

Intel[®] Blade Server Switch Module SBCEFCSW: Installation Guide

A Guide for Technically Qualified Assemblers of Intel[®] Identified Subassemblies and Products

Order Number: C39674-004

When translations of this guide are available, you can find them at the following URL:
<http://support.intel.com/support/motherboards/server/>

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Safety and regulatory information

⇒ NOTE

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

Important Safety Instructions

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

Electrical Safety

CAUTION:

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

Important: Disconnect all power before performing a mechanical inspection.

Observe the following rules when working on electrical equipment.

- Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not protect you when working with live electrical currents.
- Many customers have rubber floor mats (near their equipment) that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.
- Find the emergency power-off (EPO) switch, disconnect switch, or electrical outlet in the room. If an electrical accident occurs, you can quickly turn off the switch or unplug the power cord.
- Do not work alone under hazardous conditions, or near equipment that has hazardous voltages.
- Disconnect all power before:

- Performing a mechanical inspection
- Working near power supplies
- Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box (that supplies power to the machine) and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you. Remember: another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
 - Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
- When using testers, set controls correctly and use the approved probe leads and accessories for that tester.
- Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.
- Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of the maintenance information. Use extreme care when measuring high voltages.
- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- Never assume that power has been disconnected from a circuit. First, check that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental inspection mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- When the power is on and power supply units, blowers and fans are removed from their normal operating position in a machine, do not attempt to service the units. This practice ensures correct grounding of the units.
- If an electrical accident occurs, use caution:
 - Switch power off
 - Send another person to get help/medical aid

Handling electrostatic discharge-sensitive devices

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

⇒ NOTE

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

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

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.

- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those in the following list, to provide protection that meets the specific service requirement.
 - 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.



DANGER

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

To avoid a shock hazard:

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

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

**CAUTION:**

If your system has a module containing a lithium battery, replace it only with the same or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

- Do not:
- Throw or immerse into water
- Heat to more than 100 degrees C (212 degrees F)
- Repair or disassemble
- Dispose of the battery as required by local ordinances or regulations.

**CAUTION:**

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

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

**DANGER**

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

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



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

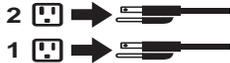
**CAUTION:**

Use safe practices when lifting.



CAUTION:

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



CAUTION:

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



CAUTION:

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



CAUTION:

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



CAUTION:

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

Regulatory specifications and disclaimers

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

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

Korea:	RRL Approval
Russia:	GOST Approval
International:	CISPR 22, Class A Limit

Electromagnetic compatibility notices (USA)

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

⇒ NOTE

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

⇒ NOTE

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

Electromagnetic compatibility notices (International)

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

Japan EMC Compatibility:

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

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

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

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

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

警告使用者:

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

RRL Korea:

기종별	사용자안내문
A급 기기	이 기기는 업무용으로 전자파 적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.
B급 기기	이 기기는 가정용으로 전자파 적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

※ 비교

A급 기기 : 업무용 정보통신기기를 말한다.

B급 기기 : 가정용 정보통신기기를 말한다.

English translation of the notice above:

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

1 Introducing the Intel® Blade Server Switch Module SBCEFCSW

This *Installation Guide* contains the following information about the Intel® Server Platform SB-HE Fibre Channel Switch Module:

- Setting up and installing your switch module
- Installing the SAN Utility application

For installation details, see Chapter 2, “Installing and replacing a switch module,” on page 9 and Chapter 3, “Information panel LEDs and external Fibre Channel ports,” on page 17 For additional information, see the instructions in your SBCE publications. The term Intel® Blade Server Switch Module SBCEFCSW is referred to as the switch module and the term SAN Utility application is referred to as the SAN Utility throughout this publication.

Your switch module is a Fibre Channel component that contains a 16-port switch application specific integrated circuit (ASIC). The ASIC provides two external Fibre Channel user ports with which to connect to external storage devices and 14 internal ports to connect to the SBCE blade server bays. You can manage and configure your switch module through either a Telnet connection to the embedded command line interface (CLI), or by using the SAN Utility. The SAN Utility provides an intuitive graphical user interface (GUI) that you can use to configure multiple switch modules through other connected SAN devices from a single interface. You can install up to two switch modules in a SBCE unit.

You can obtain up-to-date information about your switch module and other Intel server products by contacting your Intel Support Representative.

The switch module has four labels: a safety certification label, a serial number label, and two MAC address labels. The safety certification label is on the left side of the switch module. The product name and serial number are on the serial number label on the left side of the switch module. The first MAC address label is on the information panel under the switch module external port 1. The second MAC address label is on the right side of the switch module. You will need this information when you register your switch module with Intel. See Figure 1 on page 7 for the location of the switch module labels that contain the MAC address and serial number information.

Record your product information in this table
Product name: Intel® Blade Server Switch Module SBCEFCSW
Model number:
Media access control (MAC) address:

Open the shipping carton of the switch module and carefully unpack its contents. The carton should contain the following items:

- One Fibre Channel switch module
- The Intel® Blade Server Switch Module SBCEFCSW Resource CD
- One diagnostic wrap plug
- Safety attention document

⇒ **NOTE**

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

Specifications and features

This section provides a summary of the specifications and features for your switch module.

Your switch module has the following features:

- **Simple name server implementation**

The simple name server is implemented as described in Fibre Channel Generic Services (FC-GS-3). The simple name server requests and responses are based on the Common Transport Interface (CTI) as described in FC-GS-3. Name server database objects are defined as follows:

 - Native Port Identifier (P_ID)
 - Port Name (PN)
 - Node Name (NN)
 - Class of Service (CoS)
 - Internet protocol (IP) Address (IP_A)
 - Initial Process Associator (IPA)
 - FC-4 Types (Type) and Port Type (PT)
 - Symbolic Port Name (SPN)
 - Symbolic Node Name (SNN)
- **Security**

The switch module provides fabric security and interswitch link security. Fabric security controls management access to the fabric. When fabric security is enabled on all switches in the fabric, you must provide a user name and password to access the fabric. Security is disabled by default.
- **Firmware installation**

Use the SAN Utility application to install and activate new firmware.
- **Registered State Change Notification (RSCN)**

The switch module supports RSCN as described in FC-FLA. RSCN enables an agent to register for change events in the fabric and attached devices.
- **Interoperability**

The switch module is interoperable with FC-SW-2 compliant switches.

For more information, see the *Intel® Switch Interoperability Guide*.
- **Error detection**

The switch module supports the following error detection methods:

 - Cyclic redundancy check (CRC)
 - 8-byte and 10-byte conversion
 - Parity
 - Long frame and short frame
 - D_ID mismatch
 - S_ID mismatch
- **Frame bundling**

The switch module provides the following frame bundling methods:

 - No frame bundling - Intermix frames from different sources at will.
 - Soft lockdown - Soft lockdown causes the switch module to wait for either the sequence to be completed or a gap in the frame traffic to occur before servicing requests from a different port.

- Configurable Fabric Address Notification

Fabric Address Notification (FAN), as described in FC-FLA, is sent out by the fabric after an initialization event (usually a loop initialization port) to each attached NL_Port. The purpose of the FAN is to inform the attached NL_Ports of the fabric node name, port name, and fabric address.

The following information is a summary of the specifications of the switch module:

Table 1. Fibre Channel switch module specifications

<p>Fibre Channel switch module specifications:</p> <ul style="list-style-type: none"> • Fibre Channel protocols: FC-PH version 4.3, FC-PH-2, FC-PH-3, FC-AL version 4.5, FC-AL-2 Rev 7.0, FC-FLA, FC-GS-3, FC-FG, FC-PLDA, FC-Tape, FC-VI, FC-SW-2, Fibre Channel Element MIB RFC 2837, and Fibre Alliance MIB version 4.0. • Fibre Channel service classes: Class 2 and class 3 • Operation modes: Fibre Channel class 2 and class 3, connectionless. • External port type: Generic loop port (GL_port) • Internal port type: fabric port (F_port) • Port characteristics: External ports are automatically detected and self configuring • Number of Fibre Channel ports: 2 external ports and 14 internal ports • Scalability: 239 switches maximum depending on your configuration • Maximum number of user ports: 475 000 ports depending on your configuration 	<ul style="list-style-type: none"> • Buffer credits: 12 buffer credits per port • Media type: Small form-factor pluggable (SFP) module • Fabric port speed: 1.0625 or 2.125 Gbps (gigabits per second) • Maximum frame size: 2148 bytes (2112 byte payload) • System processor: Geode SC1200 • Fabric latency: Less than 0.5 μsec • Fabric point-to-point bandwidth: 2 Gbps or 4 Gbps at full duplex • Fabric aggregate bandwidth: 64 Gbps at full duplex • Nonblocking architecture to prevent latency <p>Switch maintainability:</p> <ul style="list-style-type: none"> • Diagnosis: Power-on self-test (POST) is performed on all functional components except the SFP module. Port operational tests include internal, external, and online tests. • User interface: LED indicators 	<p>Fabric management:</p> <ul style="list-style-type: none"> • Management methods: <ul style="list-style-type: none"> — SAN Utility application — Telnet and command line interface (CLI) • Switch SNMP agent: Enables a network management workstation to receive configuration values, traffic information, and Fibre Channel failure data through SNMP and the Ethernet interface. <p>Dimensions:</p> <ul style="list-style-type: none"> • Width: 112 mm (4.41 in.) • Height: 29 mm (1.14 in.) • Depth: 260.3 mm (10.25 in.) • Weight: 2 lb <p>Environmental:</p> <ul style="list-style-type: none"> • Temperature and altitude: <ul style="list-style-type: none"> — Operating: 5°C to 40°C (41°F to 104°F) at an altitude of 0 to 3048 m (0 to 10 000 ft.) — Non-operating: -40°C to 65°C (-40°F to 149°F) at an altitude of 0 to 15 240 m (0 to 50 000 ft.)
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Table 1. Fibre Channel switch module specifications (continued)

