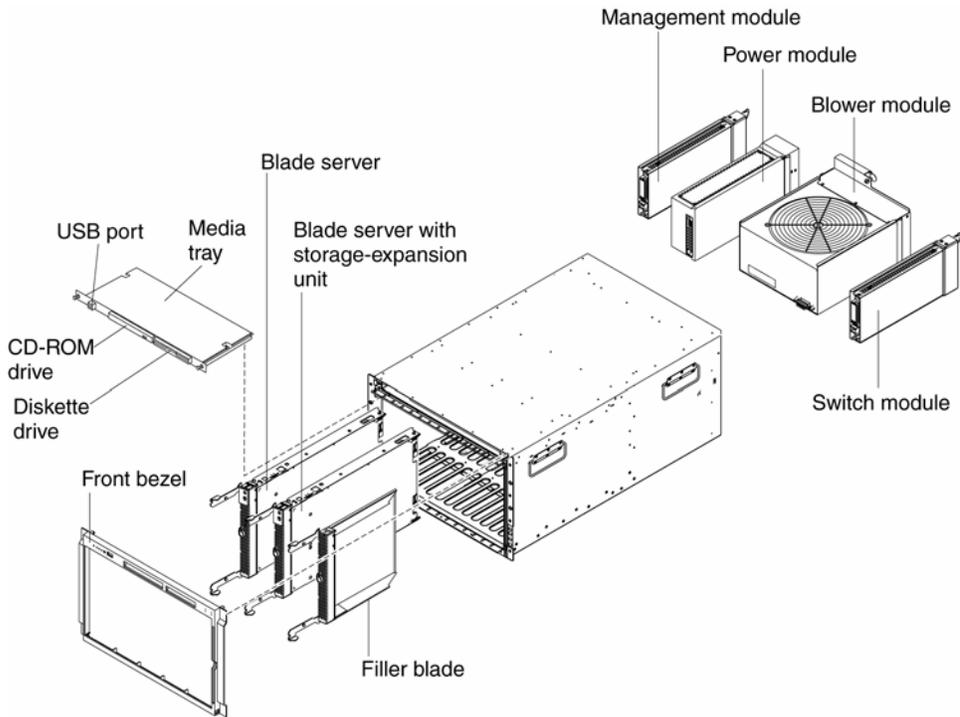
— **NOTE**
 The illustrations in this document might differ slightly from your hardware.

Attention: To maintain proper system cooling, each module bay must contain either a module or a filler module; each blade bay must contain either a blade server or a filler blade.

Front view

USB port   CD-ROM activity LED   Diskette-drive activity LED

Front system LED panel   CD-eject button   Diskette-eject button

Blade control panel

System service card

Blade servers   Filler blades
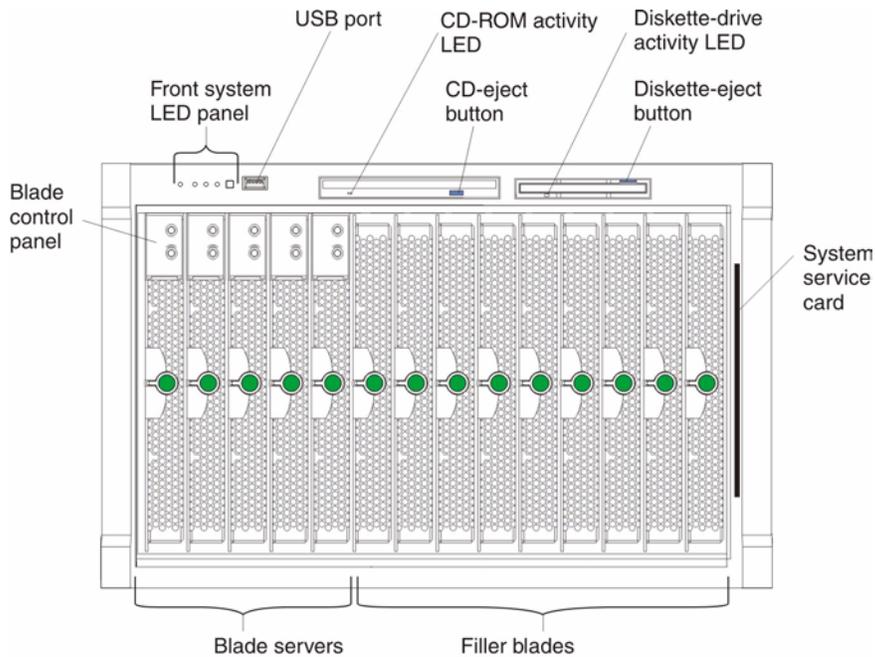
TP00212

See Chapter 3, "Blade Server Chassis SBCE power, controls, and indicators," on page 29, for details about these components and indicators.

Rear view
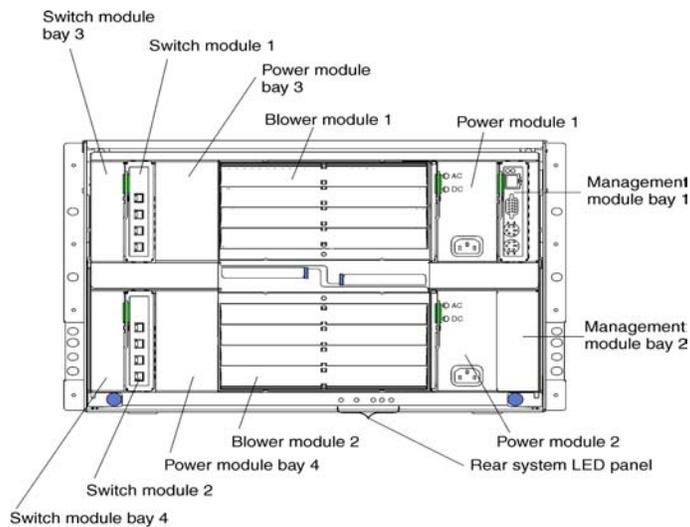
Switch module bay 3

Switch module 1

Power module bay 3

Blower module 1

Power module 1

Management module bay 1

Management module bay 2

Blower module 2

Power module bay 4

Switch module 2

Switch module bay 4

Power module 2

Rear system LED panel

See Chapter 3, "Blade Server Chassis SBCE power, controls, and indicators," on page 29 for details about these components and indicators.

9

2 Installing options

This chapter provides instructions for adding options to your Blade Server Chassis SBCE. Option removal instructions are also provided in case you need to remove one option to install another.

Installing the Blade Server Chassis SBCE in a rack

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

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

CAUTION:
Use safe practices when lifting.

Install the Blade Server Chassis SBCE in a rack before installing any blade servers in the chassis. If your Blade Server Chassis SBCE has blade servers already installed, remove them first. Blade servers are installed from the front of the chassis. Detailed instructions for installing the chassis in a rack are in the *Rack Installation Instructions* that come with your Blade Server Chassis SBCE.

Installation guidelines

Before you begin to install options in your Blade Server Chassis SBCE, read the *Intel Server Boards and Server Chassis Safety Information* book included on the SBCE Resource CD:

- Read the safety information beginning on page 9, and the guidelines in "Handling static-sensitive devices" on page 12. This information will help you work safely with your Blade Server Chassis SBCE and options.
- The green color on components and labels in your chassis identifies hot-swap or hot-plug components. You can install or remove hot-swap modules and, with some restrictions, hot-plug blade servers while the chassis is running. For complete details about installing or removing a hot-swap or hot-plug components, see the detailed information in this chapter.
- The blue color on components and labels identifies touch points where you can grip a component, move a latch, and so on.
- You do not need to disconnect the chassis from power to install or replace any of the hot-swap modules on the rear of the Blade Server Chassis SBCE. You need to shut down the operating system and turn off a hot-plug blade server on the front of the chassis before removing the blade server, but you do not need to shut down the Blade Server Chassis SBCE itself.

System reliability considerations

To help ensure proper cooling and system reliability, make sure that:

- Each of the module bays on the rear of the Blade Server Chassis SBCE has either a module or filler module installed.
- Each of the blade bays on the front of the Blade Server Chassis SBCE has either a blade server or filler blade installed.
- Each of the drive bays in a blade server storage expansion option has either a hot-swap drive or a filler panel installed.
- A removed hot-swap module, blade server, or drive is replaced within 1 minute of removal.
- Cables for the option modules are routed according to the illustrations and instructions in this document.
- A failed blower is replaced as soon as possible, to restore cooling redundancy.

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 damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the system unit for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the system unit without setting the device down. If it is necessary to set down the device, place it back into its static-protective package. Do not place the device on your system unit or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing and removing modules

The procedures for installing or removing a module on the Blade Server Chassis SBCE are nearly identical for all modules except the blower modules. To install or remove a blower module, see the *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide* on the SBCE Resource CD.

Each module is keyed so that it can only be inserted in the appropriate bay. You can insert an I/O module only in an I/O-module bay, for example. In addition, most modules must be installed in a specific sequence or under specific circumstances.

The Blade Server Chassis SBCE modules

The standard Blade Server Chassis SBCE contains the following hot-swap modules: two power modules, a management module, and two blower modules. See "Rear view" on page 32 for the location of each module. These modules supply common functions to the blade servers that are installed in the blade bays at the front of the chassis.

The chassis and the management module supply I/O resources (diskette drive, CD-ROM drive, USB port, keyboard, video, and mouse) which are used by all the blade servers, but available to only one blade server at a time. The chassis can contain up to 14 blade servers.

Attention:

To help ensure proper cooling, performance, and system reliability, make sure that each of the module bays on the rear of the Blade Server Chassis SBCE has a module or filler module installed. When replacing a module, do not operate the Blade Server Chassis SBCE for more than one minute without either a module or a filler module installed in each module bay.

Management module

The standard Blade Server Chassis SBCE comes with one hot-swap management module. Up to two management modules are supported.

> **⊸ NOTE**
>   Only one management module will be active; the second management module provides redundancy.

The management module functions as a service processor and a keyboard/video/mouse (KVM) multiplexor for the blade servers. The management module also configures the Blade Server Chassis SBCE and I/O modules, configuring such information as the switch IP addresses. The management module provides the following external connections: keyboard, mouse, and video for use by a local console, and one RJ-45 connector for a 10/100 Mbps Ethernet remote management connection.

The service processor in the management module communicates with the service processor in each blade server for such functions as:

- Blade server power-on/off requests
- Blade server error and event reporting
- Blade server requests for keyboard, mouse, and video
- Blade server requests for diskette drive, CD-ROM drive, and USB port

The management module also communicates with the I/O modules, power modules, blower modules, and blade servers to detect presence or absence and any error conditions, sending alerts when required.

I/O modules

For blade server communication with the network, your Blade Server Chassis SBCE supports from one to four hot-swap I/O modules. Table 2 identifies the type of I/O module you can install in each I/O module bay.

Your Blade Server Chassis SBCE must have at least one hot-swap Ethernet switch module in I/O-module bays 1 or 2. This I/O module provides an internal connection to an integrated Ethernet controller in all the blade servers in the Blade Server Chassis SBCE. To provide an internal connection for the second integrated Ethernet controller in each blade server, install an Ethernet switch module in the available I/O module bay of the pair (I/O module bay 1 or 2).

Similarly, the Blade Server Chassis SBCE supports a Fibre Channel I/O module in I/O module bays 3 and 4. Each of these I/O modules provides an internal connection to one of the two network-interface controllers on the I/O expansion options installed on blade servers in the Blade Server Chassis SBCE. The I/O module must be compatible with the Fibre Channel I/O expansion option on a blade server. The I/O modules you install in I/O module bays 3 and 4 must be Fibre Channel switch modules.

NOTES:

1. Because the electromagnetic interference (EMI) restrictions, no more than two SBCEGBESW four-port 1-Gb Ethernet switch modules can be installed in the Blade Server Chassis SBCE. You can mix SBCEGBESW switch modules and two other supported SBCEGBESW switch modules to achieve the maximum number of Ethernet switch modules in the Blade Server Chassis SBCE.

2. If you install an I/O expansion option on any blade server, you must install a hot-swap switch module of the same network interface in I/O module bay 3 to obtain network connection 3 for the option; to provide network connection 4 for the option, install a switch module of that same network interface in I/O module bay 4. The switch modules in bays 3 and 4 provide network connections to all the I/O expansion options in the Blade Server Chassis SBCE.

