

# Intel® Blade Server Ethernet Switch Module IXM5414E: Installation Guide

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

Order Number: C69091-002



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

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Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

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

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по  
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

### Statement 1:



### DANGER

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

**To avoid a shock hazard:**

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

#### To Connect:

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.

#### To Disconnect:

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

**Statement 2:**



**CAUTION:**

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

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



**DANGER**

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

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



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

**Statement 3:**



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

**CAUTION:**

Use safe practices when lifting.

**Statement 4:**



**CAUTION:**

If you install a strain-relief bracket option over the end of the power cord that is connected to the device, you must connect the other end of the power cord to an easily accessible power source.

**Statement 5:**



**CAUTION:**

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



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

**Statement 6:**



**DANGER**

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

**Statement 7:**



**CAUTION:**

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the following label is attached.







# Contents

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- Safety ..... iii
- 1 Introducing the Intel® Blade Server Ethernet Switch Module IXM5414E..... 1**
  - Related publications ..... 2
  - Notices and statements used in this book ..... 3
  - Major components of the IXM5414E switch module ..... 3
- 2 Installing and Removing the Intel® Blade Server Ethernet Switch Module IXM5414E..... 5**
  - Ethernet interface requirements ..... 5
  - Installation guidelines..... 7
  - System reliability considerations ..... 7
  - Handling static-sensitive devices ..... 8
  - Installing the IXM5414E switch module ..... 8
  - Removing the IXM5414E switch module..... 12
- A RJ-45 Pin Specifications..... 15**
- B Cable Lengths ..... 17**
- C Getting Help and Technical Assistance ..... 19**
  - Before you call ..... 19
  - Using the documentation ..... 19
  - Hardware and software service and support ..... 19
- D Notices ..... 21**
  - Safety and regulatory information ..... 21
  - General Safety ..... 22
  - Electrical Safety ..... 22
  - Handling electrostatic discharge-sensitive devices ..... 23
  - Regulatory specifications and disclaimers ..... 24



# 1 Introducing the Intel® Blade Server Ethernet Switch Module IXM5414E

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Thank you for purchasing an Intel® Blade Server Ethernet Switch Module IXM5414E. This *Installation Guide* contains information about setting up and installing your switch module. For additional information, see the instructions in your appropriate server board chassis publications.

Your IXM5414E switch module is one of up to four switch modules that can be installed in the SB-HE configuration of the blade chassis.

This high-performance IXM5414E switch module is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility and reliable data storage.

Performance, reliability and expansion capabilities were key considerations in the design of your switch module. 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.

The product name, machine type and serial number are located on the identification label on the side of the IXM5414E switch module. The Media Access Control (MAC) address also is located on the identification label. See “Major components of the IXM5414E switch module” on page 3 for an illustration showing the location of the identification label.

— **NOTE**

The MAC address is also located on a separate label on the information panel under the external Ethernet port connectors.

Record your product information in this table.	
Product name	Intel® Blade Server Ethernet Switch Module IXM5414E
Type	_____
Model number	_____
Serial number	_____
Media access control (MAC) address	_____

Verify that the shipping carton contains an Intel® Blade Server Ethernet Switch Module IXM5414E. If the switch module is missing or damaged, contact your local reseller for replacement. Otherwise, return the switch module to its static-protective package.

— **NOTE**

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

## Related publications

This *Installation Guide* contains setup and installation instructions for your IXM5414E switch module.

The *Installation and User's Guide on the Resource CD* provides general information about your switch module. The Intel® Server Boards and Server Chassis Safety Information is a multilingual publication on the *Resource CD* that contains translated versions of the caution and danger statements that appear in the documentation.

Depending on your switch model, additional publications might be included on the *Resource CD*.

## Notices and statements used in this book

The caution and danger statements that appear in this book are also in the multilingual *Safety Information Book* on the *Resource CD*. Each statement is numbered to refer to the corresponding statement in the *Safety Information Book*.