<ul style="list-style-type: none"> • Humidity: <ul style="list-style-type: none"> — Operating: 25% to 80%, noncondensing — Non-operating: 25% to 90%, noncondensing • Switch regulatory certifications: • Electrical: <ul style="list-style-type: none"> • Power source loading: 3.75 amps maximum at 12 V dc • Heat output: 45 watts maximum • Operating voltage: 12 V dc • Circuit protection: Internally fused • Safety standards: <ul style="list-style-type: none"> — UL 1950 (USA) — UL 1950 (Canada) — EN60950 (EC) — Support for Japan — Support for Korea — CB scheme - IEC 60950 	<ul style="list-style-type: none"> • Emissions standards: <ul style="list-style-type: none"> FCC part 15B Class A (USA) — VCCI Class A ITE (Japan) — ICES-003 issue 3 (Canada) — A4EN55022 level A (EC) — Voltage fluctuations: EN 61000-3-3 — Harmonics: EN 61000-3-2 — Immunity: EN55024: 1998 — Marking: <ul style="list-style-type: none"> – FCC Part 15 – UL (United States) – cUL (Canada) – TUV – VCCI – CE • Shortwave laser SFP module at 1 Gbps and multi-mode SFP module at 2 Gbps: <ul style="list-style-type: none"> • Connector: LC-LC • Color coding: Beige or black exposed connector surfaces • Cable: Fibre Channel 100-M6-SN-I (50 µm multimode) • Wavelength: 830 to 860 nm 	<ul style="list-style-type: none"> • Transmit power: -10 dBm minimum • Receiver sensitivity: -16 dBm average • Distance: <ul style="list-style-type: none"> — 500 meters maximum using 50 micron fiber — 300 meters maximum using 62.5 micron fiber • Safety: DHHS 21 CFR(J), IEC 825-1 CENELEC EN 60825-1, VDE • Longwave laser SFP module at 1 Gbps and 2 Gbps single-mode: <ul style="list-style-type: none"> • Connector: LC-LC Fibre Channel cable • Color coding: Blue exposed connector surfaces • Cable: Fibre Channel 100SM-LC-L (9 µm single mode) • Wavelength: 1270 through 13.5 nm • Transmit power: -10 dBm minimum • Receiver sensitivity: -20 dBm average • Distance: 2 meters to 10 kilometers • Safety: DHHS 21 CFR(J), IEDC 825-1 CENELEC EN 60825-1, VDE
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Related publications

This *Installation and User's Guide* contains setup and installation instructions for your Expansion Card, including information about getting started and how to configure your Expansion Card. In addition to this *Installation and User's Guide*, the following related documentation is provided with your switch module:

- *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide*
This publication is provided in Portable Document Format (PDF) on the *Intel® Blade Server Switch Module SBCEFCSW Resource CD*. It describes how to use the SAN Utility application, describes how to start the Telnet CLI, and lists the CLI commands and their usage.
- *Intel® Blade Server FC Expansion Card SBFCM: Installation and User's Guide*
This Installation and User's Guide contains instructions on installing the Intel® Fibre Channel Expansion Card in an Intel® Server Compute Blade. This publication contains information about:
 - Installing and configuring the expansion card
 - Updating the BIOS and device drivers for the expansion card
- *Intel® Blade Server Switch Module SBCEFCSW and FC Expansion Card SBFCM Hardware Maintenance Manual and Troubleshooting Guide*
This manual contains information to help you solve problems yourself, or to provide information to a service technician.
- *QLogic® SAN Solutions Guide*
This publication is provided in PDF on the *Resource CD*. It provides a user-oriented discussion of how Fibre Channel options are used to provide different SAN storage solutions for various application requirements. This document also provides an overview and description for backup and restore, business continuance and high availability, and storage consolidation and data sharing solutions.
- *QLogic® Switch Interoperability Guide*
This publication is provided in PDF on the *Resource CD*. It provides detailed Fibre Channel switch configuration data and step-by-step configuration procedures for integrating the SBCE unit into other vendor switch fabrics. Each vendor configuration includes:
 - An initial integration checklist
 - Configuration limitations
 - Supported switch and firmware versions
 - Specific management application operations
 - A successful-integration checklist.
- *QLogic® SAN Interoperability Guide*
This publication is provided in PDF on the *Resource CD*. It is a key resource for SAN planning and implementation. It provides interoperability matrices that let you identify at a glance the certified SAN products, solutions, and services that best suit your needs.
- *QLogic® SAN Configuration Guide: CLARiiON Storage*
This publication is provided in PDF on the *Resource CD*. It is a comprehensive guide for those interested in deploying QLogic and CLARiiON Storage solutions.
- *QLogic® SAN Configuration Guide: LSI Storage*
This publication is provided in PDF on the *Resource CD*. It is a comprehensive guide for those interested in deploying QLogic and LSI Storage solutions.
- *QLogic® SAN Configuration Guide: XIOTech Storage*
This publication is provided in PDF on the *Resource CD*. It is a comprehensive guide for those interested in deploying QLogic and XIOTech Storage solutions.

- *Intel® Server Boards and Server Chassis Safety Information*

This multilingual publication is provided in PDF on the *Resource CD*. It contains translated versions of the caution and danger statements that appear in the documentation.

Depending on your blade server model, additional publications might be included on the *Intel® Blade Server Chassis SBCE Resource CD*.

Notices and statements used in this book

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

- **Notes:** 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.

Major components of the switch module

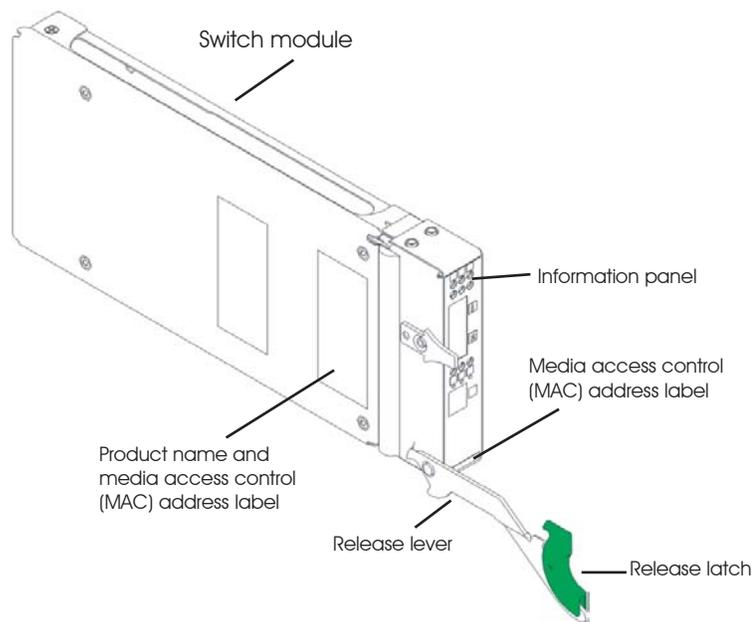
The green color on components and labels on your switch module and SBCE unit identifies hot-swap or hot-plug components. You can install or remove these components while the SBCE unit is running, provided that it is configured to support this function.

The blue color on components and labels indicates touch points where a component can be gripped, a latch moved, and so on.

Figure 1 on page 7 shows the major components of your switch module.

⇒ **NOTE**

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



TP00711

Figure 1. Fibre Channel switch module major components

For more information about the components of the information panel, see Chapter 3, “Information panel LEDs and external Fibre Channel ports,” on page 17 For more information about the MAC address, see the *Intel® Blade Server Switch Module SBCEFCSW: Management and User’s Guide* provided on the *Intel® Blade Server Switch Module SBCEFCWSW Resource CD*.

2 Installing and replacing a switch module

Figure 2 shows the switch-module bay locations in the SBCE unit.

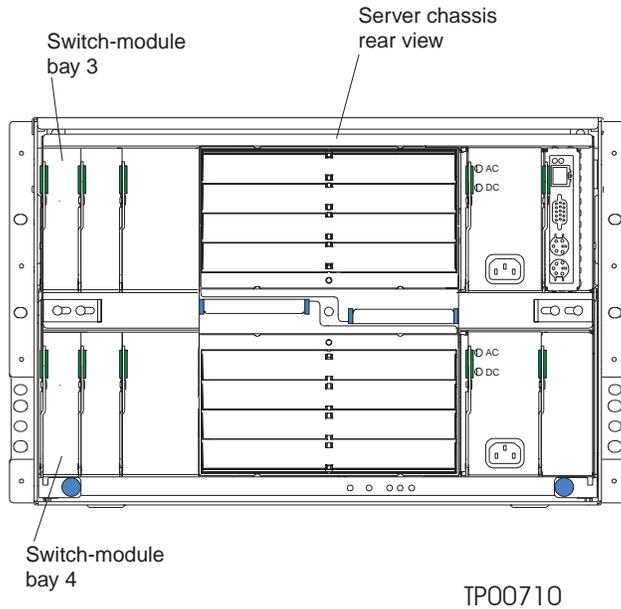


Figure 2. SBCE unit rear view

You must install switch modules only in switch-module bays 3 and 4 of the SBCE unit. At least one switch module is required when you install the Fibre Channel Expansion Card in the blade server. Installing a switch module in bay 3 or bay 4 provides the first connection to any installed Fibre Channel expansion card in the SBCE unit. Installing a second switch module enables a second connection to a Fibre Channel expansion card in the SBCE unit. Adding a second switch module provides a redundant path and a separate Fibre Channel connection from the blade server to the external Fibre Channel network and SAN.

Important:

The switch modules in switch-module bays 3 and 4 and all blade server expansion cards in the SBCE unit must use the same interface type. Therefore, you must install Fibre Channel expansion cards when you install Fibre Channel switch modules into your SBCE unit.

The following table summarizes the application for each switch module.

Bay	Switch module function
3	Port 1 connection to the blade server interface expansion card in the SBCE unit
4	Port 2 connection to the blade server interface expansion card in the SBCE unit

⇒ NOTE

The second switch module port connection allows for a redundant path from the blade server to external Fibre Channel devices.

Installation guidelines

Before you begin to install the switch module in your SBCE unit, read the following information:

- Become familiar with the safety and handling guidelines specified under “Safety and regulatory information” on page v and “Handling static-sensitive devices” on page 10 and read the safety statements in SBCE unit option publications.
- The green color on components and labels in your SBCE unit identifies hot-swap or hot-plug components. You can install or remove hot-swap modules while the SBCE unit is running. For complete details about installing or removing a hot-swap or hot-plug component, 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 turn off the SBCE unit to install or replace any of the hot-swap modules on the rear of the SBCE unit.
- For a list of supported options for your SBCE unit, contact your Intel Support Representative.

System reliability considerations

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

- Each of the module bays on the rear of the SBCE unit has either a module or filler module installed.
- A removed hot-swap module is replaced with an identical module or filler module within 1 minute of removal.
- A removed hot-swap blade server is replaced with an identical blade server or a filler blade within 1 minute of removal.

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 SBCE 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 SBCE unit without setting down the device. If it is necessary to set down the device, put it back in its static-protective package. Do not place the device on your system unit cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing a switch module



CAUTION:

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

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



Danger: DANGER

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

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments,

Class 1 Laser Product
Laser Klasse 1
Laser Klass 1
Luokan 1 Laserlaite
Appareil À Laser de Classe 1



CAUTION:

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

CAUTION:



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 switch module:

1. Review the information in “Safety and regulatory information” on page v and “Installation guidelines” on page 10 through “Handling static-sensitive devices” on page 10
2. Remove the acoustic attenuation module option, if necessary, from the rear of the SBCE unit. See the *Intel® Server Compute Blade SBXL52: Installation and User’s Guide* for detailed removal instructions.