Important: The switch modules in I/O module bays 3 and 4 and all blade server I/O expansion options in the Blade Server Chassis SBCE must use the same network interface. For example, if you install a Fibre Channel I/O expansion option on a blade server, the switch modules you install in I/O module bays 3 and 4 must be Fibre Channel, and all other I/O expansion options installed on blade servers must also be Fibre Channel I/O expansion options.

The following table summarizes the application configuration requirements for each switch module. See "Rear view" on page 32 for the location of the I/O module bays on the Blade Server Chassis SBCE.

Table 2. Switch and I/O module configuration guide

Bay	I/O module function	Permissible switch module
1	Network connection 1 (Ethernet Link 1) for all blade servers in the Blade Server Chassis SBCE	Ethernet switch module
2	Network connection 2 (Ethernet Link 2) for all blade servers in the Blade Server Chassis SBCE	Ethernet switch module
3	Network connection 3 (from all blade server I/O expansion options in the Blade Server Chassis SBCE)	One of the following modules: • Ethernet switch module • Switch module of another network-communication standard, such as Fibre Channel **Important:** The module must support the network interface used on the I/O expansion options and must match the type of module installed in bay 4.
4	Network connection 4 (from all blade server I/O expansion options in the Blade Server Chassis SBCE)	One of the following modules: • Ethernet switch module • Switch module of another network-communication standard, such as Fibre Channel **Important:** The module must support the network interface used on the I/O expansion options and must match the type of module installed in bay 3.

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* AS 2.1. 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 AS 2.1. You can verify the designations through your operating system settings or by testing:

1. Install only one switch module, in I/O module bay 1.
2. Enable only one of the Ethernet controllers on the blade server. Make note of the designation that 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 2.

NOTE
Future switch offerings will be made available by Intel. Contact your Intel Support Representative for information.

Power modules

Your Blade Server Chassis SBCE comes with one pair of 220-volt hot-swap power modules in power bays 1 and 2 that provides power to all the SBCE modules and to blade bays 1 through 6. The Blade Server Chassis SBCE supports a second pair of power modules in power bays 3 and 4 that provides power to blade bays 7 through 14.

Each pair of power modules is redundant; if a power module fails, the remaining power module continues to supply power. If only one power module of a pair is present, it can be installed in either bay of the pair; there is no redundancy.

To provide true redundant power, SBCE power modules 1 and 3 must connect to different AC power sources than power modules 2 and 4. If using Power Distribution Units (PDUs), connect SBCE power modules 1 and 3 to a different PDU than power modules 2 and 4; then, connect each PDU to an AC power source (building power source or service entrance) that is controlled by a separate circuit breaker.

The following table summarizes the application for each power module:

Bays	Power module function
1 and 2	Provides power to all the SBCE modules and to blade bays 1 through 6
3 and 4	Provides power to blade bays 7 through 14

Power modules are not needed in bays 3 and 4 until you begin installing blade servers and options in blade bays 7 through 14. Each active power module supplies 12 volts of power to the blade bays it services.

NOTE
If you install a blade server that has a storage expansion unit option attached in blade bay 6, the option will use blade bay 7; power modules will be required in power bays 1, 2, 3 and 4.

The SBCE Chassis support multiple power supplies. These power supplies may require different type power cords. Please refer to the SBCE Component Enabling document for detailed specifications.

Blower modules

Your Blade Server Chassis SBCE comes with two hot-swap blowers for cooling redundancy. The blower speeds vary depending on the ambient air temperature at the front of the SBCE. If the ambient temperature is 72°F or below, the SBCE blowers will run at 30% of their maximum rotational speed, increasing their speed as required to control the internal SBCE temperature. If the ambient temperature is above 72°F, the blowers will run at 80% of their maximum rotational speed, increasing their speed as required to control the internal SBCE temperature. If a blower fails, the remaining blower continues to cool the Blade Server Chassis SBCE and blade servers.

Important:

Replace a failed blower as soon as possible to restore cooling redundancy (see the *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide* on the Resource CD for instructions).

Installing a module

The following illustration shows how to install a power module, management module, or I/O module in the rear of the Blade Server Chassis SBCE. See the *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide* on the Resource CD for information about replacing a blower module.
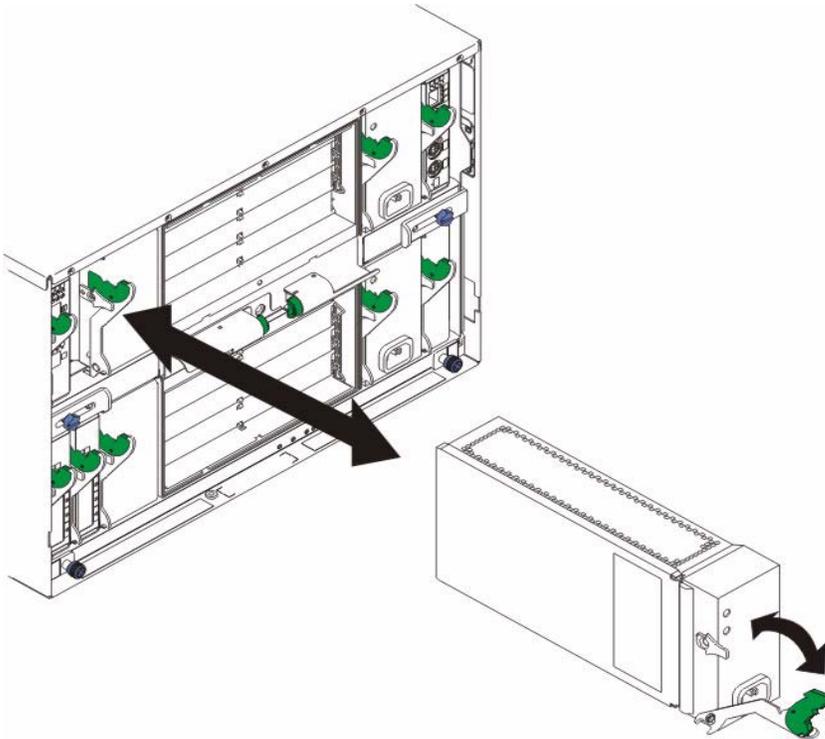
Before you begin, read the documentation that comes with your I/O module option.

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

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

Complete the following steps to install a module:

⊸ NOTE
> These instructions assume the Blade Server Chassis SBCE is connected to power.

1. Read the safety information beginning on page v and "Installation guidelines" on page 11 through "Handling static-sensitive devices" on page 12

2. Remove the acoustic module option, if installed, from the rear of the Blade Server Chassis SBCE. See "Installing and removing the acoustic module option" on page 19 for instructions.

3. Remove the filler module from the bay.

4. Ensure that the release lever on the module is in the open position.

5. Slide the module into the appropriate module bay until it stops.

6. Push the release lever on the front of the module closed.

7. Attach any cables or cords required by the module. See "Input/output connectors" on page 25 for the location of connectors on the Blade Server Chassis SBCE. Be sure to route the power cord on a power module through the strain-relief clamp on the power module.

8. Make sure the LEDs on the module indicate that it is operating properly. Verify that:
   • The DC power LED and the AC power LED on each power module are lit.
   • The OK LED on the management module is lit.
   • The OK LED on each switch module is lit.

9. If you have other modules to install, do so now; otherwise, go to step 10

10. Replace the acoustic module option, if you removed it in step 17

Removing a module
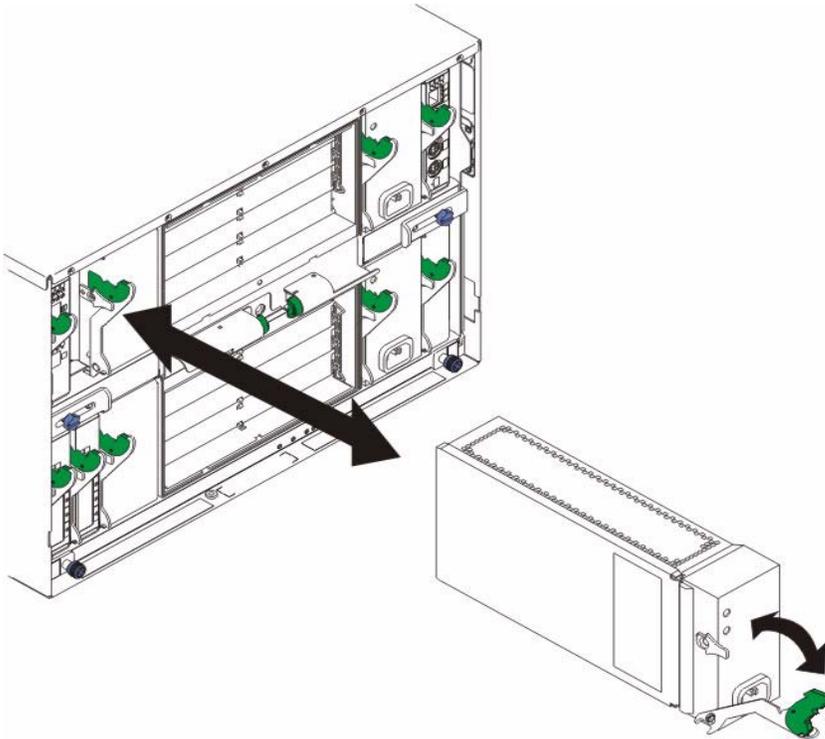
Complete the following steps to remove a power module, management module, or switch module. See the *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide* on the Resource CD for information about replacing a blower module.

☞ NOTE
These instructions assume the Blade Server Chassis SBCE is connected to power.

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

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

1. Read the safety information beginning on page v and "Installation guidelines" on page 11 through "Handling static-sensitive devices" on page 12

2. Remove the acoustic module option, if installed, from the rear of the Blade Server Chassis SBCE. See "Installing and removing the acoustic module option" for instructions.

   Important:

   a. If you are removing a functional power module, make sure before you remove the module that both the AC power LED and the DC power LED on the remaining power module are lit; otherwise, shut down the operating systems and turn off all blade servers that are supported by the power module you are removing before you remove it. (See the documentation that comes with the blade server for instructions for shutting down the blade server operating system and turning off the blade server.)

   b. If you are removing a management module, you might prefer to stop all management module local and remote sessions before proceeding, to avoid unexpected termination of sessions.

3. Unplug any cables from the module. For a power module, unplug the power cord from the module.

4. Pull the release lever all the way toward the bottom of the module until it stops, as shown in the illustration. The module moves out of the bay approximately 0.6 cm (0.25 inch).

5. Slide the module out of the bay and set it aside. Within 1 minute, place either another module of the same type or a filler module in the bay.

6. If you placed another module in the bay, reconnect any cables or power cords you unplugged in step <$elemparanumonly<$elemparanumonly<$elemparanumonly; then, make sure the LEDs on the module indicate that it is operating properly. Verify that:

   • The DC power LED and the AC power LED on each power module are lit.
   • The OK LED on the management module is lit.
   • The OK LED on each I/O module is lit.

7. Replace the acoustic module option, if you removed it in step <$elemparanumonly<$elemparanumonly<$elemparanumonly

Installing and removing the acoustic module option

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

Installing the acoustic module option

Complete the following steps to install an acoustic module option on the Blade Server Chassis SBCE:

Acoustic module

Locking handle
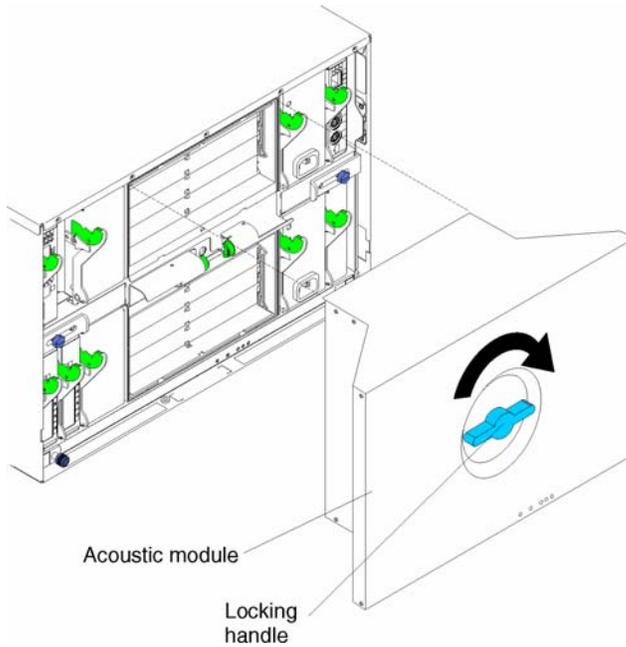
1. Place the acoustic module over the blower modules, aligning the corners of the acoustic module back with the guides on the chassis, and pushing the shaft into the hole between the blower modules.
2. Rotate the acoustic module handle approximately 2 turns clockwise until it tightens the acoustic module firmly into place.