The following notices and statements are used in this book:

- **Note:** These notices provide important tips, guidance or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problematic 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 IXM5414E switch module

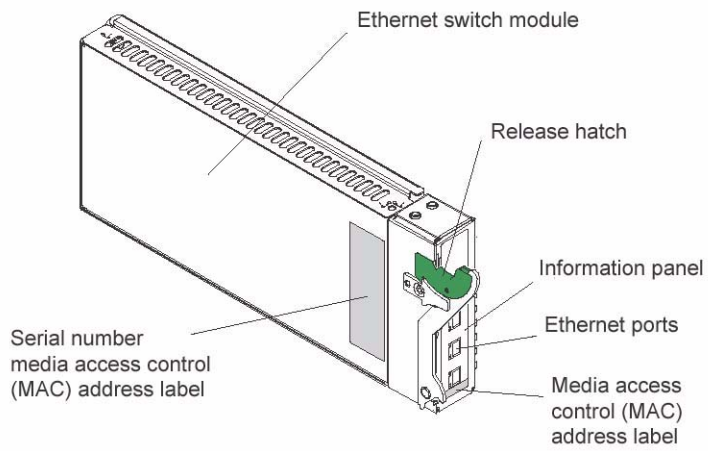
The green color on components and labels identify hot-swap or hot-plug components. You can install or remove these components while the system is running, as long as your system is configured to support this function.

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

The following illustration shows the major components of your switch module.

### — NOTE

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

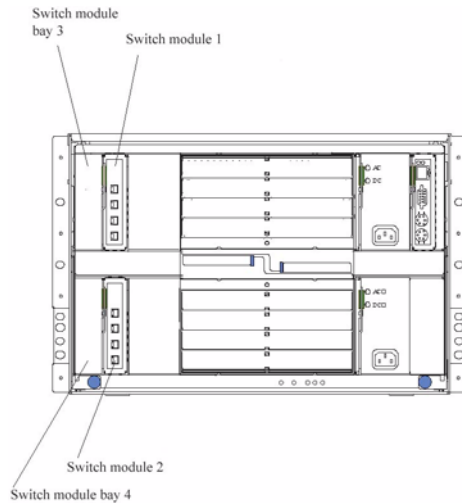


For more information about the components of the information panel, see the Installation and User's Guide.

## 2 Installing and Removing the Intel® Blade Server Ethernet Switch Module IXM5414E

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The following illustration shows the I/O module bay locations in the platform.



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

### Ethernet interface requirements

The SB-HE platform supports a minimum of one hot-swap Ethernet switch module in I/O module bay 1. This switch module is a fully functional four-connector Ethernet switch that provides a network connection to Ethernet Link 1 in all the blade servers in the SB-HE. To provide a network connection for Ethernet Link 2 in each blade server, install an Ethernet switch module in I/O module bay 2.

If you install an interface option on any blade server, you must install a hot-swap switch module of the same interface type in I/O module bay 3 to obtain connection 1 for the interface option. To provide connection 2 for the interface option, install a switch module of that interface type in I/O module bay 4. The switch modules in I/O module bays 3 and 4 provide connections to all the interface options in the SB-HE.

**Important:** The switch modules in I/O module bays 3 and 4 and all blade server interface options in the SB-HE must use the same interface type. For example: if you install an Ethernet interface option

on a blade server, the switch modules that you install in I/O module bays 3 and 4 must be Ethernet. All other interface options in the SB-HE must also be Ethernet interface options.



The following table summarizes the application for each switch module.

I/O module bay	Switch-module function
1	Connection 1 (Ethernet Link 1) for all blade servers in the SB-HE
2	Connection 2 (Ethernet Link 2) for all blade servers in the SB-HE
3	Connection 3 (from all blade server interface options in the SB-HE)
4	Connection 4 (from all blade server interface options in the SB-HE)

For additional information, see the *SB-HE Installation and User's Guide* on the *Resource CD*.

## Installation guidelines

Before you begin installing the IXM5414E switch module in your SB-HE, read the following information:

- Become familiar with the safety and handling guidelines specified under Chapter Chapter , “Safety,” on page iii and “Handling static-sensitive devices” on page 8, and read the safety statements in the SB-HE option publications.
- The green color on components and labels in your SB-HE identifies hot-swap or hot-plug components. You can install or remove hot-swap modules while the SB-HE 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 SB-HE to install or replace any of the hot-swap modules on the rear of the SB-HE.

## System reliability considerations

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

- Each of the I/O module bays on the rear of the SB-HE 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.
- Cables for the optional modules are routed according to the illustrations and instructions in this document.