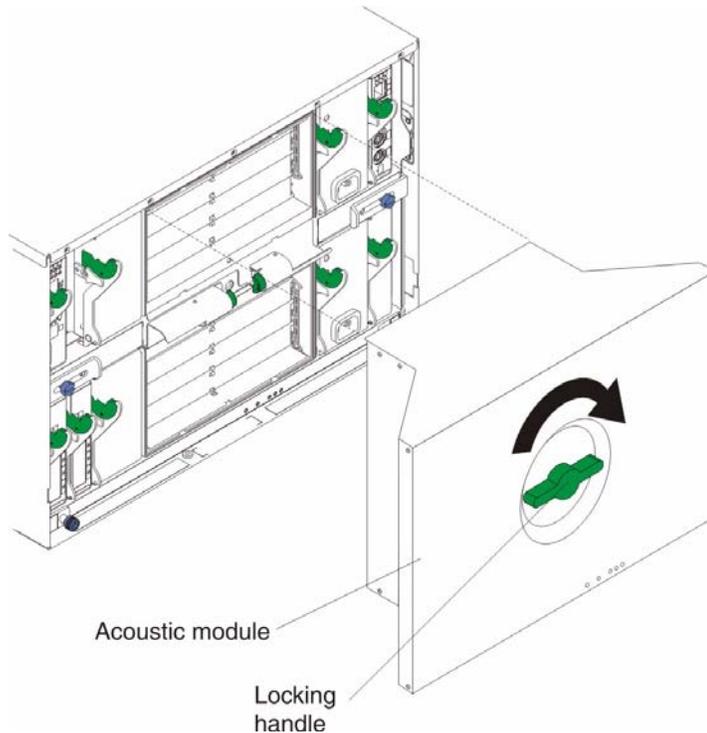


Figure 3. Removing the acoustic attenuation module

3. Be sure that the SBCE unit is turned on, the green DC power LED on each power module is lit, and the green OK LED on the management module is lit.
4. Select only switch-module bay 3 or bay 4 in which to install the switch module.
5. Remove the filler module from the switch-module bay in which you are installing the switch module. Store the filler module for future use.

⇒ **NOTE**

Install your switch module only in switch-module bay 3 or bay 4.

6. If you have not already done so, touch the static-protective package that contains the switch module to an unpainted metal part of the SBCE unit for at least 2 seconds.
7. Remove the switch module from its static-protective package.

8. Ensure that the release lever and latch on the switch module is in the open position (perpendicular to the module).

Figure 4 shows how to install a switch module in the rear of the SBCE unit.

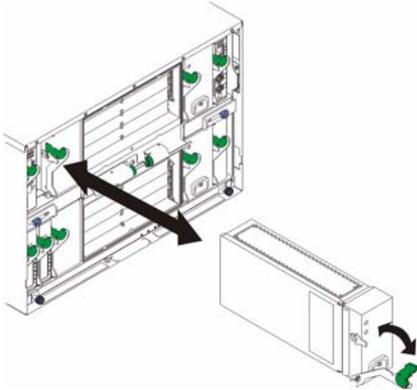


Figure 4. Installing a switch module

9. Slide the switch module into the switch-module bay until it stops.
10. Push the release lever and latch on the front of the switch module to the closed position.

⇒ **NOTE**

The switch module takes approximately 85 seconds to complete the POST. When the switch module is powered on, a LED test occurs. All LEDs are lit and remain lit for approximately 10 to 15 seconds and then return to normal state.

11. Make sure that the LEDs on the switch module indicate that it is operating properly. Verify that:
 - When the POST starts, the OK LED on the switch module will be off. The POST tests the condition of firmware, memories, data paths, and switch logic and uses the heartbeat LED to indicate pass or fail conditions.
 - The green OK LED on the switch module is lit to indicate that the switch logic has completed POST.
 - The green heartbeat LED on the switch module has a steady flash rate of once per second. This indicates that the switch module is operating with no errors.

⇒ **NOTE**

If the heartbeat LED is not flashing once per second, the POST has failed. Be sure the SBCE unit is powered on and the SBCE LEDs are lit. If POST has failed, see the *Fibre Channel Switch Management User's Guide* for diagnostic information.

12. If you have a second switch module to install, repeat Step 5 through Step 11; otherwise, go to Step 13.
13. If needed, connect an SFP module option into external Fibre Channel port 1 and Fibre Channel port 2. For SFP module installation instructions, see the documentation that comes with your SFP module.

⇒ **NOTE**

SFP module options do not come with the switch module but are required to use external switch module ports.

14. Use LC-LC fiber-optic cables to connect the switch module external ports to external Fibre Channel devices. For more information, see the documentation that comes with your cable options.

⇒ **NOTE**

You can remove and replace an SFP module while the switch module is operating without damaging the switch module or the SFP module. However, transmission on the affected port will be interrupted until the SFP module and cables are installed. See the documentation that comes with your connected Fibre Channel device for information about installation, configuration, and startup sequence.

15. Replace the acoustic attenuation module, if you removed it in Step 2
16. Continue with Chapter 3, “Information panel LEDs and external Fibre Channel ports,” on page 17.

Removing or replacing a switch module



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



 **CAUTION:**
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 replace a switch module:

1. Review the information in “Safety and regulatory information” on page v and “Installation guidelines” on page 10 through “Handling static-sensitive devices” on page 10
2. Remove the acoustic attenuation module, if any, from the rear of the SBCE unit.
3. Remove the LC-LC fiber-optic cables from the two external ports on the SFP module. Removing these cables will disrupt the network connection from the external Fibre Channel port to any connected external Fibre Channel devices. For removal instructions, see the documentation that comes with your cable options.
4. Remove any SFP modules from the switch module external Fibre Channel ports. For SFP module removal instructions, see the documentation that comes with your SFP module.
5. Pull the release latch toward the bottom of the switch module, as shown in Figure 5. The module moves out of the bay approximately 0.64 cm (0.25 inch).

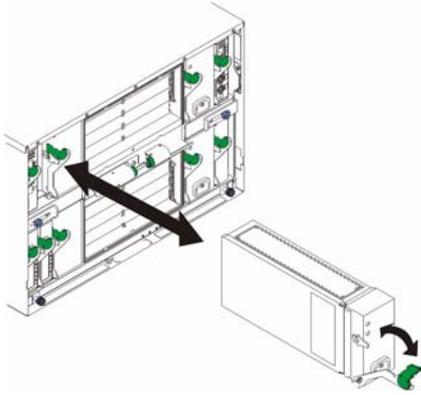


Figure 5. Fibre Channel switch module release latch

Attention: If you do not replace the switch module, you must insert a filler module into the empty bay within 1 minute.

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

⇒ **NOTE**

To verify that the switch module is active after you replace it, see Step 10 and Step 11 on page 13.

7. If you placed another switch module into the bay, if needed, insert any SFP modules that you removed in Step 4 into external Fibre Channel port 1 and Fibre Channel port 2. For SFP module installation instructions, see the documentation that comes with your SFP module.
8. If needed, use LC-LC fiber-optic cables to connect the switch module external port to external Fibre Channel devices. For more information, see the documentation that comes with your cable options.
9. Replace the acoustic attenuation module option, if you removed it in Step 2.

3 Information panel LEDs and external Fibre Channel ports

This chapter describes the information panel and LEDs on the switch module. This chapter also identifies the external Fibre Channel ports on the information panel.

Information panel

The switch module information panel contains LEDs and two Fibre Channel ports, as shown in Figure 6.

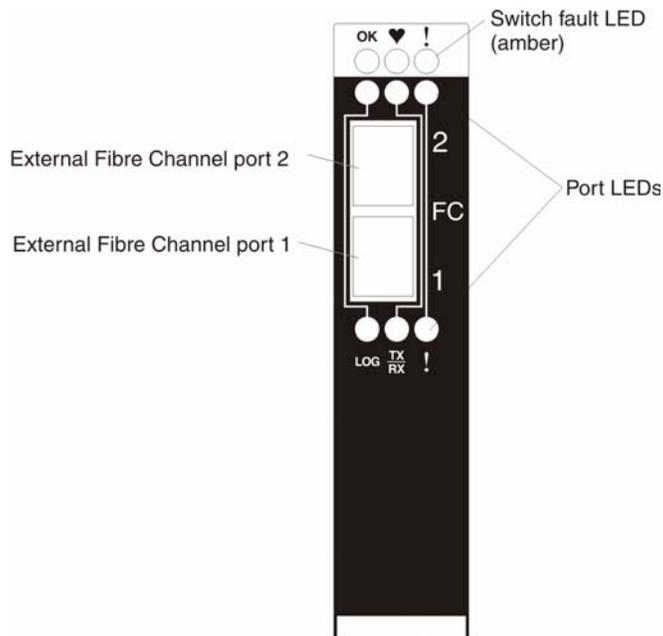


Figure 6. Fibre Channel switch module information panel

The switch module information panel contains:

- Comprehensive LEDs that display the status of the switch module and the network. For more information, see “LEDs” on page 17.
- Two external Fibre Channel ports to connect Fibre Channel devices, end devices, and servers. These ports are identified as port 2 and port 1 in the switch configuration menus and are labeled 2 and 1 (from top to bottom) on the switch module, as shown in Figure 6.

LEDs

There are three sets of LEDs on the information panel. The first row of LEDs at the top of the switch module represent switch module status and include OK, ♥ (heartbeat), and ! (Fibre Channel switch fault). The second and third sets of LEDs represent status for external Fibre Channel port 2 and external Fibre Channel port 1. The port LEDs include port logged-in, port activity, and port fault. Figure 7 on page 18 shows the locations of these LEDs on the switch module. In addition, this section provides a description of each LED and their and diagnostic flash patterns. See the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide* for more information about diagnostic flash patterns.