Removing the acoustic module option

Acoustic module

Unlocking
handle
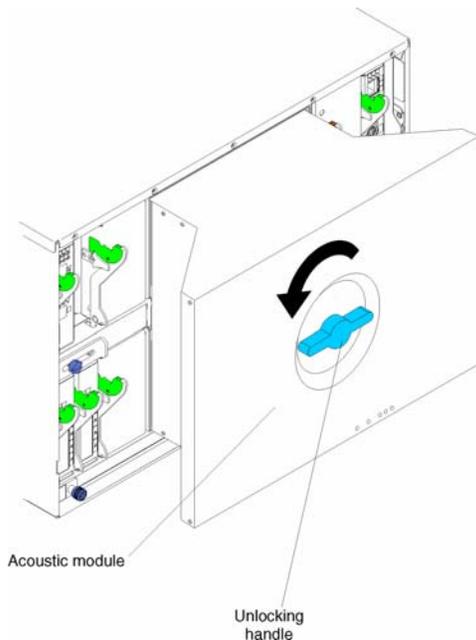
Complete the following steps to remove an acoustic module option from the Blade Server Chassis SBCE:

1. Rotate the acoustic module handle approximately 2 turns counter-clockwise until it stops.

2. Carefully pull the acoustic module away from the Blade Server Chassis SBCE and set it aside.

Installing and removing blade servers

Your Blade Server Chassis SBCE supports up to 14 high-performance blade servers. Each blade server is an enclosure that contains microprocessors, memory, a control chipset, an I/O bus, Ethernet controllers, hard disk drives, customer interface controls and connectors for expansion options. The blade server receives its power, network connection, and I/O devices (CD-ROM and diskette drives, keyboard, mouse, and video ports, USB port, remote monitoring port) from the Blade Server Chassis SBCE, reducing the server's physical size and reducing the number of cables needed.

Blade server expansion options

Some blade servers contain connectors for options that add capabilities to the blade server. You can add these options before installing the blade server in the Blade Server Chassis SBCE.

I/O expansion option

Some blade servers have connectors for adding an I/O expansion option, such as the Intel Fibre Channel Expansion Card. The Blade Server Chassis SBCE routes network communication signals from the I/O expansion option to switch modules 3 and 4 on the Blade Server Chassis SBCE. The I/O expansion option is attached directly to the blade server but does not occupy an additional blade bay.

> **NOTE**
> If an I/O expansion option is installed on any blade server, switch modules for that network interface must be installed in I/O module bays 3 or 4 on the Blade Server Chassis SBCE.

Storage-expansion option

Some blade servers have a connector for adding a SCSI expansion unit, such as the Intel SCSI Storage Expansion Unit. The storage expansion unit supports up to two hot-swap SCSI hard disk drives. The expansion option is attached directly to the blade server; the blade server and expansion option together use two blade bays.

Installing a blade server
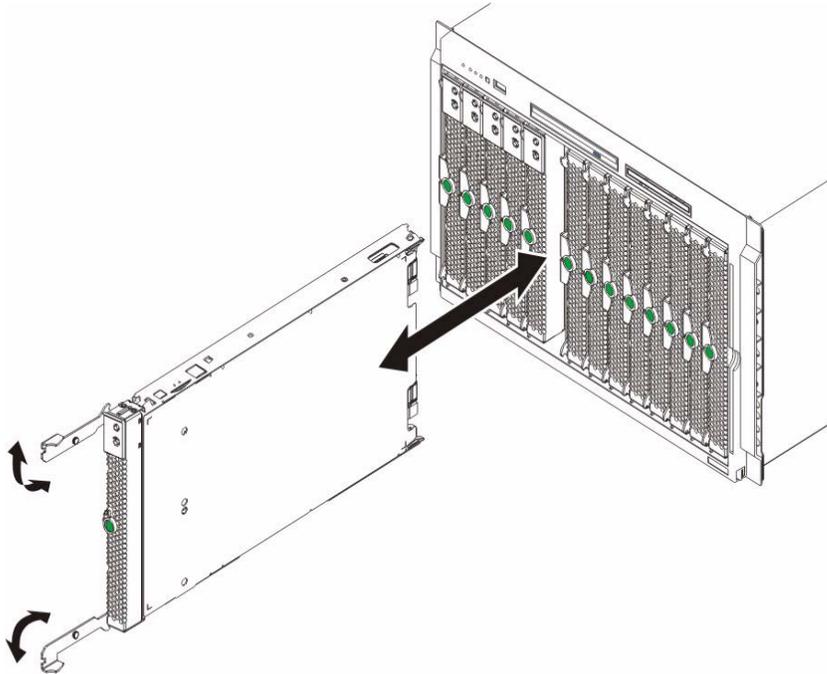
TP00213

Complete the following steps to install a blade server in the Blade Server Chassis SBCE.

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

1. Read the safety information beginning on page v and "Installation guidelines" on page 11 through "Handling static-sensitive devices" on page 12

2. Install any options needed, such as disk drives, an I/O expansion card, or memory in the blade server. See the documentation that comes with the blade server for instructions.

3. Select the bay for the blade server.

⊸ **NOTE**
  Notes:

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

b. If you install a blade server or option in bay 7 through 14, you must install power modules in power bays 3 and 4.

4. Remove the filler blade from the bay and store in a safe place.

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

5. Ensure that the release levers on the blade server are in the open position.

6. Slide the blade server into the bay until it stops. The spring-loaded doors that cover the bay opening move out of the way as you insert the blade server.

7. Push the release levers on the front of the blade server until they are closed.

8. Turn on the blade server by pressing the power-control button on the blade server control panel. See the documentation that comes with the blade server for more instructions.

9. Verify that the power LED on the blade server control panel is lit, indicating that the blade server is receiving power.

10. If desired, write identifying information on one of the user labels that come with the blade server; then, place the label on the SBCE bezel just below the blade server, as shown in the following illustration.
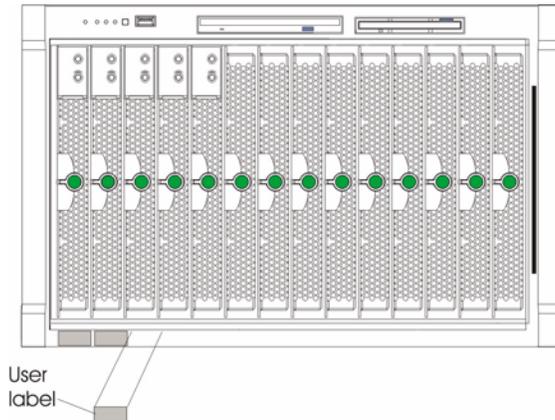
TP00216

Important:

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

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

Important:

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. You might need to reconfigure the blade server.

If this is the initial installation for a blade server in the Blade Server Chassis SBCE, you need to configure the blade server with the blade server Configuration/Setup Utility program and install the blade server operating system. See the documentation that comes with the blade server for instructions.

Removing a blade server

The following illustration shows how to remove a blade server from the Blade Server Chassis SBCE.
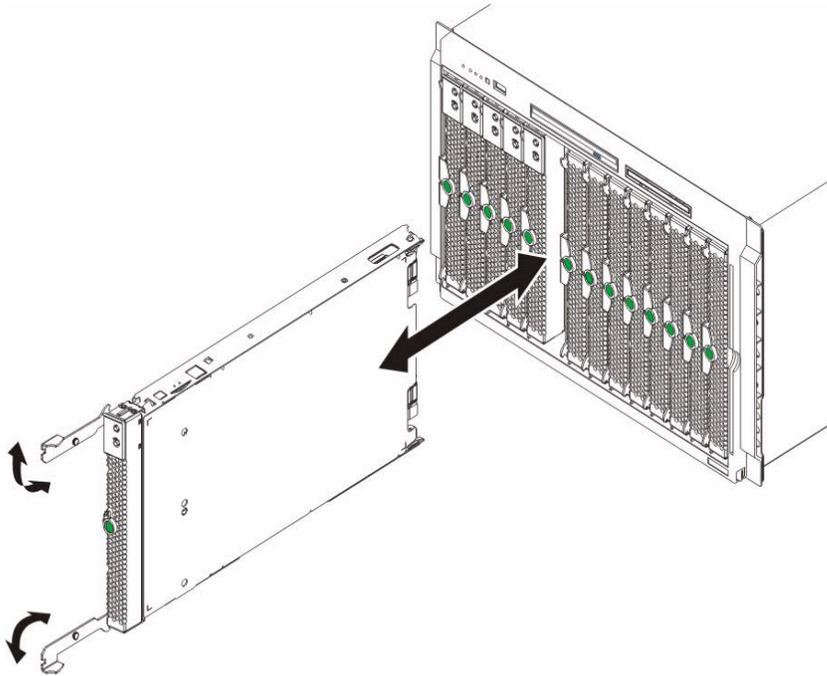
TP00213

Attention:

1. To maintain proper system cooling, do not operate the Blade Server Chassis SBCE for more than one minute without either a blade server or a filler blade installed in each blade bay. If you fail to replace a blade server or filler blade within one minute, system performance might be affected.

2. Make note of the bay number. Some configuration information and update options are established according to bay; if you reinstall the blade server in a different bay than the one from which it was removed, unintended consequences could occur.

Complete the following steps to remove a blade server from the Blade Server Chassis SBCE.

1. Read the safety information beginning on page v and "Installation guidelines" on page 11 through "Handling static-sensitive devices" on page 12

    ⎯ **NOTE**
       Improper shutdown of a blade server will not allow that blade server to be restarted using Wake on LAN.

2. Shut down the blade server operating system; then, press the blade server power-control button (behind the blade server control panel door) to turn off the blade server. Wait at least 30 seconds until the drives stop spinning, before proceeding to the next step.

3. Press on the green button on the front of the blade to cause the levers to release. 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).

4. Pull the blade server out of the bay. Spring-loaded doors move down to cover the bay temporarily.

5. Place either a filler blade or another blade server in the bay within one minute. The spring-loaded doors will move out of the way as you insert the blade server or filler blade.

Completing the installation

After you connect the cables to the modules and route the cables (if necessary, see the *Rack Installation Instructions* for information about routing the cables), start the Blade Server Chassis SBCE (if it is not already started) and verify that it is working properly, as follows:

1. Start the Blade Server Chassis SBCE by connecting the power-module power cords to a 220-volt power source (a 220-volt power distribution unit (PDU) that is connected to a 220-volt AC power outlet).

2. Make sure the LEDs on the modules indicate that they are operating properly. Verify that:
   - The DC power LED and the AC power LED on each power module are lit.
   - The OK LED on each management module is lit.
   - The OK LED on each switch module is lit.

3. Make sure the Power-on LED on each blade server is lit, either steady or blinking.

See 3, "Blade Server Chassis SBCE power, controls, and indicators," on page 29 for information about starting the Blade Server Chassis SBCE and the location of the LEDs on the modules. See the *Intel® Blade Server Chassis SBCE Installation and User's Guide* on the Resource CD for the location of the LEDs on the blade servers.

Input/output connectors

The Blade Server Chassis SBCE has the following ports:

- One video
- One PS/2 keyboard
- One PS/2 mouse
- One Universal Serial Bus (USB) on the front of the Blade Server Chassis SBCE
- One 10/100 Mbps Ethernet for remote console and management
- Four 10/100/1000 Mbps Ethernet on the Ethernet switch module that is required for the Blade Server Chassis SBCE

The following illustration shows the I/O connectors on the rear of your Blade Server Chassis SBCE.

Video connector

Each SBCE management module contains one standard video connector. The integrated video controller on each blade server is compatible with SVGA and VGA and communicates through this video port.
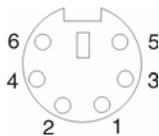
Use this connector to connect a video monitor to the Blade Server Chassis SBCE.
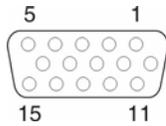
Keyboard connector

Each SBCE management module contains one PS/2-style keyboard connector.

Use this connector to connect a PS/2 keyboard to the Blade Server Chassis SBCE.

Mouse connector

Each SBCE management module contains one PS/2-style mouse connector.