## Handling static-sensitive devices

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

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

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

## Installing the IXM5414E switch module

**Statement 8:**



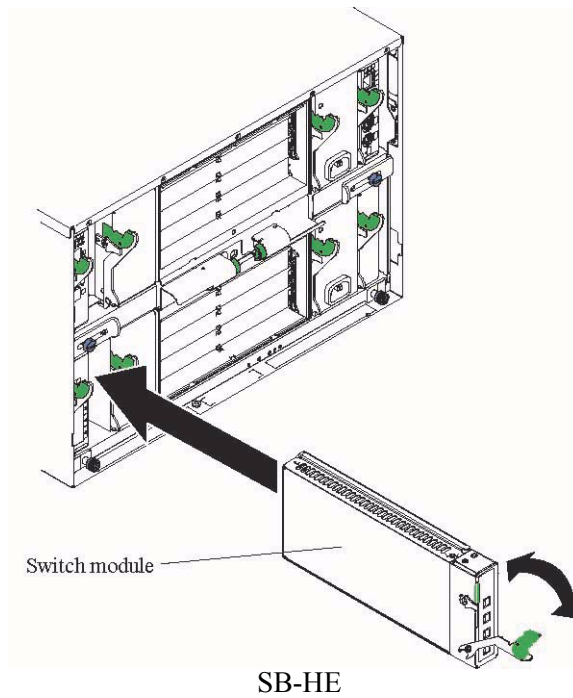
 **CAUTION:**

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



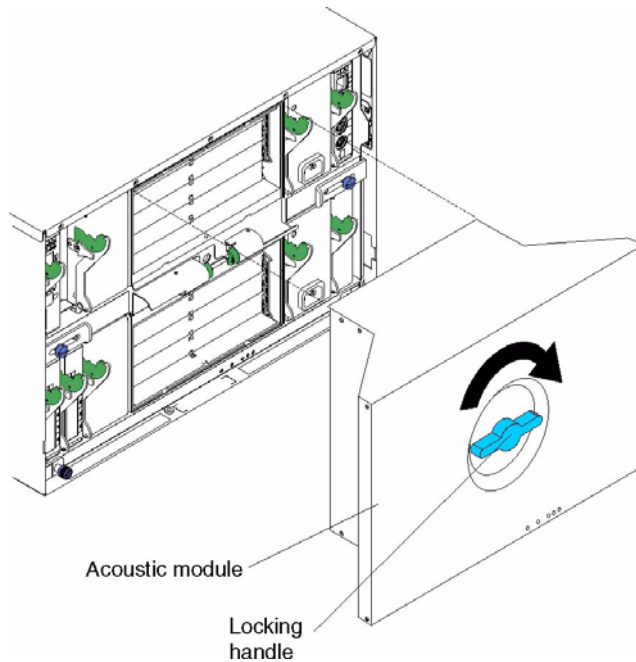
Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

The following steps and illustrations describe how to install a switch module in the rear of the SB-HE platform.

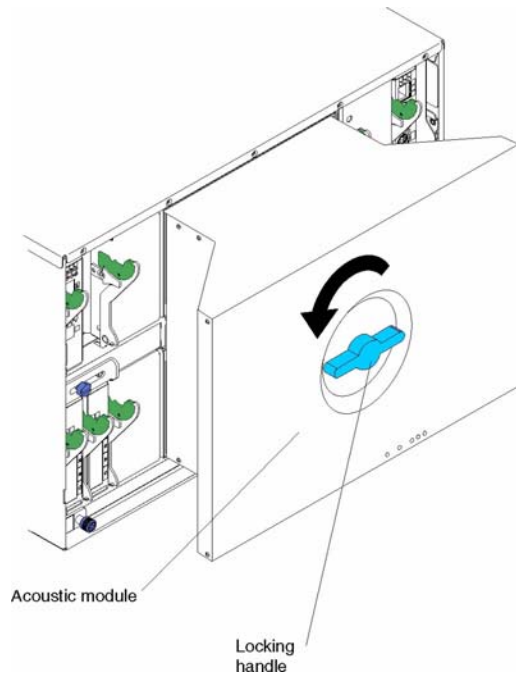


Complete the following steps to install the IXM5414E switch module.

1. Review the information in “Safety” on page iii and in “Installation guidelines” on page 7 through “Handling static-sensitive devices” on page 8.
2. Remove the acoustic attenuation module, if installed, from the rear of the SB-HE platform. The following illustrations show how to remove the module from the SB-HE platform.