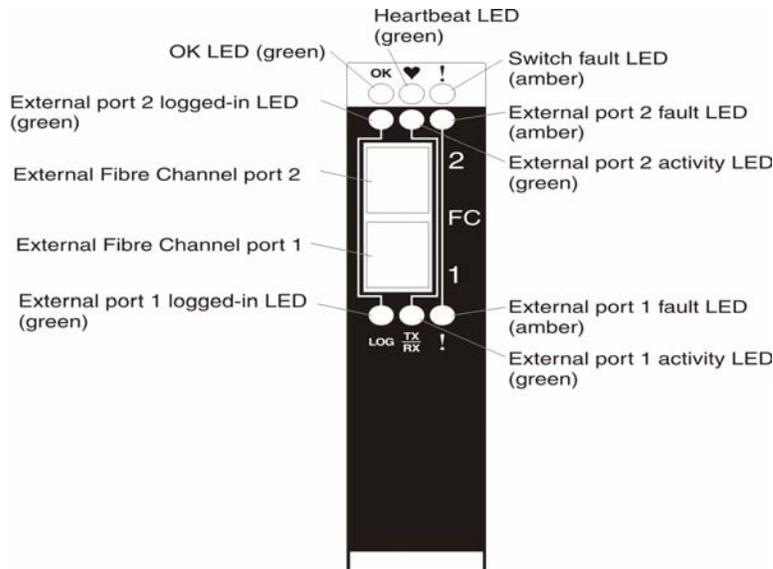


Figure 7. Fibre Channel switch module LEDs

Notes:

1. The illustrations in this document might differ slightly from your hardware.
2. An amber LED is lit when a system error or event has occurred. To identify the error or event, check the LEDs on the information panel of the switch module and see Table 2 on page 19 for more information.
3. An LED test occurs whenever the switch module is turned on. All LEDs are lit and remain lit for approximately 10 to 15 seconds and then return to a normal state.

OK: This green LED is at the top of the switch module on the information panel. When this LED is lit, it indicates that the switch module has passed the POST and is operational.

♥ (heartbeat): This green LED is at the top of the switch module on the information panel. When this LED is flashing, it indicates the status of the internal switch module processor and the results of the POST.

⇒ NOTE

One flash per second indicates that the switch module processor is operating in OK status. Other flash patterns indicate POST errors. For more information, see Table 2 on page 19

! (Fibre Channel switch fault): This amber LED is at the top of the switch module on the information panel. This LED indicates that the switch module has a fault. If the switch module fails the POST, this fault LED is lit.

Port logged-in: There are two green port logged-in LEDs. The port 2 logged-in LED is at the top of port 2, and the port 1 logged-in LED is at the bottom of port 1. When one of these LEDs is lit, it indicates that there is a connection (or link) to a device on that port.

Port activity: There are two green port activity LEDs. The port 2 activity LED is at the top of port 2, and the port 1 activity LED is at the bottom of port 1. When one of these LEDs flashes, it indicates that data is being received or transmitted (that is, activity is occurring) on that port. The flash frequency is proportional to the amount of traffic on that port.

Port fault: There are two amber port fault LEDs. The port 2 fault LED is at the top of port 2, and the port 1 fault LED is at the bottom of port 1. When a port fault LED is lit, it indicates that the external port has failed the internal, external, or online port diagnostics tests that are performed with the SAN Utility or CLI. For more

information, see the diagnostic section of the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide*.

Table 2. Switch module LED diagnostic flash patterns

LED	LED activity
OK	<ul style="list-style-type: none"> • The LED is off during initialization and POST or when there is a system fault. • The LED is lit during LED test and when the switch module is operational. • The LED does not flash.
Heartbeat	<ul style="list-style-type: none"> • The LED is off when you reset the blade server and when the Fibre Channel switch module processor is not operational. • The LED is lit steady on only during LED test. • The LED flashes to indicate the following conditions: <ul style="list-style-type: none"> — Normal operation - The LED flashes at a steady rate of one flash per second. — Internal firmware failure - The LED flashes two times, at twice the normal rate, followed by a 2-second pause. — Fatal error - The LED flashes three times, at twice the normal rate, followed by a 2-second pause. — Configuration file system error - The LED flashes four times, at twice the normal rate, followed by a 2-second pause. <p style="margin-left: 40px;">⇒ NOTE See the diagnostic section of the <i>Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide</i> for more information about diagnostic flash patterns.</p>
Switch fault	<ul style="list-style-type: none"> • The LED is off during initialization or when the switch module is in normal operation. • The LED is lit during LED test or to indicate a system fault during a POST failure or thermal fault. • The LED does not flash.
Port logged-in	<ul style="list-style-type: none"> • The LED is off when the port is not logged in. • The LED is lit when the port is logged-in or during LED test. • The LED pattern indicates the following conditions: <ul style="list-style-type: none"> — Logged in - The LED is lit. — Logging in - The LED flashes at 1-second intervals. — Beacon location - The LED flashes at 1-second intervals. For more information, see the <i>Fibre Channel Switch Management User's Guide</i>. — Error - The LED flashes two times per second.
Port activity	<ul style="list-style-type: none"> • The LED is off when the port is not logged in or when the port is logged in and there is no port activity. • The LED is lit during LED test. • The LED flashes when port activity performs a normal send or receive operation.
Port fault	<ul style="list-style-type: none"> • The LED is off when port diagnostics starts and is completed without error. • The LED is lit when port diagnostics discovers a port error. • The LED does not flash.

4 Configuring the switch module through the Telnet interface

Your switch module contains a Telnet server. This server enables a Telnet client to establish a Telnet session with the Fibre Channel switch module to retrieve information or to configure parameters using the CLI. You can perform a variety of fabric and switch management tasks through an Ethernet connection using the CLI.

You can access the Telnet interface in two ways:

- In the SBCE management module Web interface
- In a command line window on a network management workstation

To configure the switch module through the Telnet interface, the IP address and subnet masks must be compatible. In addition to the IP addressing, to access a switch module from a network management workstation that is connected to an external Ethernet port, the following configuration settings in the management module must be enabled:

- Switch module external port 1 and port 2
- External management for external port 1 and port 2

To enable the configuration settings, in the management module Web interface, click **Switch Tasks** :: **Management** :: **Advanced Switch Management** :: **Advanced Setup**.

Important:

Before you configure your switch module, be sure that the management modules in your SBCE unit are properly configured. In addition, to access and manage your switch module from an external environment, you might need to enable certain features, such as the external ports and external management over all ports. See the applicable Intel® Blade Server Chassis SBCE publications on the *Resource* CD for more information. For more detailed information about configuring your switch module, see the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide* on the *Resource* CD.

Connecting to the switch module

To use the Telnet program (in VT100 compatible terminal mode) to access and control the switch module, you must know the IP address for your switch module and have an existing network connection. If you need to obtain the IP address for your switch module or establish a network connection, contact your system or network administrator. Be sure to use the correct IP address in the required command.

Establishing a Telnet session through the management module

Complete the following steps to establish a Telnet session through the SBCE management module:

1. In your browser, in the address bar, type `http://xxx.xxx.xxx.xxx`, where `xxx.xxx.xxx.xxx` is the IP address of the SBCE management-module interface. Click **GO** or press Enter. The Enter Network Password window opens.

— **NOTE**

The default IP address for the SBCE management module is 192.168.70.125.



Figure 8. Enter Network Password window

2. In the **User Name** field, type the initial default user ID, `USERID`. In the **Password** field, type the initial default password, `PASSWORD` (the sixth character is a zero, not the letter *O*). The user ID and password are case sensitive.

The Active Session from Same Client window opens.



Figure 9. Active Session from Same Client window

3. In the **Inactive session timeout value** field, select the timeout value for this Web session and click **Start New Session**. The SBCE management module main window opens.

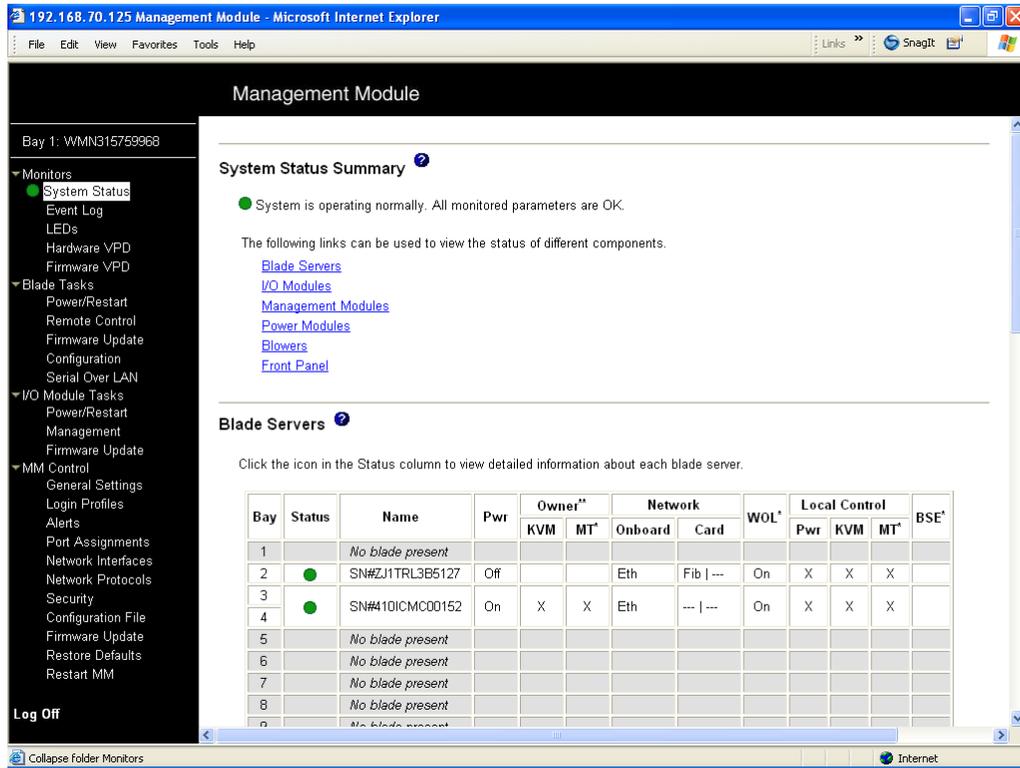


Figure 10. Management Module window

- In the left navigation pane under **Switch Tasks**, click **Management**. The Switch Management window opens.