Use this connector to connect a PS/2 mouse to the Blade Server Chassis SBCE.
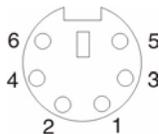
Universal Serial Bus connector

Each SBCE has one Universal Serial Bus (USB) version 1.1 connector on the front of the Blade Server Chassis SBCE.

Use the USB connector to connect a USB device other than a mouse or keyboard to the Blade Server Chassis SBCE. USB technology transfers data at up to 12 Mb per second (Mbps) with a maximum of 127 devices and a maximum signal distance of 5 meters (16 ft.) per segment. Using Plug and Play* technology, USB devices are configured automatically.

The following illustration shows a USB connector.
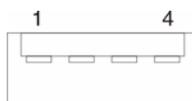
Use a USB cable to connect a device to a USB connector. If you need to connect more USB devices than the Blade Server Chassis SBCE has USB connectors, use a USB hub to connect additional devices.

If you connect a USB keyboard that has a mouse port, the keyboard emulates a mouse, and you cannot disable the mouse settings in the blade server Configuration/Setup Utility program.

Switch-module Ethernet connector

Each Ethernet switch module contains four Ethernet connectors.

Connect a Category 3, 4, or 5 unshielded twisted-pair cable to this connector. The 100BASE-TX and 1000BASE-T Fast Ethernet standards require Category 5 or higher.

The following illustration shows an Ethernet connector that is on an Ethernet switch module.
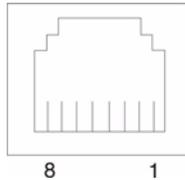
Remote management and console Ethernet connector

Your SBCE management module contains one 10/100 Mb Ethernet port that provides the remote connection to the network management station on the network.

Use this port for remote management and remote console.

The network management station, through this port, can access control functions running in the service processor on each blade server or within each switch module. However, it cannot use this port to communicate with application programs running in the blade servers. The network management station must direct those communications through a network connected to the external ports in the switch modules.

The following illustration shows the Ethernet connector that is on the management module.
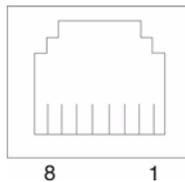
I/O module connectors

See the documentation that comes with each I/O module for a description of the connectors on the I/O module.

3 Blade Server Chassis SBCE power, controls, and indicators

This section describes the controls and light-emitting diodes (LEDs) and how to start and shut down the Blade Server Chassis SBCE.

Starting the Blade Server Chassis SBCE

Important: For the LEDs on each system LED panel to function correctly, be sure to install the management module before turning on the Blade Server Chassis SBCE. See 2, "Installing options," on page 11 for instructions for installing the management module.

The Blade Server Chassis SBCE does not have a power switch. To start the Blade Server Chassis SBCE, plug one end of each power cord into a power module on the rear of the Blade Server Chassis SBCE, and the other end of each power cord into a 220-volt power distribution unit (PDU) that is plugged into an appropriate electrical outlet.

After you start the Blade Server Chassis SBCE, it has AC power. The blade servers in the Blade Server Chassis SBCE are connected to AC power but are not turned on. Press the power-control button on the front of each blade server to obtain full power for the blade server and start its operating system (see the documentation that comes with your blade server for information about turning on the blade server). Once the operating system (OS) is installed, be sure to shutdown the OS before turning off the blade server, to avoid damaging the hard disk drives.

Notes:

1. If a power failure occurs, the Blade Server Chassis SBCE restarts automatically when power is restored.

2. The blade server power button turns the blade server on or off if local power control has not been disabled through the management module.

3. The blade server power button turns on the blade server only if the green power light on the blade server is flashing slowly. If the light flashes rapidly, the blade server has not yet synchronized with the management module and the power button will have no effect.

Shutting down the Blade Server Chassis SBCE

You can shut down the Blade Server Chassis SBCE by turning off the blade servers and disconnecting the Blade Server Chassis SBCE from the power source.

Complete the following steps to shut down the Blade Server Chassis SBCE:

1. Refer to your blade server operating system documentation for the proper procedure to shut Press the power-control button on the front of each blade server.

2. Wait at least 30 seconds for the blade server drives to stop spinning.

   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.

3. Disconnect all power cords on the Blade Server Chassis SBCE from all the power modules. down the operating system in the blade servers; then, shut down each operating system.

⚊ **NOTE**
> After you disconnect the Blade Server Chassis SBCE from power, wait at least 5 seconds before you connect the Blade Server Chassis SBCE to power again.

SBCE components, controls, and LEDs

This section identifies the components, controls, and LEDs on the front and rear of your Blade Server Chassis SBCE.

⚊ **NOTE**
> The illustrations in this document might differ slightly from your hardware.

Front view

This section identifies the components, controls, and LEDs on the front of your Blade Server Chassis SBCE.
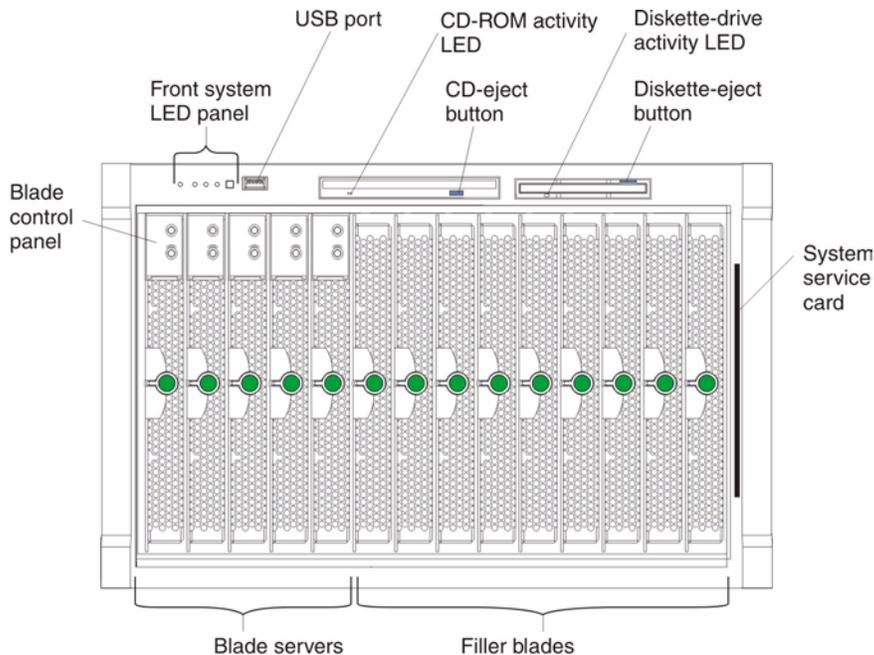
Front system LED panel: The LEDs on this panel provide status information for your Blade Server Chassis SBCE. See "System LED panel" on page 35 for more information.

USB port: Use this port to attach an external USB device.

CD-ROM drive activity LED: When this LED is lit, it indicates that the CD-ROM drive is in use.

CD-eject button: Press this button to release a CD from the drive.

Diskette-drive activity LED: When this LED is lit, it indicates that the diskette drive is in use.

Diskette-eject button: Press this button to release a diskette from the drive.

Blade control panel: This panel contains indicators and controls for the blade server. See the documentation that comes with your blade server for information about the blade control panel.

System service card: This card contains system service instructions and a writable area for your use.

Writeable area

System service card
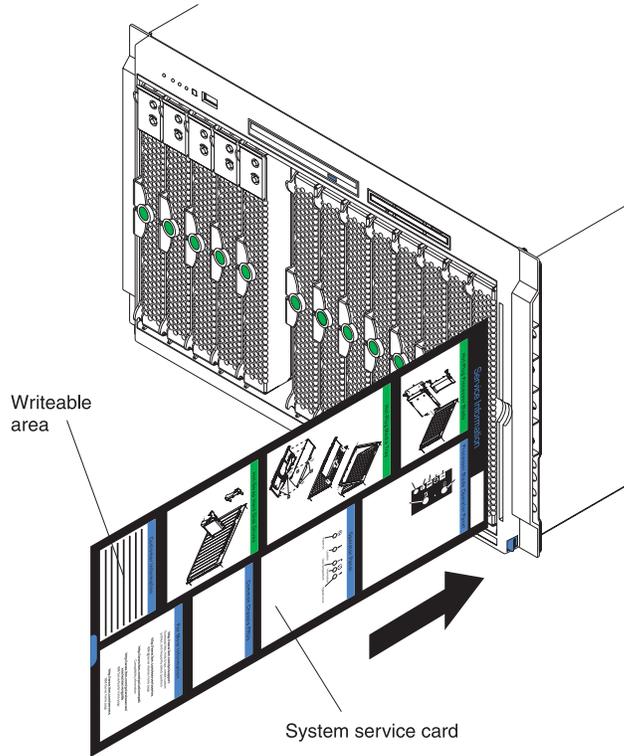
TP00215

Rear view

This section identifies the components and indicators on the rear of your Blade Server Chassis SBCE.
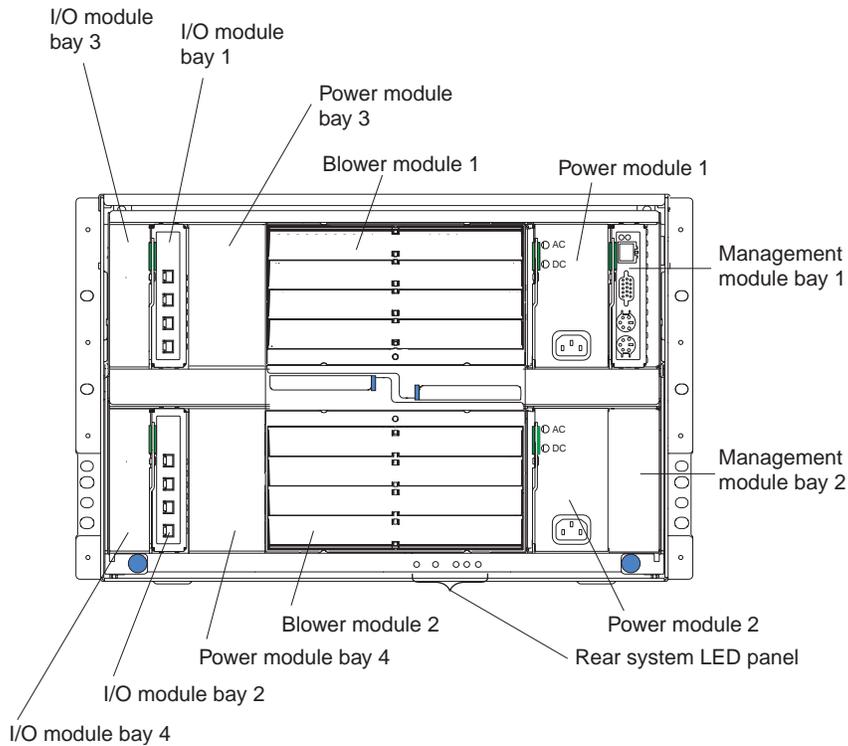
Rear system LED panel

The LEDs on this panel provide status information for your Blade Server Chassis SBCE. These LEDs duplicate the LEDs in the front system LED panel. See "System LED panel" on page 35, for more information about these LEDs.

Blower module
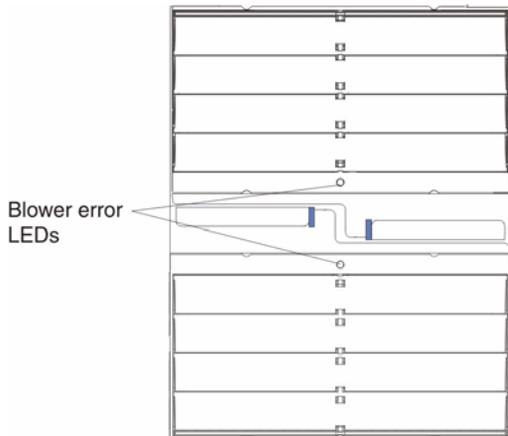
- **Blower LEDs:** The LED on each blower provides status information about the blower. For additional information, see the "Light Path Diagnostics*" section in the SBCE *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.
- **Blower error:** This amber LED is lit and stays lit when an error has been detected in the blower. The system error LED on the Blade Server Chassis SBCE LED panels will also be lit.

Ethernet switch module
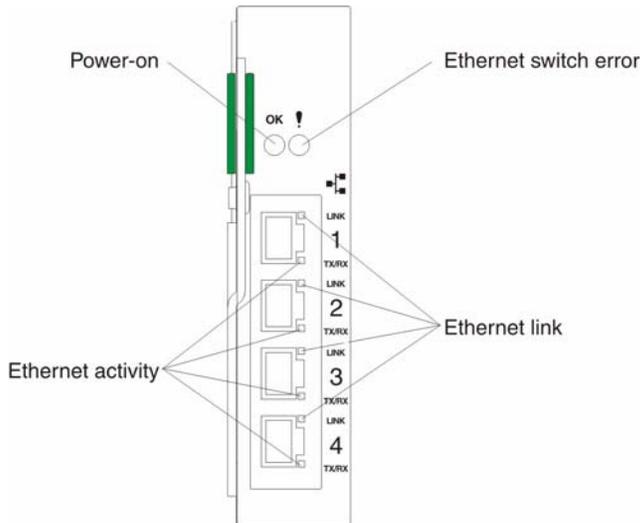
Ethernet switch LEDs: The LEDs on the switch module indicate the condition of the Ethernet switch and the links to the network. For additional information, see the "Light Path Diagnostics" section in the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.

- **Power-on:** When this green LED is lit, it indicates that the switch module has power.
- **Ethernet switch error:** When this amber LED is lit, it indicates that an error has been detected somewhere in the switch module. The system error LED on each of the Blade Server Chassis SBCE LED panels is also lit.
- **Ethernet link:** When this green LED is lit, there is an active connection through the port to the network.
- **Ethernet activity:** When this green LED is flashing, it indicates that there is activity through the port over the network link.

Power module

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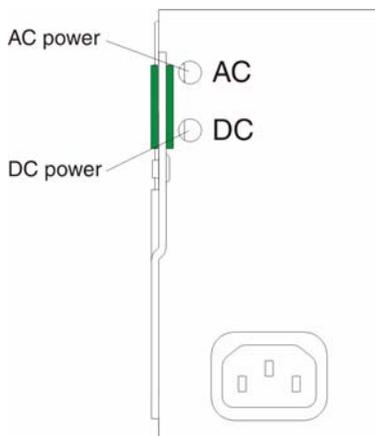
Power module LEDs: These green LEDs indicate the condition of the power module. For additional information, see the "Light Path Diagnostics" section in the SBCE *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.

- **AC power:** When this LED is lit, AC input to the power module is present and within specifications. During typical operation, both the AC and DC power LEDs are lit. For any other combination of LEDs, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.
- **DC power:** When this LED is lit, the DC output from the power module to the other components and blade servers is present and within specifications. During typical operation, both the AC and DC power LEDs are lit. For any other combination of LEDs, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.

Management module
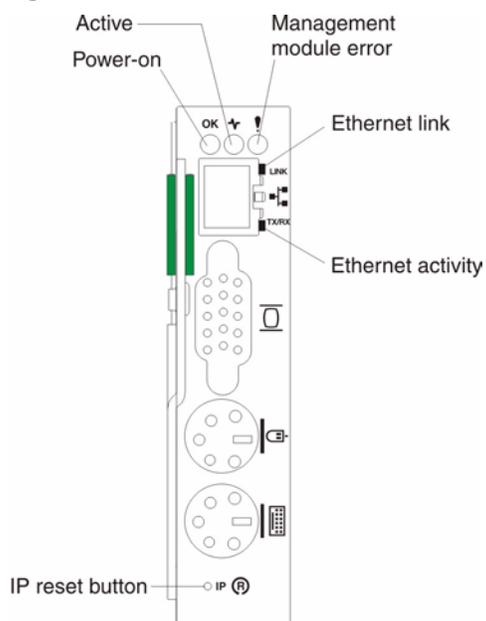
Management module LEDs: These LEDs provide status information about the management module and remote management connection. For additional information, see the "Light Path Diagnostics" section in the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.

- **Power-on:** When this green LED is lit, the management module has power.
- **Active:** When this green LED is lit, it indicates that this management module is actively controlling the Blade Server Chassis SBCE.
- **Management module error:** When this amber LED is lit, it indicates that an error has been detected somewhere on this management module. When this indicator is lit, the system error LEDs on the front and rear of the Blade Server Chassis SBCE LED panels are also lit.
- **Ethernet link:** When this green LED is lit, there is an active connection through the port to the network.
- **Ethernet activity:** When this green LED is flashing, it indicates that there is activity through the port over the network link.

Management module IP reset button: Do not press this button unless you intend to erase your configured IP addresses for the management module and lose connection with the remote management station, the I/O modules and the blade servers. If you press this button, you will need to reconfigure the management module settings (see the information beginning with "Setting up the remote connection" on page 38 for instructions).

Press this recessed button to reset the IP configuration of the management module network interfaces (Ethernet 1, Ethernet 2, gateway address, and so forth) to the factory defaults and then restart the management module.

Use a straightened paper clip to press the button.

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

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

System LED panel

The following illustration shows the status LEDs on the system LED panels on the front and rear of the Blade Server Chassis SBCE.
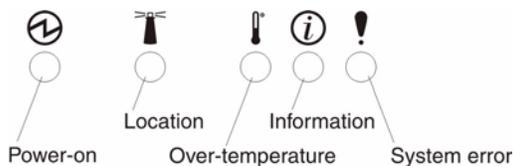
Attention: If the power-on LED is off, it does not mean there is no electrical current present in the Blade Server Chassis SBCE. The LED might be burned out. To remove all electrical current from the Blade Server Chassis SBCE, you must unplug all power cords from all power modules.

> **NOTE**
> You can turn off the location LED and the information LED through the management module web interface.

Power-on: When this green LED is lit, power is present in the Blade Server Chassis SBCE. When this LED is off, the power subsystem, the AC power, or the LED has failed, or the management module is not present or not functioning.

Location: When this blue LED is lit or flashing, it has been turned on by the system administrator, to aid in visually locating the Blade Server Chassis SBCE. If a blade server requires attention, the location LED on the blade server usually will also be lit. After the Blade Server Chassis SBCE has been located, you can have the system administrator turn off the location LED.

Over-temperature: When this amber LED is lit, the temperature in the Blade Server Chassis SBCE exceeds the temperature limits or a blade server reports an over-temperature condition. The Blade Server Chassis SBCE might have already taken corrective action, such as increasing the blower speed. This LED turns off automatically when there is no longer an over-temperature condition.

Information: When this amber LED is lit, a noncritical event has occurred that requires attention, such as the wrong I/O module inserted in a bay or power demands that exceed the capacity of power modules currently installed. The event is recorded in the event log. Check the LEDs on the Blade Server Chassis SBCE and the blade servers to isolate the component (see the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD for instructions on viewing the event log and checking the LEDs). After the situation is handled, have the system administrator turn off the information LED.

System error: When this amber LED is lit, it indicates that a system error has occurred, such as a failed module or a system error in a blade server. An LED on one of the components or on a blade server is also lit to further isolate the error. (For more information, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD.)

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4 Configuring your Blade Server Chassis SBCE

The Blade Server Chassis SBCE automatically detects the modules and blade servers that are installed and stores the vital product data (VPD) information. When the Blade Server Chassis SBCE is started, it automatically configures the remote management port on the management module so that you can configure and manage the Blade Server Chassis SBCE and blade servers. You configure and manage the Blade Server Chassis SBCE through the management module using the Web-based user interface.

> ⊸ **NOTE**
> You can also configure the I/O modules directly through an external I/O module port, using a telnet interface or a Web browser. See the documentation that comes with the I/O module for more information.

For the management module to communicate with the blade servers in the Blade Server Chassis SBCE, you will need to configure the IP addresses for the following internal and external ports:

* Remote management port (out-of-band) on the management module. The initial autoconfiguration enables you to connect to the network management station in order to configure the port completely and to configure the rest of the Blade Server Chassis SBCE.

* Internal Ethernet port on the management module for communication with the I/O modules.

* One internal Ethernet port on each I/O module, for communication with the management module.

To communicate with the blade servers for such functions as deploying an operating system or application program, you also will need to configure at least one external (in-band) port on an Ethernet switch module. See "What to configure" on page 50, for information about configuring external ports on Ethernet switch modules.

The management module supports the following Web browsers for remote access. The Web browser that you use must be Java-enabled, must support JavaScript* 1.2 or later, and must have the Java 1.4 Plug-In installed.

* Microsoft* Internet Explorer* 4.0 (with Service Pack 1), or later

* Netscape* Navigator* 4.72, or later (version 6.0 is not supported)

   Notes:

1. For best results when using the Web browser, set the monitor to 256 colors. Use only the video resolutions and refresh rates given in the following table. These are the only video resolution and refresh rate combinations that are supported for all system configurations.

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

2. The Web interface does not support the double-byte character set (DBCS) languages.

The Web-based user interface communicates with the management and configuration program that is part of the firmware that comes with the management module. You can use this program to perform tasks such as:

- Define the login IDs and passwords
- Select recipients for alert notification of specific events
- Monitor the status of the Blade Server Chassis SBCE and blade servers
- Control the Blade Server Chassis SBCE and blade servers
- Access the I/O modules to configure them
- Change the drive startup sequence in a blade server
- Set the date and time
- Remote control
- Change ownership of the keyboard, video, and mouse
- Change ownership of the CD-ROM drive, diskette drive, and USB port. (The CD-ROM drive and diskette drive in the Blade Server Chassis SBCE are viewed as USB devices by the blade server operating system.)

You also can use the management and configuration program to view some of the blade server configuration settings. See "Using the management and configuration program" on page 41, for more information.

Setting up the remote connection

To configure and manage the Blade Server Chassis SBCE and blade servers, you must first set up the remote connection through the Ethernet port on the management module.

Cabling the Ethernet port

Complete the following steps to connect the Ethernet cable to the management module:

1. Connect one end of a Category 5, or higher Ethernet cable, to the Ethernet port on the management module. Connect the other end of the Ethernet cable to the network.

2. Check the Ethernet LEDs to ensure that the network connection is working. The following illustration shows the locations of the Ethernet LEDs.
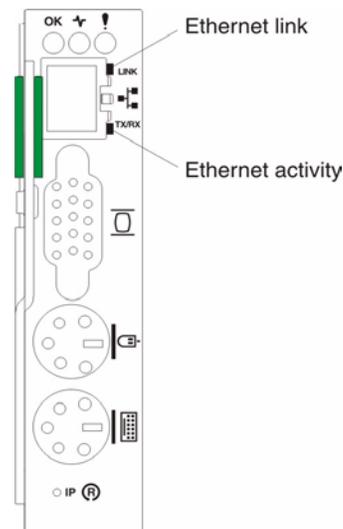
Ethernet link LED

When this green LED is lit, there is an active connection through the port to the network.

Ethernet activity LED

When this green LED is flashing, it indicates that there is activity through the port over the network link.

Configuring the management module for remote access

After you connect the management module to the network, the Ethernet port connection is configured in one of the following ways:

- If you have an accessible, active, and configured dynamic host configuration protocol (DHCP) server on the network, the host name, IP address, gateway address, subnet mask, and DNS server IP address are set automatically.
- If the DHCP server does not respond within two minutes after the port is connected, the management module uses the static IP address and subnet address.
- Blade server startups initiated from the network will be faster if you connect the DHCP server to the Ethernet switch in I/O bay 2. This is because the BIOS code in the blade server "sees" the bottom Ethernet controller first, and the bottom Ethernet controller in each blade server is associated with the switch in I/O bay 2.

Either of these actions enables the Ethernet connection.

If you do not want to use the default static values, you can configure the static IP address, host name, and subnet mask for the management module through the Web interface. The default IP address is 192.168.70.125, the default subnet address is 255.255.255.0, and the default hostname is MMxxxxxxxxxxxx, where xxxxxxxxxxxx is the burned-in media access control (MAC) address. The MAC address is on a label on the management module, below the IP reset button.
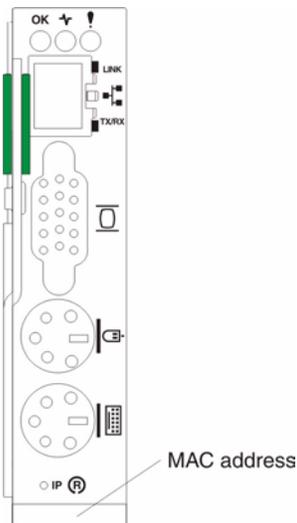
Important: Pressing the IP reset button on the management module replaces the configured IP addresses for the management module with the factory default IP addresses, and terminates the connection with the remote management station, the switch modules, and the blade servers. If you press this button, you will need to reconfigure the management module settings.