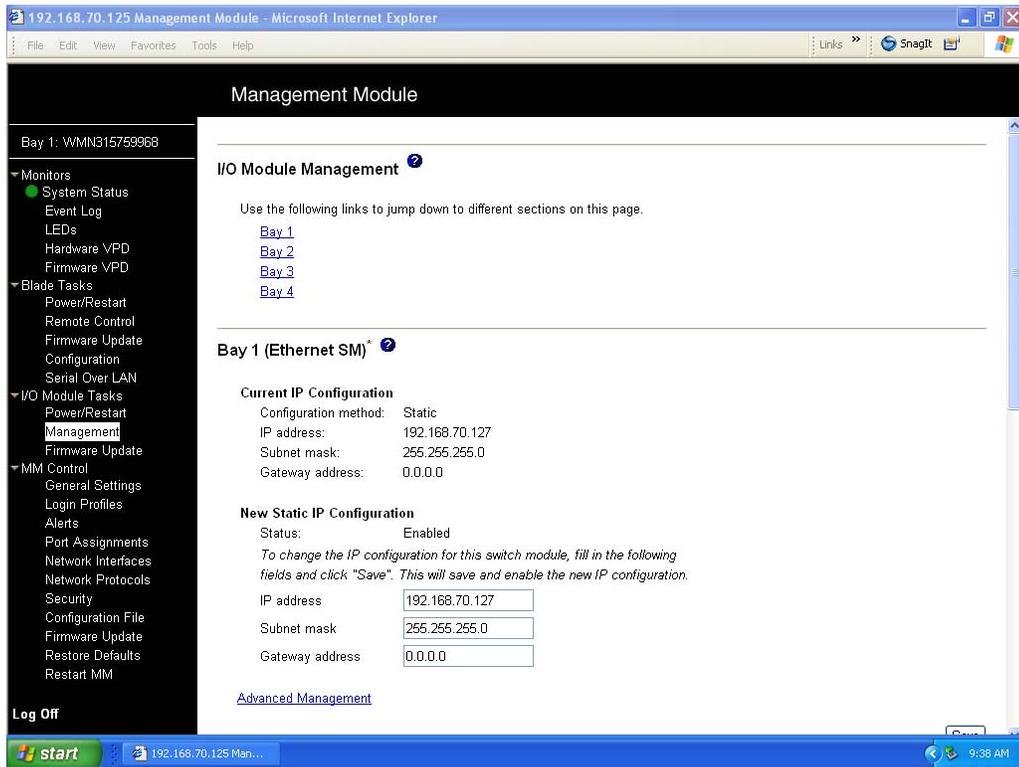


Figure 11. Switch Management window

5. Click the link for either Switch Module 3 or Switch Module 4. A window similar to the one in Figure 12 on page 25 opens.

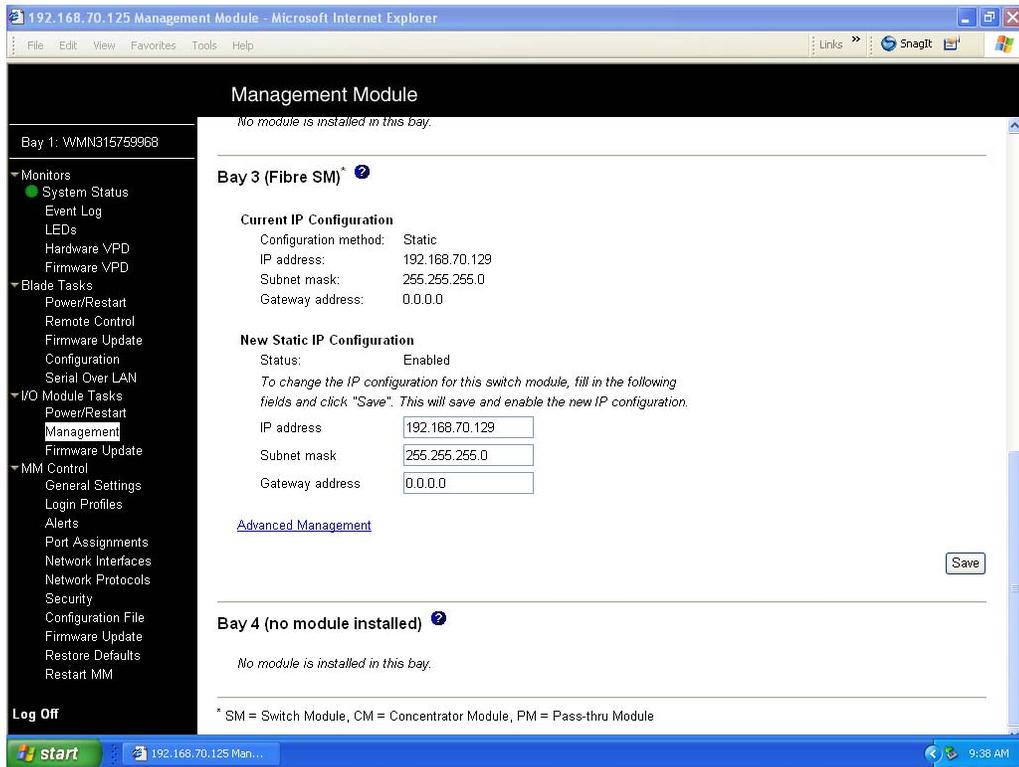


Figure 12. Switch Management window showing switch module 3 example

6. Verify that the IP address is the same in the **Current IP Configuration** and **New Static IP Configuration** sections.
7. Scroll down and click **Advanced Switch Management**. A window similar to the one in Figure 13 on page 26 opens.

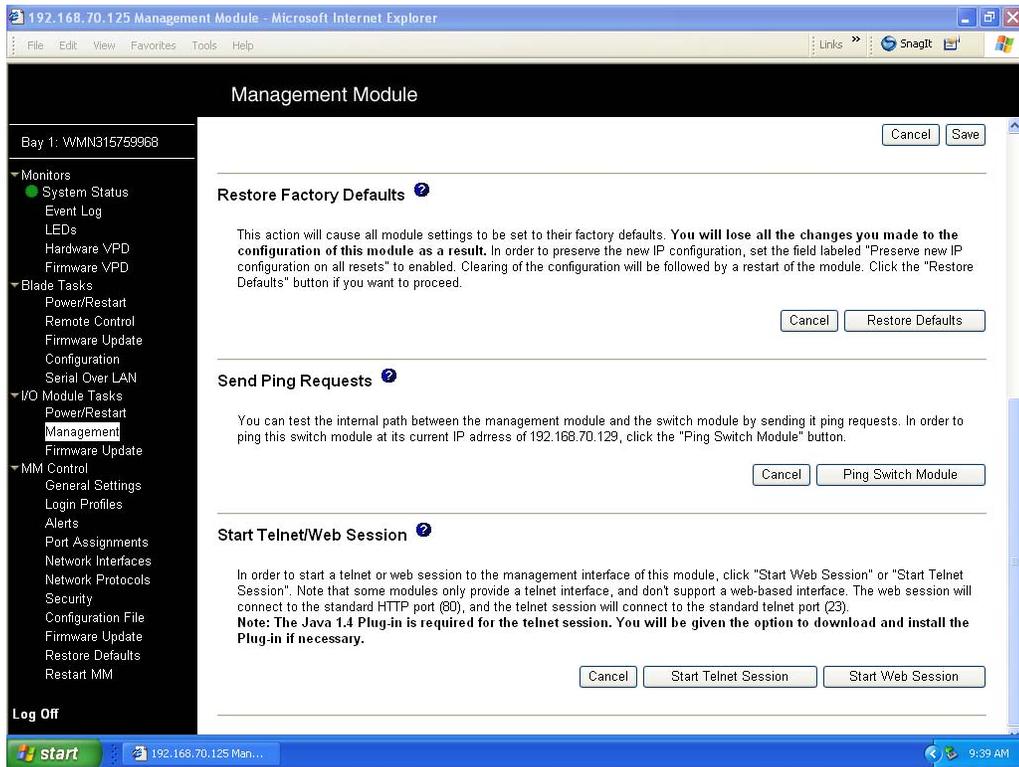


Figure 13. Switch Management window - advanced

8. To start a Telnet session, scroll down to the **Start Telnet/Web Session** section and click **Start Telnet Session**.
9. The switch module Telnet Login window opens, as shown in Figure 14 on page 27.



Figure 14. Fibre Channel Switch Module Telnet Login window

10. At the **Login** prompt, type the initial default user ID, USERID and press Enter. At the **Password** prompt, type the initial default password, PASSWORD (the sixth character is a zero, not the letter O). The user ID and password are case sensitive.
11. Click **OK** to open the Command Line Interface Shell window.

```

*****
*                               *
*      Command Line Interface Shell  <CLISH>                               *
*                               *
*****

SystemDescription  Fibre Channel Switch Module
Eth0NetworkAddress 192.168.70.129 (use 'set setup system' to update)
MACAddress         00:c0:dd:01:c0:0f
WorldWideName      10:00:00:c0:dd:01:c0:10
SymbolicName       FCSM
SWImageVersion     01.4.0.47-0
SWImageBuildDate   Mon Apr 14 15:52:37 2003
DiagnosticsStatus  Passed
SecurityEnabled     False

Alarms history ...
-----
[1][Fri Jan 01 00:01:05.605 1988][A4101][0xdd01c00f.329][cmon: unable to set gw addr]
FCSM: USERID> _

```

Figure 15. Command Line Interface Shell window

To open online help, type `help` and press Enter.

Continue with “CLI command format” on page 30. For more information about using the CLI, see the *Intel® Blade Server Switch Module SBCEFCSW: Management and User’s Guide*.

Establishing a Telnet session in a command-line window

— NOTE

The switch module can be accessed by IP-enabled devices that are connected to SBCE Ethernet switch modules. An Ethernet connection to the management module external ports on the SBCE unit is required. See the *Intel® Blade Server Chassis SBCE: Installation and User’s Guide* for more information.

Complete the following steps to establish a Telnet session through a command-line window:

1. Open a command-line window on the network management workstation and type one of the following commands and press Enter. Note that the following are default IP addresses.

For switch module bay 3:

```
telnet 192.168.70.129
```

For switch module bay 4:

```
telnet 192.168.70.130
```

A Command Prompt window opens.

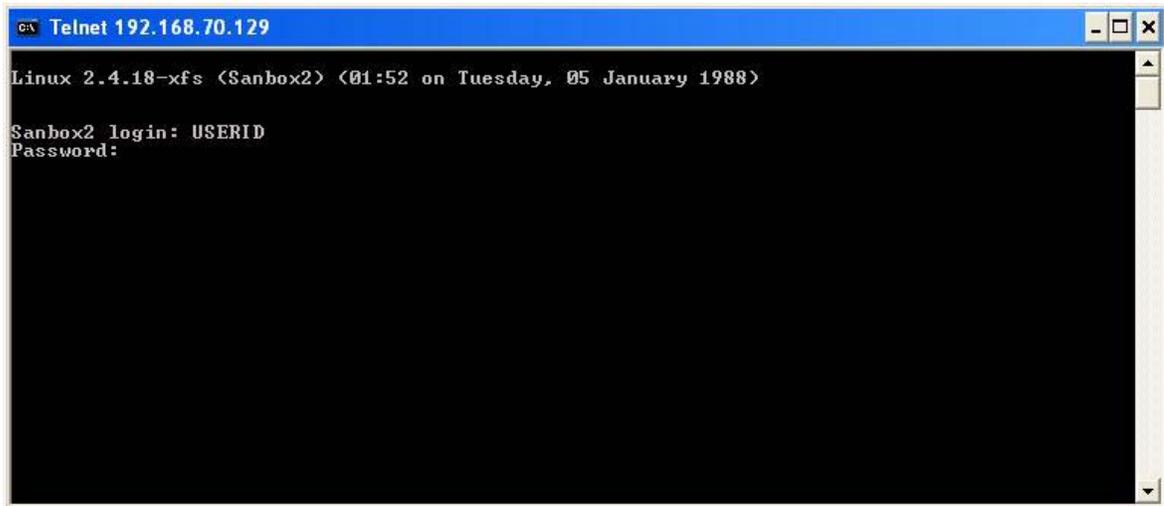


Figure 16. Command Prompt window

2. At the **Login** prompt, type the initial default user ID, USERID and press Enter. At the **Password** prompt, type the initial default password, PASSWORD (the sixth character is a zero, not the letter O). The user ID and password are case sensitive.