Notes:

1. If the IP configuration is assigned by the DHCP server, the network administrator can use the MAC address of the management module network interface to find out what IP address and host name are assigned.

2. If you want to access the management module with a laptop, set your laptop to have an address with the same subnet as the management module; then, enter the address of the management module in your Web browser.

Configuring Wake on LAN in the Blade Server Chassis SBCE

Complete the following steps to configure Wake on LAN in the Blade Server Chassis SBCE:

1. Write down the MAC addresses of the integrated Ethernet controllers of each blade server. This information can be found using the Configuration/Setup Utility for each blade server (**Devices and I/O Ports, System MAC Addresses**). The blade server MAC addresses can also be found on a barcode label that is on the bottom of the blade server enclosure. There might also be a loose label that shipped with the blade server that has the MAC addresses printed on it. The MAC addresses are needed to configure a remote system to start the blade servers using Wake on LAN. The remote system issues the Wake on LAN command by broadcasting it to a MAC address.

2. Make sure that Wake on LAN is enabled in the SBCE management module.

3. Make sure that the external ports of the Ethernet switch modules are enabled. If the external ports are not enabled, the Blade Server Chassis SBCE will not be able to communicate with the external network.

Verifying your Wake on LAN configuration

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

1. Start the blade server operating system.

2. Attempt to ping the remote computer that will issue the Wake on LAN command (magic packet). This verifies network connectivity.

3. Shut down the blade server, insert a DOS bootable diskette in the diskette drive, and then restart the blade server.

4. When the A:\ prompt appears, turn off the blade server using the power-control button.

5. Issue the Wake on LAN command from the remote computer.

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

Linux specific configuration

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

1. Type the following command:

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

   Where The "1,1" in the switch "enable_wol=1,1" instructs the driver to enable Wake on LAN for both controllers onboard a single blade. Since there are two controllers, it is required to issue a "1" for each of them.

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

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

Using the management and configuration program

This section provides the instructions for using the management and configuration program in the management module.

Starting the management and configuration program

Complete the following steps to start the management and configuration program:

1. Open a Web browser. In the address or URL field, type the IP address or host name defined for the management module remote connection (see "Configuring the management module for remote access" on page 39 for more details).

   The Enter Network Password window opens.

2. Type your user name and password. If you are logging in to the management module for the first time, you can obtain your user name and password from your system administrator. All login attempts are documented in the event log.

   ### ▬ NOTE

   The default user ID and password for the management module are:
   - User ID: USERID (all capital letters)
   - Password: PASSW0RD (note the zero, not O, in PASSW0RD)

3. Follow the instructions that appear on the screen. Be sure to set the timeout value you want for your Web session.

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

The SBCE management and configuration window opens.
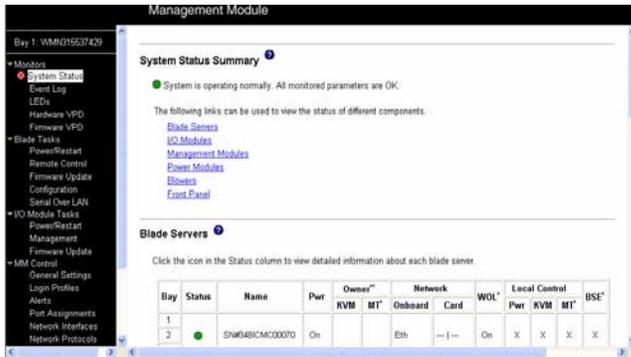
Management and configuration program options

From the management and configuration program main menu, you can select settings that you want to view or change.

The navigation pane (at the left on the management module window) contains navigational links that you use to manage your Blade Server Chassis SBCE and check the status of the components (modules and blade servers). Descriptions of the links are as follows:

Monitors
Use the choices in this section to view the status, settings, and other information for components in the Blade Server Chassis SBCE.

> **System status**
> Select this choice to view the overall system status, a list of events that require immediate attention, and the overall status of each of the blade servers and I/O modules.
>
> > **Blades:**
> > - **Bay** - The lowest-number bay the blade server occupies.
> > - **Status** - An icon that indicates good, warning, or bad for the particular blade server. Click the icon for more detailed status information.
> > - **Name** - The name of the blade server.
> > - **Pwr** - The power state (on or off) of the blade server.
> > - **Owner** - An indication of whether the blade server is the current owner of the following SBCE resources:
> >   — **KVM** - Keyboard, video, and mouse.
> >   — **MT** - The CD-ROM drive, diskette drive, and USB port.
> > - **Network** - An indication of which network interfaces are on the blade server (Ethernet or Fibre Channel).
> > - **WOL** - An indication of whether the Wake on LAN feature is currently enabled for the blade server. The Wake on LAN feature is enabled by default in blade server BIOS code and cannot be disabled. The SBCE management module provides a single point of control for the Wake on LAN feature, allowing the settings to be controlled for either the entire Blade Server Chassis SBCE or a single blade server. Wake on LAN settings made in the management module override the settings in the blade server BIOS code.
> > - **Local Control** - an indication of whether the following options are enabled:
> >   — Local power control
> >   — Local keyboard, video, and mouse switching
> >   — Local CD-ROM drive, diskette drive, and USB port switching
> > - **BSE** - an indication of whether a SCSI expansion unit occupies the blade tray

I/O modules:

- **Bay** - The number of the bay the I/O module occupies.
- **Status** - Icon that indicates good, warning, or bad for the particular switch module.
- **Type** - The network interface (Ethernet or Fibre Channel) the I/O module uses.
- **MAC Address** - The medium access control (MAC) address of the I/O module.
- **IP Address** - The IP address of the switch module.
- **Power** - The power state (on or off) of the I/O module.
- **Details** - Text information about the status of the I/O module.

Management module:

- **Bay** - The number of the bay that the management module occupies.
- **Status** - An icon that indicates good, warning, or critical for the particular management module. Click the icon for more detailed status information.
- **IP Address** - The IP address of the remote connection (external Ethernet port) on the management module.
- **Primary** - An indication of which MM is the primary, or active, MM.

Power Modules:

- **Bay** - The number of the bay that the power module occupies.
- **Status** - An icon that indicates good, warning, or critical for the particular power module.
- **Details** - Text information about the status of the power module.

Blowers:

- **Bay** - The number of the bay that the blower module occupies.
- **Status** - An icon that indicates good, warning, or critical for the particular blower module.
- **Speed** - The current speed of the blower module, as a percentage of the maximum revolutions per minute (RPMs). The blower speed varies with the thermal load. An entry of Offline indicates that the blower is not functioning.

Front panel: The temperature status for the front of the Blade Server Chassis SBCE.

Event log

Select this choice to view entries that are currently stored in the management module event log. This log includes entries for events that are detected by the blade servers. The log displays the most recent entries first. Information about all remote access attempts is recorded in the event log, and the management module sends out the appropriate alerts if configured to do so.

You can sort and filter entries in the event log.

LEDs

Select this choice to view the state of the Blade Server Chassis SBCE LED panel and blade server control panel LEDs. You also can use this choice to turn off the information LED and turn on, turn off, or blink the location LED on the Blade Server Chassis SBCE and the blade servers.

- **Front Panel LEDs** - The state of the following LEDs on the Blade Server Chassis SBCE LED panel is provided under this option.
  - Information
  - System error
  - Over temperature
  - Location

- **Blade Server LEDs** - The state of the following LEDs on the blade server control panel provided under this option.
    — Power
    — Information
    — Error
    — Location
    — Keyboard, video, and monitor select
    — Media (CD-ROM, diskette drive, USB port) select

Hardware VPD
Select this choice to view the hardware vital product data (VPD) for the Blade Server Chassis SBCE. When the Blade Server Chassis SBCE is started, the management module collects the vital product data and stores it in nonvolatile memory. The management module then modifies the stored VPD as components are added to or removed from the Blade Server Chassis SBCE. You can access this information at any time through remote connection. You can also view the log of modules inserted or removed from the Blade Server Chassis SBCE.

Firmware VPD
Select this choice to view the vital product data (VPD) for the firmware in all blade servers, and the I/O modules, and management module in the Blade Server Chassis SBCE. The firmware VPD identifies the firmware type, build ID, release date, and revision number. The VPD for the firmware in the management module includes the file name of the firmware components. (Selecting this choice takes 3 to 4 minutes to refresh and display information.)

Blade tasks
Select the choices in this section to view and change the settings or configurations of blade servers in the Blade Server Chassis SBCE.

Power/restart
Select this choice to perform the following actions on any blade server in the Blade Server Chassis SBCE:

- Turn on or turn off the selected blade server (set the power state on or off).

- Enable or disable local power control. When local power control is enabled, a local user can the blade server on or off by pressing the power-control button on the blade server.

- Enable or disable the Wake on LAN feature.

- Restart the blade server or the service processor in the blade server.

- See which blade servers are currently under remote control by a remote console (identified by an "x" in the Console Redirection column.

Select the blade servers you want to perform an action on, then click the appropriate link below the table for the action you want to perform.

Remote control

Select this choice to:

- View the current owner of the keyboard, monitor, and mouse (KVM), and of the CD-ROM drive, diskette drive, and USB port (Media tray).

- View the details of any remote control session currently active (user ID, client IP address, start time).

- Redirect a blade server console to the remote console. On the remote console, you can:

— Disable local switching of the KVM and of the media tray for all blade servers until explicitly enabled again. This prevents a local user from switching the console display to a different blade server while you are performing tasks.

— Change the owner of the KVM and of the media tray to the blade server you need to view.

— View the current blade server display.

— Control the blade server as if you were at the local console, including restarting the blade server and viewing the POST process, with full keyboard and mouse control.

Notes:

1. Only one remote control session is allowed at a time. If a remote control session is already active, you can end the current session and start a new one.

2. The timeout value for a remote control session is the same as the timeout value that you set for the Web session when you logged in.

3. When you redirect a blade server Linux X Window System session console to the remote console, the ability of the remote console applet to accurately track the location of the mouse cursor depends on the configuration of X-Windows. Complete the following procedure to configure the X Window System for accurate mouse tracking. Type the commands through the remote console or at the keyboard attached to the Blade Server Chassis SBCE. Note that the changes require root privileges.

   a. Enter the following commands:

      `init 3` (Switch to text mode if necessary)

      `rmmod mousedev` (Unload the mouse driver module)

   b. Add the following statement to.xinitrc in the user's home directory:

      `xset m 1 1` (Turn off mouse acceleration)

   c. Add the following statement to /etc/modules.conf:

      `options mousedev xres=X yres=Y` (Notify the mouse driver of the video resolution) where X and Y specify the video resolution

   d. Enter the following commands:

      `insmod mousedev` (Reload the mouse driver module)

      `init 5` (Return to GUI mode if necessary)

Firmware update

Select this choice to update the service processor firmware on a blade server. Select the target blade server and the firmware file to use for the update; then, click **Update**. You can obtain the firmware files from your Intel Support Representative.

Configuration

Select this choice to:

- Define a name for a blade server.

- Enable or disable the following items on the blade servers in the Blade Server Chassis SBCE:
    - Local power control
    - Local KVM control
    - Local media tray control
    - Wake-on-LAN feature

- View or define the startup (boot) sequence for one or more blade servers. The startup sequence prioritizes the following boot-record sources for a blade server:
    - IDE drive 1 (HDD1)
    - IDE drive 2 (HDD2)
    - CD-ROM
    - Diskette
    - Network
        - **PXE** - Attempt a PXE/DHCP network startup the next time the selected blade server is turned on or restarted.

    NOTE:

    In order to use the CD-ROM drive or diskette drive as a boot-record source for a blade server, the blade server must have been designated as the owner of the CD-ROM drive, diskette drive, and USB port. You set ownership either by pressing the CD/diskette/USB select button on the blade server or through the "Remote Control" choice described on page 45.

Serial Over LAN

Select this choice to view and change the global serial over LAN (SOL) settings used by all blade servers installed in the Blade Server Chassis SBCE and to enable or disable SOL globally for the chassis.

This choice also lets you monitor the SOL status for each blade server and lets you enable or disable SOL for each blade server, and globally for the chassis. Enabling or disabling SOL globally does not affect the SOL session status for each blad server. SOL must be enabled both globally for the Blade Server Chassis SBCE and individually for each blade server where you plan to begin a SOL session. SOL is enabled globally and on the blade servers by default.