The Command Line Interface Shell window opens.

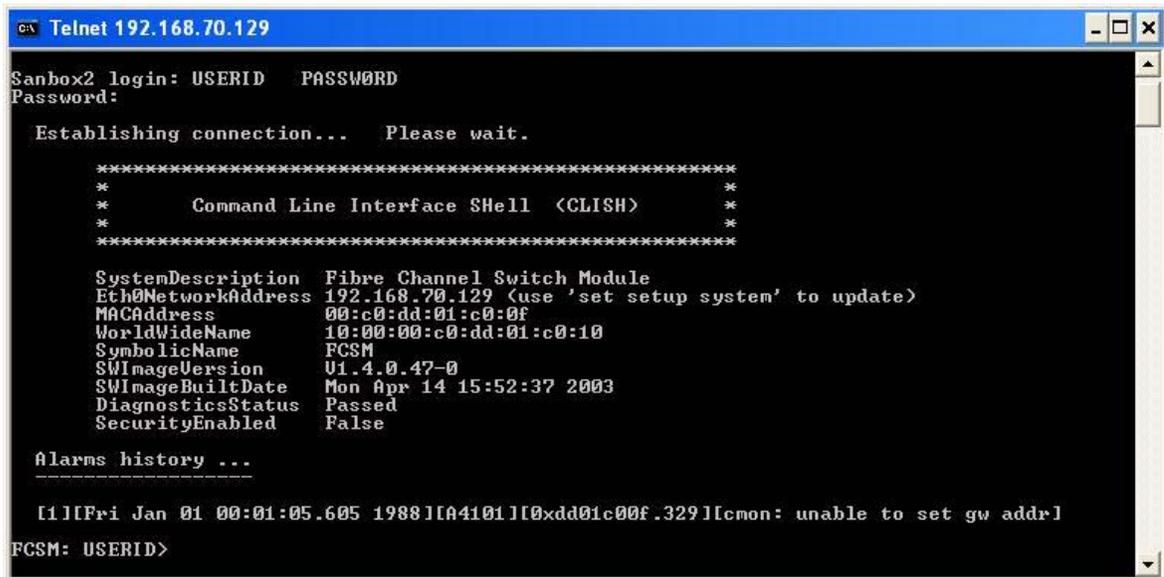


Figure 17. Command Line Interface Shell window

Continue with “CLI command format” on page 30.

CLI command format

The information in this section gives an overview of the CLI command format.

For detailed information about using CLI commands, see the *Intel® Blade Server Switch Module SBCEFCSW Management and User's Guide* on the *Resource CD*.

A command is followed by one or more keywords. Consider the following rules when typing keywords:

- Commands and keywords are lowercase and case sensitive.
- Required keyword values are shown in standard font: [value]. Optional values are shown in italics *[value]*.
- The underlined portion of each keyword indicates the abbreviated form that can be used. For example, the Delete keyword can be abbreviated as Del.

The CLI command syntax is as follows:

- keyword
- keyword *[value]*
- keyword [value][value 2]

Items in square brackets ([]) can be changed by typing a new value. You can use the Backspace and Delete keys to erase characters behind and in front of the cursor.

5 Installing the Intel® SAN Utility

You can use the SAN Utility application to access and configure the switch modules. The SAN Utility can be installed on a network management workstation, which is either an Intel server compute blade or an external network management workstation configured with one of the operating systems described in “System requirements” on page 31.

This chapter lists system requirements and explains how to install the SAN Utility. In addition, this chapter describes two basic windows you will use to manage your fabrics and switch modules: Topology and Faceplate.

Important: Before you configure your switch module, be sure that the management modules in your SBCE unit are properly configured. In addition, to access and manage your switch module from an external environment, you might need to enable certain features, such as the external ports and external management over all ports. See the applicable *Intel® Blade Server Chassis SBCE: Installation and User’s Guide* publications on the *SBCE Resource CD* for more information. For more detailed information about configuring and managing your switch module, see the *Intel® Blade Server Switch Module SBCEFCSW: Management and User’s Guide* on the *Intel® Blade Server Switch Module SBCEFCSW Resource CD*.

System requirements

Before you install the SAN Utility, be sure that your network management workstation has the following hardware and software.

Table 3. Network management workstation requirements

Operating system	<ul style="list-style-type: none">• Microsoft* Windows* 2003• Red Hat* Linux, Version 9.0• Red Hat* Linux Advanced Server, Version 2.1• Microsoft* Windows* 2000
Memory	128 MB minimum
Disk space	150 MB for each installation
Processor	300 MHz or faster
Hardware	CD-ROM drive, 10/100/1000 Base-T Ethernet port
Internet browser	Microsoft Internet Explorer* or Netscape* Navigator*

Use the applicable procedure in the following sections to install the SAN Utility on your network management workstation.

Installing the SAN Utility on a Microsoft* Windows* 2003 platform

Complete the following steps to install the SAN Utility on a network management workstation that is configured with Microsoft* Windows* 2003:

1. If your network management workstation is an Intel Server Platform SB-HE blade server, to associate the CD-ROM drive with the blade server, press the CD/diskette/USB select button on the blade server. For the

location of the CD/diskette/USB button, see the documentation that comes with the blade server. The LED on the button flashes while the request is being processed, then is steady when the ownership of the CD-ROM drive is transferred to the blade server.

2. If your network management workstation is a Intel Server Platform SB-HE blade server, to associate the keyboard port, mouse port, and video port with the blade server, press the keyboard/mouse/video select button. The LED on this button flashes while the request is processed, then is steady when the ownership of the keyboard, mouse and video is transferred to the blade server.
3. Close all open programs. Insert the *SAN Utility* CD into the CD-ROM drive.
4. Open Windows Explorer* and double-click the CD-ROM drive letter.
5. To install the SAN Utility, use one of the following methods, where *x.xx.xx* is the SAN Utility version number:
 - To install from the CD, mount the CD and double-click **Windowsx.xx.xx.exe**. Follow the SAN Utility installation instructions.
 - To copy and install from the hard disk drive, complete the following steps:
 - a. Specify a location and save the *Windowsx.xx.xx.exe* file.
 - b. Click **Save**.
 - c. Double-click **Windowsx.xx.xx.exe**.
 - d. Follow the SAN Utility installation instructions.
6. When the installation is completed, use one of the following methods to start the SAN Utility:
 - Double-click the **SAN Utility** shortcut.
 - Click **Start** ∴ **Programs** ∴ **SANUtility** ∴ **SANUtility**.

If a default fabric view file exists, the Enter Default File Password for Loading File window opens, as shown in Figure 18 on page 32. Otherwise, the SAN Utility window opens.



Figure 18. Enter Default File Password For Loading file window.

Continue with “Using the SAN Utility” on page 34.

Uninstalling the SAN Utility on a Microsoft* Windows* 2003 platform

The Uninstaller Data folder is copied into the installation folder during the initial SAN Utility installation process. The Uninstaller Data folder contains the Uninstall SAN Utility program that is used to uninstall the SAN Utility from a network management workstation running Microsoft Windows 2003. In addition, a shortcut to the uninstall program is installed in the user’s home directory during the SAN Utility installation process. The default installation directory is *C:/Program files/SANUtility*.

Complete the following steps to uninstall the SAN Utility:

1. Browse for the uninstallation program file or the shortcut that points to the uninstallation program.
Locate the uninstallation program shortcut in the same folder as the program shortcut or click **Start** ·· **Programs** ·· **SANUtility** ·· **Uninstall SANUtility**.
2. Double-click the uninstallation program or shortcut and follow the instructions to uninstall the SAN Utility.

Installing the SAN Utility on a Red Hat* Linux* platform

Complete the following steps to install the SAN Utility on a network management workstation that is configured with Red Hat Linux:

1. If your network management workstation is a Intel Server Platform SB-HE blade server, to associate the CD-ROM drive with the blade server, press the CD/diskette/USB select button on the blade server. For the location of the CD/diskette/USB button, see the documentation that comes with the blade server. The LED on the button flashes while the request is being processed, then is steady when the ownership of the CD-ROM drive is transferred to the blade server.
 2. If your network management workstation is a Intel Server Platform SB-HE blade server, to associate the keyboard port, mouse port, and video port with the blade server, press the keyboard/mouse/video select button. The LED on this button flashes while the request is processed, then is steady when the ownership of the keyboard, mouse and video is transferred to the blade server.
 3. Close all open programs. Insert the *SAN Utility* CD into the CD-ROM drive.
 4. Open an xterm or other terminal window.
 5. Mount the CD. From a shell command-line prompt, type the following command and press Enter:

```
mount /mnt/cdrom
```
 6. To install the SAN Utility, use one of the following methods, where *x.xx.xx* is the SAN Utility version number:
 - To install from the CD, type:

```
sh /mnt/cdrom/Linux/Linux_x.xx.xx.bin
```


Follow the SAN Utility installation instructions.
 - To copy and install from your hard disk drive, complete the following steps:
 - a. Type:

```
cp /mnt/cdrom/Linux/Linux_x.xx.xx.bin /[directory]/
```


Where *[directory]* is where you want to copy the files to.
 - b. Open a terminal window for the directory in which the *Linux_x.xx.xx.bin* file was saved.
 - c. Type:

```
sh Linux_x.xx.xx.bin
```
 - d. Follow the SAN Utility installation instructions.
 7. To start the SAN Utility after the installation is completed, from a command prompt, type one the following commands and press Enter:

```
sh /opt/SANUtility/SANUtility
```



```
sh /opt/runSANUtility
```


If a default fabric view file exists, the “Enter Default File Password for Loading File” window opens, as shown in Figure 18 on page 32. Otherwise, the SAN Utility window opens.
- Go to “Using the SAN Utility” on page 34.

Uninstalling the SAN Utility on a Red Hat* Linux* platform

The Uninstaller Data folder is copied into the installation folder during the initial SAN Utility installation process. The Uninstaller Data folder contains the Uninstall SAN Utility program that is used to uninstall the SAN Utility from a network management workstation running Red Hat Linux. In addition, a shortcut to the uninstallation program is installed in the user's home directory during the SAN Utility installation process. The default installation directory is /opt/SANUtility/.

Complete the following steps to uninstall the SAN Utility:

1. At the command prompt, type the following command and press Enter:

```
# cd /opt/
```

2. At the command prompt, type the following command and press Enter:

```
#sh Uninstall_Intel_San_Utility
```

Using the SAN Utility

Use the following procedures to start the SAN Utility and complete the following tasks:

- Start the SAN Utility and add a new fabric
- Change the password for the default fabric view
- Set user preferences
- Access online help
- Save the default fabric
- Exit the SAN Utility

Starting the SAN Utility and adding a new fabric

When you have successfully installed the SAN Utility and the default fabric view does not exist, the SAN Utility - Topology window (referred to as the Topology window) opens, as shown in Figure 19 on page 35.

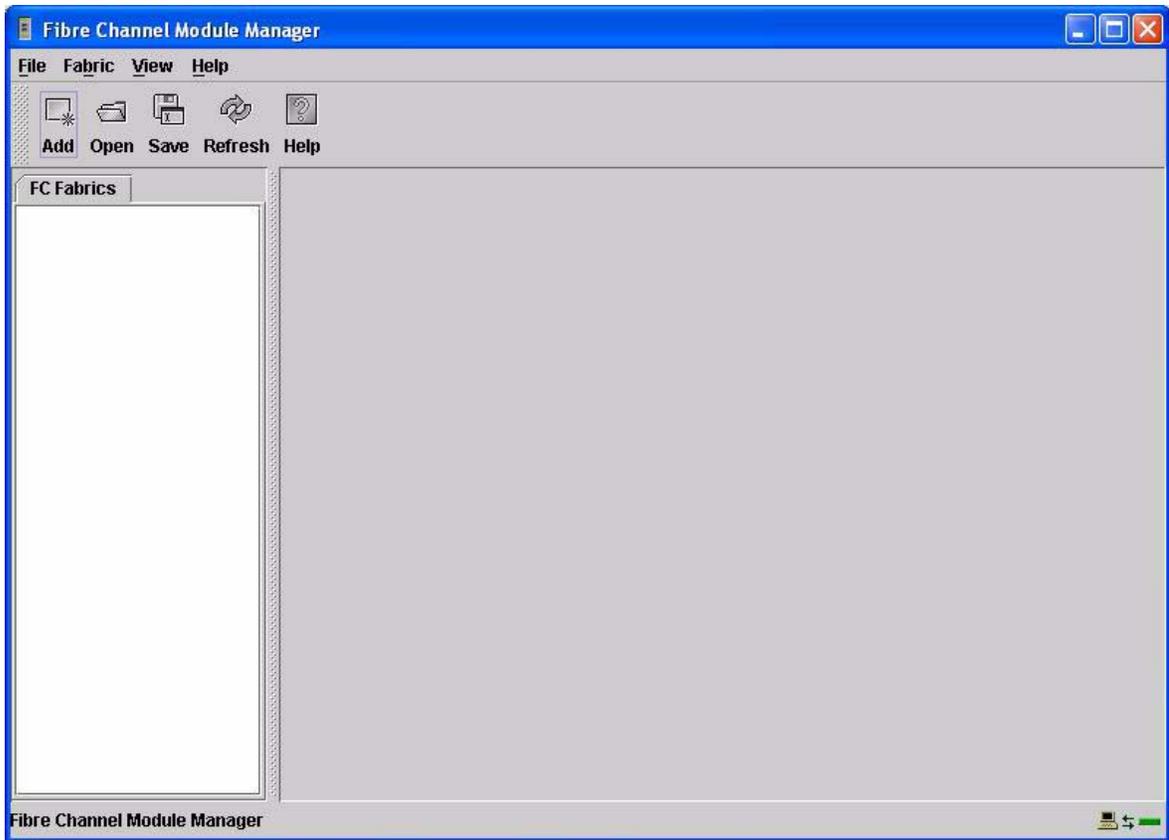


Figure 19. Topology window.

If the default fabric view file exists, the Enter Default File Password for Loading File window opens, as shown in Figure 18 on page 32. Complete the following steps to start the SAN Utility and add a new fabric:

1. At the **Default file password** prompt, type the password and click **Load View File**.
The SAN Utility starts, and any previously saved set of fabrics is displayed. If no set of fabrics has been saved previously, click **Continue Without Loading** to open an empty fabric view.
The Topology window opens, as shown in Figure 19 on page 35.
2. Click **Add**.
The Add a New Fabric window opens, as shown in Figure 20 on page 36.



Figure 20. Add a New Fabric window.

3. In the **Fabric name** field, type a fabric name.
4. In the **IP address** field, type the IP address of the switch module.
5. In the **Login name** field, type the initial default user ID, USERID. In the **Password** field, type the initial default password, PASSWORD (the sixth character is a zero, not the letter O). The user ID and password are case sensitive.

— **NOTE**

Security is disabled by default. When security is disabled, you are not required to type a login name or password. The default password is for the switch module and is stored in the switch module firmware. If you want to use a Telnet command set to grant user and authority levels, see the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide* for more information.

6. Click **Add Fabric**.

Changing the password for the default fabric view

Complete the following steps to change the password for the default fabric view file:

1. In the Topology window, click **File** :: **Change Default File Password**.

The Set New Password window opens, as shown in Figure 21 on page 36.



Figure 21. Set New Password window.

2. In the **Default file password** field, type the new password.
3. In the **Re-enter password to confirm** field, type the same password again.
4. Click **OK** to save your changes.

⇒ **NOTE**

If you lose the password for the account, contact your Intel Support Representative.

Setting user preferences

Use the Preferences window to perform the following tasks:

- Change the location of the working directory that you will use to save files.
- Change the location of the browser used to view the online help.
- Choose the fabric discovery interval. Rates are 30, 45, or 60 seconds. The fabric discovery interval indicates how often the SAN Utility polls the fabric.
- Enable or disable the default view file auto save and load feature. See “Using the SAN Utility” on page 34 for more information about the default fabric view file.
- Select the default port view when opening the SAN Utility Faceplate window (referred to as the Faceplate window). See the *Intel® Blade Server Switch Module SBCEFCSW: Management and User’s Guide* for more information about port views.

Complete the following steps from the Faceplate window to set user preferences for your SAN Utility sessions:

1. Click **File :: Preferences**.

The Preferences window opens, as shown in Figure 22 on page 37.

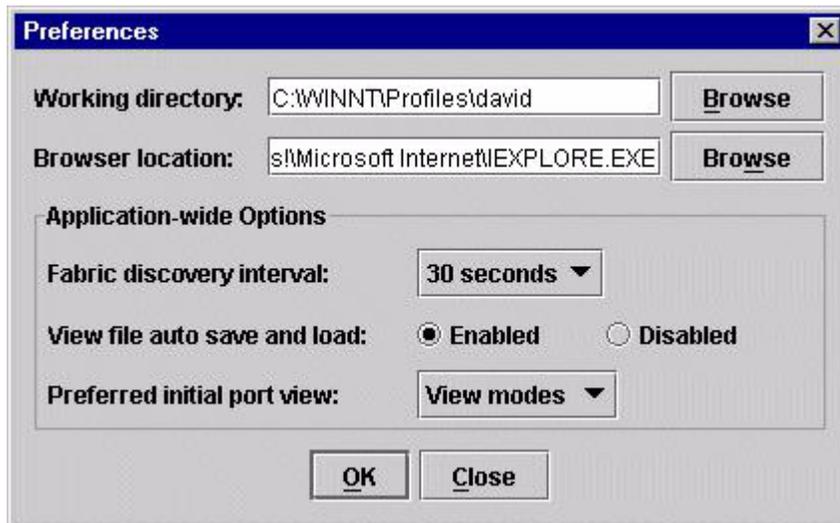


Figure 22. Preferences window.

2. Type or browse to the paths to the working directory and browser.
3. In the **Application-wide Options** area of the window, complete the following steps:
 - a. In the **Fabric discovery interval** field, select a polling frequency (30 seconds is the default value).
 - b. In the **View file auto save and load** field, select **Enabled** or **Disabled**.
 - c. In the **Preferred initial port view** field, select the port view mode for the Faceplate window.
4. Click **OK** to save your changes.

Using online help

Online help is available for the SAN Utility. You can access online help using the following two methods:

- From the SAN Utility window menu bar, click **Help** ∷ **Help Topics**.
- From the SAN Utility window toolbar, click **Help**.

To view the SAN Utility software version and copyright information, click **Help** ∷ **About**.

Exiting the SAN Utility

When you exit the SAN Utility, the current fabric view is encrypted and saved to the default fabric view file (fc_view.dft). A password is required to encrypt and save the default fabric view file the first time you exit the SAN Utility. When you exit subsequent sessions, the SAN Utility closes and saves the default fabric view file automatically without requiring a password.

In your next session, the SAN Utility opens the default fabric view file automatically after you type the password. To prevent the SAN Utility from automatically saving the default fabric view file each time you exit a session, select **Disabled** in the **View file auto save and load** field (it is set to **Enabled** by default). See “Setting user preferences” on page 37 for more information.

Complete the following steps to exit a SAN Utility session:

1. From the Faceplate window, click **File** ∷ **Exit**.
The Enter Default File Password for Loading File window opens, as shown in Figure 18 on page 32.
2. When you are prompted to type a password with which to protect the default fabric view file, complete one of the following tasks:
 - To save the current set of fabrics in the default fabric view file (fc_view.dft) in the working directory, type a password and click **Save View File**.

— NOTE

If the default fabric view file was saved with a password, the next time you open the SAN Utility, you will be prompted for the password in the Load Default Fabric View File window. The fabric window opens after you type the password.

- Click **Exit Without Saving** to exit the program without saving the current fabrics to the default fabric view file.
- Click **Cancel Exit** to cancel the exit operation.

SAN Utility Topology and Faceplate windows

The SAN Utility provides two basic windows for you to manage the fabric and switch modules. The windows are called Topology and Faceplate. Both windows share the following common elements:

Menu bar: The menus and the items offered in them vary depending on which window is open. For example, the port menu and many of the switch menu selections are displayed only in the Faceplate window. Menu items have a gray background.