SOL sessios are started and run sing the management module command-line interface. See the *Intel® Blade Server Chassis SBCE: Management Module Command-Line Interface Reference Guide* and the *Intel® Blade Server Chassis SBCE: Serial Over LAN (SOL) Setup Guide* for additional information and instructions. These guides are available on the *Intel® Blade Server Chassis SBCE Resource CD*.

I/O Module Tasks

Select the choices in this section to view and change the settings or configuration on network-interface I/O modules in the Blade Server Chassis SBCE.

Power/Restart

Select this choice to display the power status of the I/O modules and perform the following actions:

- Turn a switch on or off
- Reset a switch

Management

Select this choice to view or change the IP configuration of the I/O modules, ping the I/O module, return an I/O module to the default configuration, and start the configuration and management firmware that is in the I/O module.

Notes:

1. Before you can access the I/O module firmware, the following items must be set to **Enabled**:

- I/O module external ports
- External management for the external ports

    From this page, click **Advanced Switch Management>Advanced Setup** and enable the items.

2. The default user ID and password for the switch module firmware are:

- User ID: USERID (all capital letters)
- Password: PASSW0RD (note the zero, not O, in PASSW0RD)

See "Configuring the Ethernet switch module" on page 50, for more information about basic configuration of the Ethernet switch module that is required for the Blade Server Chassis SBCE.

See the documentation that comes with the switch module for details about the configuration and management firmware for the switch module.

MM Control

Select the choices in this section to view and change the settings or configuration on the management module whose Web interface you are logged into.

This includes configuring the following items:

- The name of the management module
- Up to 12 login profiles for logging in to the management module
- Ports used by the MM
- How alerts are handled
- The management module Ethernet connections for remote console and for communicating with the I/O modules
- Settings for the SNMP, SMTP, and DNS protocols
- Settings for secure socket layer (SSL) security

This also includes performing the following tasks:

- Backing up and restoring the management module configuration
- Updating the management module firmware
- Restoring the default configuration
- Restarting the management module
- Switching from the current, active MM to the redundant MM

General Settings

Select this choice to view or change the following settings:

- The name of the management module
- The name of the contact person responsible for the module
- The physical location of the management module
- The real-time clock settings in the management module

Login Profiles

Select this choice to configure up to 12 login profiles for logging in to the management module, and to specify the lockout period after five unsuccessful login attempts. For each profile, specify the following values:

- Login ID
- Authority level (default is Read Only)
- Password (requires confirmation)

Port Assignments

Select this choice to configure ports used by the management module. See the *Intel® Server Management Module SBCEMM: Installation and User's Guide* for information.

Alerts

Select this choice to specify which alerts (from lists of Critical, Warning, and System alerts) are monitored, which alert notifications are sent to whom, how alert notifications are sent (SNMP or e-mail), whether to include the event log with the notification, and other alert parameters.

Network Interfaces

Select this choice to configure the two Ethernet interfaces: external (remote management and console), and internal (communication with the I/O modules).

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

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

The management module cannot apply the switch IP address from its NVRAM if:

- The management module is restarting
- The management module has failed
- The management module has been removed from the chassis

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

Note: For switch communication with a remote management station through the management module external Ethernet port, the switch module internal network interface and the management module internal and external interfaces must be on the same subnet.

- **External Network Interface (eth0)** - This is the interface for the remote management and console port.
    — **Interface** - Select **Enabled** (the default) to use the Ethernet connection.
    — **DHCP** - Select one of the following choices:
        – **DHCP with rollover to static** (this is the default).
        – DHCP only
        – Static only
    — **Hostname** - (Optional) This is the IP host name you want to use for the management module (maximum of 63 characters).
    — **Static IP configuration** - You need to configure this information only if DHCP is disabled.
        – **IP address** - The IP address for the management module. The IP address must contain four integers from 0 to 255, separated by periods, with no spaces or consecutive periods. The default setting is 192.168.70.125.
        – **Subnet mask** - The subnet mask must contain four integers from 0 to 255, separated by periods, with no spaces. The default setting is 255.255.255.0
        – **Gateway address** - The IP address for your network gateway router. The gateway address must contain four integers from 0 to 255, separated by periods, with no spaces.
- **Internal Network Interface (eth1)** - This interface communicates with the switch module.
    — Specify the IP address to use for this interface. The subnet mask must be the same as the subnet mask in the external network interface (eth0).
    — View the data rate, duplex mode, maximum transmission unit (MTU), locally-administered MAC address, and burned-in MAC address for this interface. You can configure the locally-administered MAC address; the other fields are read-only.

Network Protocols
Select this choice to view or change the settings for the SNMP, SMTP, and DNS protocols.

Security
Select this choice to view or change the secure socket layer (SSL) settings for the Web server and LDAP client, and to view or change the Web server secure shell (SSH) settings. You can enable or disable (default is disabled) SSL and choose between self-signed certificates and certificates provided by a certificate authority (CA). You can also enable or disable (default is disabled) SSH, and generate and manage the SSH server key.

> **Note:** The first time you select Security, you are directed to an Intel Web page for downloading the SSL installation key. After you load the key, the Security choice functions as described.

Configuration File
Select this choice to back up or restore the management module configuration file.

Firmware Update
Select this choice to update the management module firmware. Click the **Browse** button to locate the firmware file you want, then click the **Update** button.

You can obtain the firmware files from your Intel Support Representative.

Restore Defaults
Select this choice to restore the factory default configuration of the management module.

Restart MM
Select this choice to restart (reset) the management module or to change to the redundant management module if one is present.

Saving and restoring the configuration file

After you have configured the management module, you can save the configuration file to a diskette or other external media. Then, if the configuration in the management module becomes damaged or the management module is replaced, you can restore the saved configuration file to the management module. Use the management module Web interface to save and restore the configuration file (**MM Control> Configuration File**).

> ➩ **NOTE**
>> If you cannot communicate with a replacement management module through the Web interface or the Intel Discovery Console, the IP address might be different from the IP address of the management module just removed. Press the IP reset button to set the management module to the factory default IP addresses; then, access the management module using the factory IP address (see "Configuring the management module for remote access" on page 39, for the factory IP addresses) and configure the management module or load the saved configuration file.

Configuring the Ethernet switch module

To connect any of the blade servers to the network, you must have an Ethernet switch module installed in I/O module bay 1. See "I/O modules" on page 38, for information about the location and purpose of each I/O module.

What to configure

You need to configure the switch IP addresses and subnet mask through the management module Web interface in order to have switch communication with the management module and remote management station (Intel Blade Discover Console, for example). This is in addition to the IP addresses configured in the management module. You might also need to use the firmware in the switch module to configure the switch external ports to operate in the correct link aggregation (trunking) mode, or to configure any VLANs or other special conditions.

> ➩ **NOTE**
>> To access the firmware in the switch module, make sure the following configuration items in the management module are set to **Enabled**:

- Switch module external ports
- External management for the external ports

In the management module Web interface, click **Switch Tasks Management> Advanced Switch Management> Advanced Setup** and enable the items.

Because all blade servers in the SBCE chassis share access to the external LAN through the switch ports, you can configure the four ports on a switch module to operate together as an aggregate link, or trunk. An aggregate link provides more bandwidth than a single link to the attached LAN.

> **Notes:**

1. The attaching LAN switch must have a compatible multi-port trunk configuration.
2. Configure link aggregation prior to attaching cables between the external ports and your LAN equipment.

You configure the switch through the firmware on the switch module, which you can access through the Web interface to the management module (click **Switch Tasks Management** in the navigation panel).

> ✒ **NOTE**
> You can also access the firmware on the switch module directly through an external switch module port, using a telnet interface or a Web browser and the switch IP address. See the documentation that comes with the switch module for more information.

You can configure the IP addresses, subnet mask, and protocols through the Deployment Wizard, which is a function of the Intel Blade Discovery Console (IBDC). You can also configure external switch module ports for multi-port link aggregation through the Wizard.

Important: For a remote management station, such as the IBDC server, to communicate with the switch modules in the Blade Server Chassis SBCE, the switch modules must be on the same subnet as the management module.

Supporting Ethernet failover

To have the Blade Server Chassis SBCE support Ethernet failover on the blade servers, set up the Blade Server Chassis SBCE and blade servers as follows:

- Configure the Ethernet controllers in one or more blade servers for failover (see the blade server documentation and the operating system documentation for information).

  > ✒ **NOTE**
  > When failover occurs on a blade server, the secondary Ethernet controller takes over network communication, using the switch module associated with that controller.

- Install a pair of Ethernet switch modules in I/O module bays 1 and 2.
- Configure the Ethernet switch modules and your network infrastructure so that they can direct traffic to the same destinations.

Configuring the Ethernet controllers in the blade servers
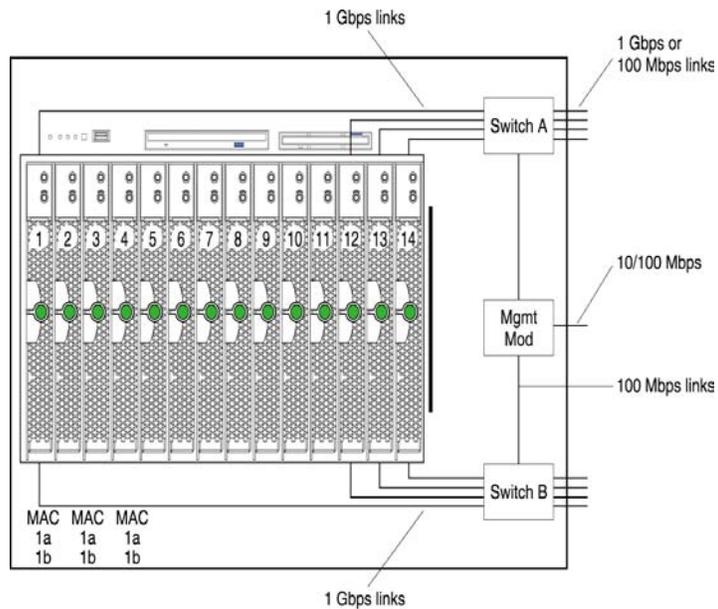
> ✒ **NOTE**
> The Blade Server Chassis SBCE does not include an Ethernet switch module; this is an optional feature that must be purchased separately. An Ethernet switch module must be installed in the Blade Server Chassis SBCE before the Ethernet controllers integrated on each blade server system board can be used.

The Ethernet controllers are integrated on each blade server system board. The Ethernet controllers provide 1000-Mbps full-duplex capability only, which enables simultaneous transmission and reception of data to the external ports on the Ethernet switches. You do not need to set any jumpers or configure the controller for the blade server operating system. However, you must install a device driver in the blade server to enable the blade server operating system to address the Ethernet controller. For blade server device drivers and information about configuring the Ethernet controllers, see the Ethernet Software CD that comes with the blade server.

SBCE networking guidelines

Your networking administrator should assist in the configuration of the network infrastructure prior to connecting the Blade Server Chassis SBCE to the LAN switch or similar network device. This section provides additional guidelines that might be useful in setting up your system.

A SBCE chassis with two Ethernet switch modules and one management module has the following internal configuration:


Each blade server has two independent Ethernet controllers, each with its own MAC address and a dedicated 1000-Mbps link to one of the switch modules (Controller 1 to Switch A and Controller 2 to Switch B in this diagram). In this configuration (the default), the blade servers share access to four external ports on each switch. There is no internal data path between the two switches within the SBCE chassis; an external network device is required for data packets to flow from one internal switch to the other.

The management module has a separate internal 100-Mbps link to each switch. These links are for internal management and control only. No data packets are allowed to flow from application programs on the blade servers to the management module over this path. A separate, non-switched path (not shown) is used for communication between the management module and a service processor on each blade server.