In addition to the menu bar, each window has context-sensitive menus that open when you right-click in the graphic window. See the information about opening the Faceplate window and pop-up window in the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide*.

Toolbar: The toolbar consists of a row of graphical buttons that you can use to access SAN Utility functions. The toolbar buttons are an alternative method to using the menu bar.

Fabric tree: The fabric tree, shown in the FC Fabrics pane, lists the managed fabrics and their associated switches. The pane width can be adjusted by clicking and dragging the moveable border. An entry handle to the left of an entry in the tree indicates that the entry can be expanded. Click this handle or double-click the entry to expand or contract a fabric tree entry. A fabric entry expands to show its member switches.

You can use the fabric tree to access any fabric or switch using the Topology or Faceplate window. You can click a fabric entry to open the Topology window from the fabric tree. You can click a switch entry to open the Faceplate window from the fabric tree.

Graphic window: The graphic window presents graphic information about fabrics and switches such as the fabric topology and the switch faceplate. You can adjust the window length by clicking and dragging the window border that it shares with the data window.

Data window and tabs: A table of data and statistics associated with the selected tab is displayed in the data window. Use the scroll bar to browse through the data. The window length can be adjusted by clicking and dragging the border that it shares with the graphic window. The data window tabs present options for the type of information that is displayed in the data window. These options vary depending on the tab you select.

Working status indicator: The working status indicator is in the lower-right corner of the SAN Utility window. The indicator is displayed when the network management workstation is exchanging information with the fabric. As conditions change, the fabric forwards this information to the network management workstation where it is displayed in the various windows.

Switch modules that are enabled and the connections between switch modules are displayed in the Topology window, as shown in Figure 23 on page 39.

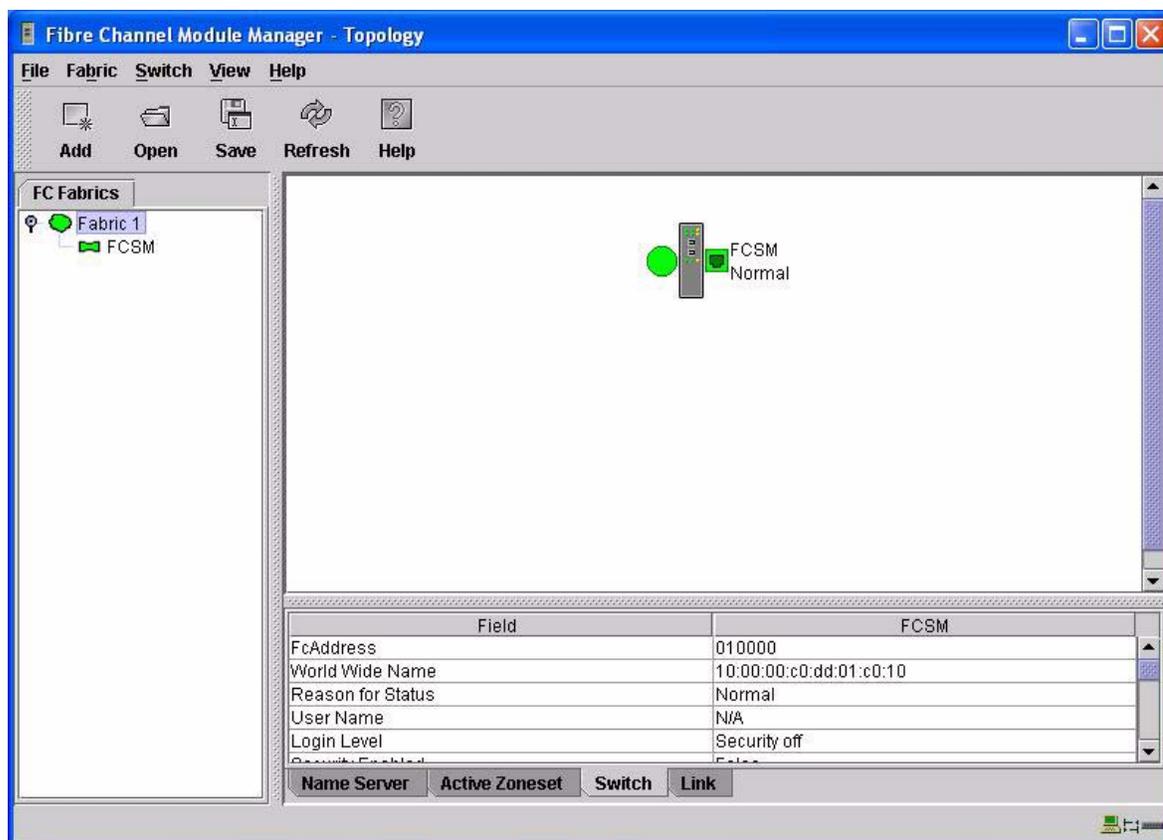


Figure 23. Topology window elements.

A single switch and its active ports are displayed in the Faceplate window, as shown in Figure 24 on page 40.

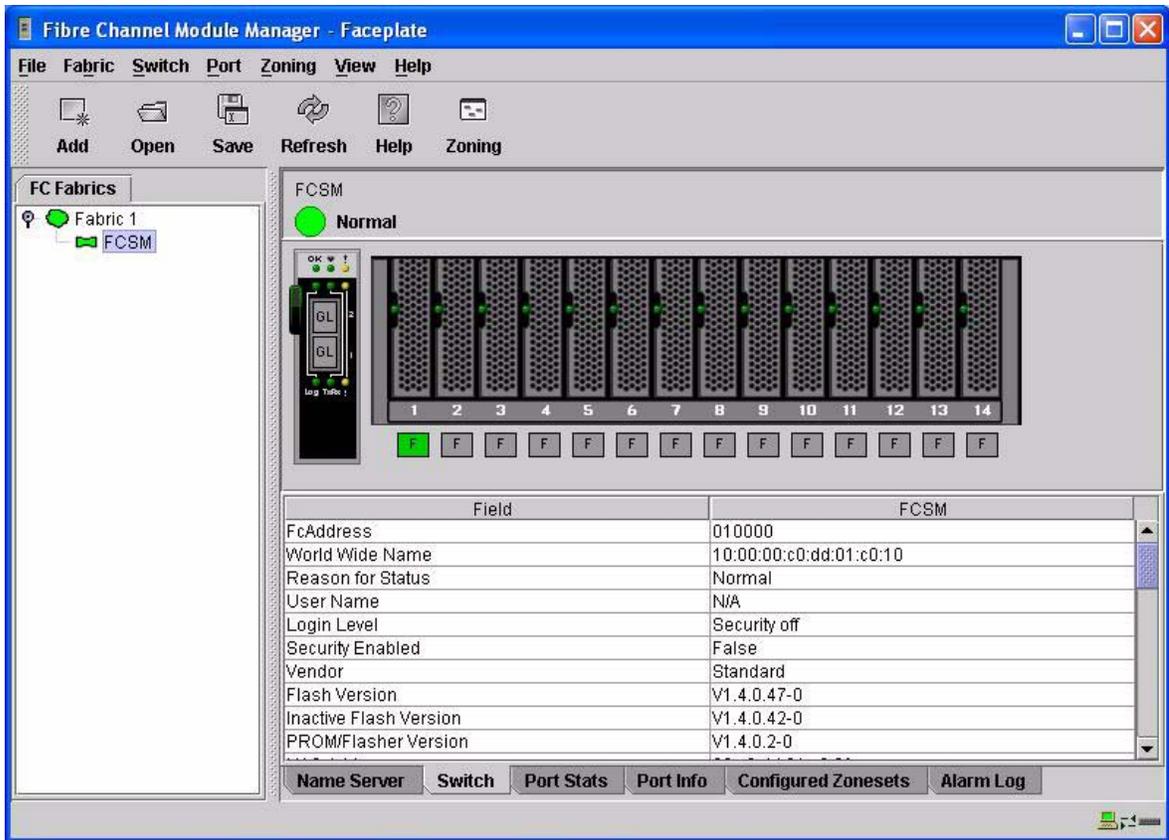


Figure 24. Faceplate window elements.

The fabric tree, in the FC Fabrics pane, lists the managed fabrics and their switches. You can adjust the window by clicking and dragging the moveable window border. An entry handle at the left of the entry in the tree indicates that the entry can be expanded. When you click the handle or double-click the entry, the entry expands to show its member switches. These fabric tree elements are shown in Figure 25 on page 41.

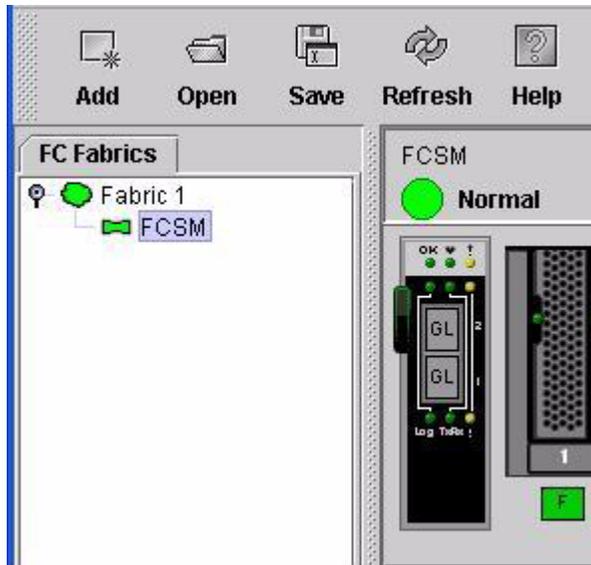


Figure 25. Fabric tree elements.

Each fabric tree entry has a small icon next to it that uses color to indicate the following operational status:

- A green switch entry icon indicates that the switch module is in normal operation.
- A red switch entry icon indicates that the switch module has a communications failure.
- A blue switch entry icon indicates that the switch status is Unknown or that security is enabled on the switch module, but security is disabled on the fabric management switch.
- A amber icon indicates that a switch is operational with errors.

The fabric tree provides access to the Topology and Faceplate windows for any fabric or switch.

- To open the Topology window from the fabric tree, click a fabric entry.
- To open the Faceplate window from the fabric tree, click a switch entry.

See the *Intel® Blade Server Switch Module SBCEFCSW: Management and User's Guide* for information about using the Faceplate and Topology windows.

A Getting help and technical assistance

This appendix contains information about where to go for additional information about Intel products, what to do if you experience a problem with your Intel product, and whom to call for service, if it is necessary.

Before you call

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

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system is turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system.

You can solve many problems without outside assistance by following the troubleshooting procedures provided in the publications that shipped with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

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.

Hardware/Software service and support

Contact your Intel Support Representative for additional hardware or software support.

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