A typical SBCE network topology is shown in the following illustration.
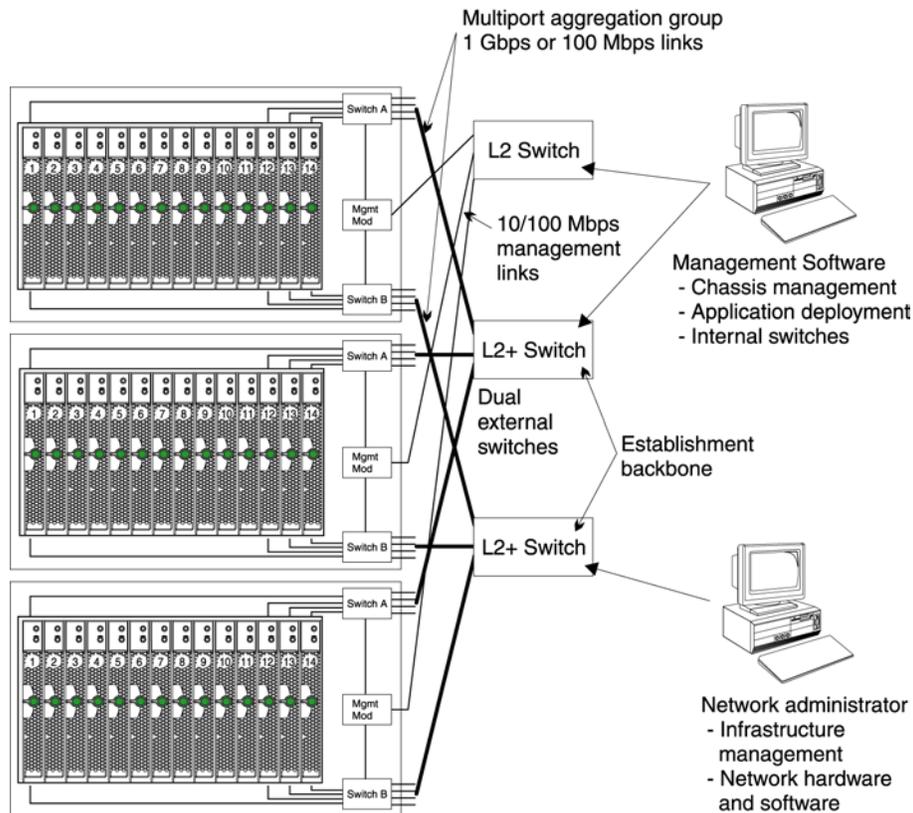
In this configuration, each Blade Server Chassis SBCE contains two Ethernet switch modules and one management module. The external ports on the switch modules are configured for multi-port link aggregation groups, or trunks, as are the corresponding ports on the attaching external LAN switches. Additionally, every port in the switch module in I/O module bay 1 (switch A in this illustration) in the Blade Server Chassis SBCEs is connected to the same external LAN switch and every port in the switch module in I/O module bay 2 (switch B in this illustration) in the Blade Server Chassis SBCEs is connected to the second external LAN switch.

Observe the following guidelines when creating this topology:

1. The external ports on the SBCE switch modules are designed for point-to-point, full-duplex operation to a compatible LAN switch or router. Configure a corresponding multi-port link aggregation group, or trunk, in both the switch module and the attaching LAN switch prior to installing the cables. The connection options are as follows, in order of preference:
   - Multi-port Link Aggregation Group or Trunk, 1 Gbps (1000 Mbps) per port
   - Single-uplink port, 1 Gbps
   - Multi-port Link Aggregation Group or Trunk, 100 Mbps per port

2. Connect the management module 10/100 Mbps Ethernet port to a separate Layer 2 network if possible, for the best security. If a separate network is not available, you can attach the Ethernet ports of the management module and switch modules to the same Layer 2 network.

3. Avoid network configurations that could lead to data loops, if possible. Loops will be created if you connect multiple ports from the same switch module to the same Layer 2 network device without first enabling link aggregation. If you implement configurations that include data loops, it is essential that you enable Spanning Tree Protocol on the switch module external ports.

5 Sharing resources among the blade servers

Your Blade Server Chassis SBCE provides resources that are available to all blade servers at all times, such as power modules, cooling, system management, and network switches; no user intervention is required. Some resources are selectable for use by a single blade server at a time, such as the CD-ROM drive, diskette drive, and USB port unit (media tray), or the keyboard-video-mouse unit. There are two ways to select resources for a blade server:

* Each blade server has two selection buttons on the front of the blade: CD and |O| .

  — To switch the keyboard, video, and mouse to a specific blade server, press the |O| button on that blade server.

  — To switch the CD-ROM, diskette drive, and USB port to a specific blade server, press the CD button on that blade server.

  The management module immediately assigns the resource to the blade server requesting it.

* You can use the management module Web interface to change ownership of the keyboard, video, and mouse, or the CD-ROM drive, diskette drive, and USB port   (**Blade task>, Remote control**).

* 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 (03 for blade 3).

  Do to keyboard variations, if the above key sequence does not switch KVM control, do the following steps:

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

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

  Notes:

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

2. If you install Microsoft Windows on a 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).

3. 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 Blade Server Chassis SBCE uses USB for internal communication with these devices.

4. You can use the management module Web interface to enable or disable the select buttons (**Blade tasks> Remote control**) on the blade servers.

Attention: Do not switch the CD-ROM drive, diskette drive, and USB port to another blade server while activity is taking place on either the CD-ROM or the diskette drive. (Activity lights on the CD-ROM drive and diskette drive must be off.) Otherwise, damage can occur.

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 Chassis SBCE.

If you cannot locate and correct the problem using the information in this section, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD for more information.

Diagnostic tools overview

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

- **Troubleshooting charts**

  These charts list problem symptoms and steps to correct the problems. See the *Intel® Blade Server Chassis SBCE Hardware Maintenance Manual and Troubleshooting Guide* for more information.

- **Diagnostic programs and error messages**

  The built-in self-test (BIST) program checks the Blade Server Chassis SBCE during startup and generates error messages if problems are found.

- **Light Path Diagnostics feature**

  Use the Light Path Diagnostics feature to identify system errors quickly. On the Blade Server Chassis SBCE, the Light Path Diagnostics feature consists of the LEDs on the front and rear of the SBCE chassis and on the front of the modules and blade servers.

Troubleshooting charts

You can use the troubleshooting charts in this section to find solutions to problems that have definite symptoms.

See the *Hardware Maintenance Manual and Troubleshooting Guide* on the Intel SBCE Resource CD for more detailed information about testing the Blade Server Chassis SBCE. If you have run the diagnostic test programs or if running the tests does not reveal the problem, call your Intel Support Representative.

If you have just added a new option and your system is not working, complete the following procedure before using the troubleshooting charts:

1. Remove the option that you just added.
2. Run the diagnostic tests to determine if your system is running correctly.
3. Reinstall the new device.

Table 3. 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.	

Table 3. Troubleshooting charts (continued)

Device	Suggested action
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 SBCE management module, and that the management module LEDs indicate that the module is functioning.
	Some monitors have their own self-tests. If you suspect a problem with your monitor, refer to the information that comes with the monitor for adjusting and testing instructions.
	If you still cannot find the problem, try replacing the management module. If the problem remains, replace the monitor.
The screen is blank.	Verify that:
	1. The system power cord is plugged into the SBCE power module and a working 220-volt PDU.
	2. The monitor cables are connected properly.
	3. The monitor is turned on and the brightness and contrast controls are adjusted correctly.
	4. The monitor is owned by a blade server that is turned on.
	If the items above are correct and the screen remains blank, contact your Intel Support Representative.
Only the cursor appears.	Replace the monitor.
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. Non-standard monitor cables might cause unpredictable problems.
	3. An enhanced monitor cable with additional shielding may help
	4. If the problem remains, contact your Intel Support Representative.
Wrong characters appear on the screen.	If the wrong language is displayed, update the firmware in the management module with the correct language.
	If the problem remains, contact your Intel Support Representative.
Power	

Table 3. Troubleshooting charts (continued)

Device	Suggested action
The system does not power on.	Verify that: 1. The power cables are properly connected to the power modules in the Blade Server Chassis SBCE. 2. The 220-volt PDU or electrical outlet functions properly. 3. The LEDs on the power module are on. 4. If you just installed an option, remove it, and restart the Blade Server Chassis SBCE. If the Blade Server Chassis SBCE now turns on, you might have installed more options than the power module supports. You might need to install a power module in power bay 3 or 4. If the problem remains, contact your Intel Support Representative.
Option problems	
An Intel option that was just installed does not work.	Verify that: • The option is designed for the Blade Server Chassis SBCE. • You followed the installation instructions that came with the option. • You have not disturbed any other installed options or cables. If the problem remains, contact your Intel Support Representative.
An Intel 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 Intel Support Representative.
Service processor problems	
Service processor in the management module reports a general monitor failure.	Disconnect the Blade Server Chassis SBCE from all electrical sources, wait for 30 seconds, reconnect the Blade Server Chassis SBCE to the electrical sources, and restart the server. If the problem remains, contact your Intel Support Representative.

Light Path Diagnostics* feature overview

On the Blade Server Chassis SBCE, the Light Path Diagnostics* feature consists of the LEDs on the front and rear of the SBCE chassis and on the front of the modules and blade servers. If the system-error LED on the system LED panel on the front or rear of the Blade Server Chassis SBCE is lit, one or more error LEDs on the SBCE 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 problems using the Light Path Diagnostics.

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

The following example illustrates how to use the Light Path Diagnostics feature to diagnose a system error.

1. Note that the Blade Server Chassis Blade Server Chassis SBCE error LED is lit on the system LED panel.
2. Locate the module or blade server that also has an error LED lit. See,"Major components of the Blade Server Chassis SBCE" on page 8.

> See the documentation that comes with your blade server for the location of error LEDs on the blade server.

- If the component is a module, replace the module.
- If the component is a blade server with its system error LED lit, follow the instructions in the documentation that comes with the blade server to isolate and correct the problem.

Light Path Diagnostics table

The system error LED on the system LED panel is lit when certain system errors occur. If the system error LED on your Blade Server Chassis SBCE is lit, use the following table to help determine the cause of the error and the action you should take.

Table 4. Light Path Diagnostics

Lit LED	Cause	Action
Blade Server Chassis SBCE LED panel		
Location	A condition has occurred in this Blade Server Chassis SBCE that has caused the remote system management to identify this Blade Server Chassis SBCE as needing attention.	Look for any information or error LEDs on the system LED panels, the modules, and the blade servers in this Blade Server Chassis SBCE, and follow the instructions in this table for those LEDs.
Over-temperature	The system temperature has exceeded a threshold level.	1. Check to see if a blower module has failed. If it has, replace the blower module as soon as possible, to regain redundancy. 2. Make sure the room temperature is not too high. (See "Features and specifications" on page 3 for temperature information.) 3. Check to see if a blade server has a temperature LED lit. If it has, see the documentation that comes with the blade server. 4. Make sure there is a blade server, module, or filler plugged into each bay. If the problem remains, have the system serviced.
Information	A noncritical event has occurred that should be looked at, such as the wrong switch module inserted in a bay, or power needs that exceed the capacity of power modules currently installed.	Check the error log for the messages. Check the LEDs on the Blade Server Chassis SBCE and the blade servers to isolate the component.

Table 4. Light Path Diagnostics (continued)

Lit LED	Cause	Action
System error	A critical system error has occurred, such as non-redundancy on the power modules or a system error in a blade.	1. Check the error log for messages. 2. Look for an error LED on the modules and blade servers to locate the component. • If the error LED is on a module, follow the instructions for the module in this table. • If the error LED is on a blade server, see the documentation that comes with the blade server.

Table 4. Light Path Diagnostics (continued)

Lit LED	Cause	Action
Management module		
System error	A critical error has occurred in the management module.	If your Blade Server Chassis SBCE has only one management module, remove AC power from the chassis and restart it. If the problem remains, replace the management module. If your Blade Server Chassis SBCE has a redundant module for this management module, the chassis continues to function using the redundant module. Replace the failed management module.
Power module		
System error	A critical error has occurred in the power module.	Replace the module. If your Blade Server Chassis SBCE has a redundant module for this power module, the chassis continues to function using the redundant module.
Blower module		
System error	The blower has failed or is operating too slowly.	Replace the blower module as soon as possible, to regain cooling redundancy. The Blade Server Chassis SBCE continues to function. The redundant blower module provides cooling to the chassis and blade servers.
Switch module		
System error	A critical error has occurred in the switch module.	Replace the module.

A Getting help and technical assistance

This appendix contains information about where to go for additional information about Intel and Intel products, what to do if you experience a problem with your Blade Server Chassis SBCE and components, and whom to call for service, if necessary.

Before you call

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

Check all cables to make sure that they are connected.

Check the power switches to make sure that the system is turned on.

Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system.

Contact your Intel Support Representative.

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

Using the documentation

Information about your Blade Server Chassis SBCE and pre installed software, if any, is available in the documentation that comes with your system. The documentation includes online books, README files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software.

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