3. Select an I/O module bay in which to install the switch module, in accordance with the instructions in “Ethernet interface requirements” on page 5.
4. Remove the filler module from the selected I/O module bay. Store the filler module for future use.
5. If you have not already done so, touch the static-protective package that contains the switch module to an unpainted metal part of the SB-HE platform for at least two seconds.
6. Remove the switch module from its static-protective package.
7. Ensure that the release latch on the switch module is in the open position (perpendicular to the module).
8. Slide the switch module into the appropriate I/O module bay until it stops.
9. Push the release latch on the front of the switch module to the closed position.
10. Make sure that the LEDs on the switch 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 each management module is lit.
  - The OK LED on each switch module is lit.
11. If you have other switch modules to install, do so now; otherwise, continue with step 12.
12. Attach any cables required by the switch module. For the location of the connectors on the SB-HE<sup>®</sup> platform, see *Intel<sup>®</sup> Server Chassis SB-HE Installation and User’s Guide* on the Resource CD.
13. Replace the acoustic attenuation module if you removed it in step 2 on page 9. The following illustration shows how to replace the acoustic attenuation module in the SB-HE platform.



# Removing the IXM5414E switch module

Statement 8:



**CAUTION:**

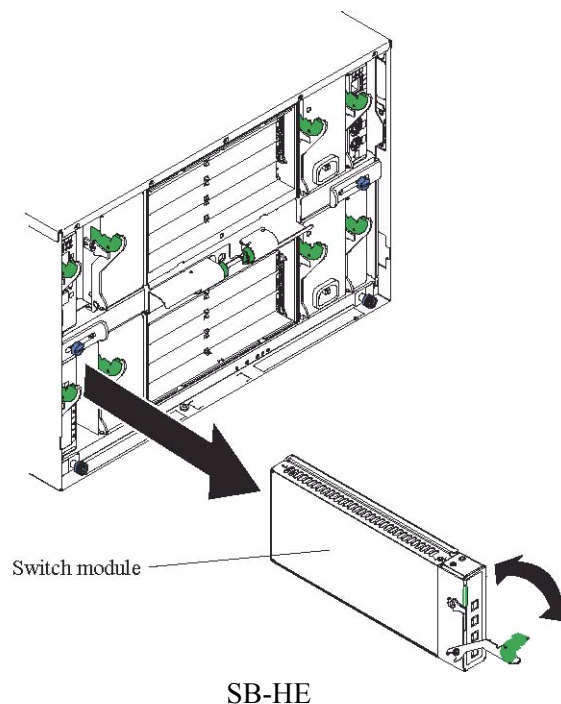
Never remove the cover on a power supply or any part that has the following label attached.



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

Complete the following steps to remove the IXM5414E switch module.

1. Select an appropriate I/O module bay from which to remove a switch module, in accordance with the instructions in “Ethernet interface requirements” on page 5.
2. Unplug any cables from the selected switch module.
3. For the SB-HE platform, pull the release latch toward the side of the switch module as shown in the second illustration. The module moves out of the I/O module bay about 0.64 cm (0.25 inch).



4. Slide the switch module out of the I/O module bay and set it aside.
5. Place either another switch module or a filler module in the I/O module bay within 1 minute.
6. If you placed another switch module in the I/O module bay, reconnect any cables that you unplugged in step 2.
7. Replace the acoustic attenuation module option if you removed it in step 1.



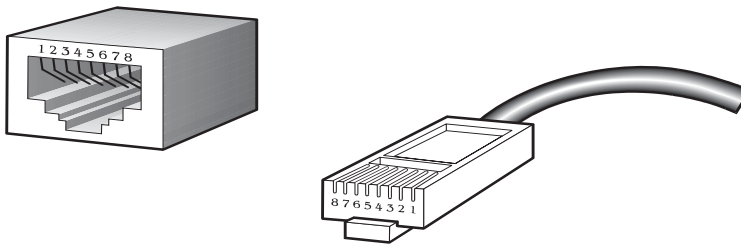


# A RJ-45 Pin Specifications

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The four external Ethernet ports of this switch module are auto-configuring and will work with straight-through or crossover cables when connected to other Ethernet equipment. Review the documentation that comes with the product you are connecting to for matching cable pin assignments.

The following illustration and table show the standard RJ-45 receptacle/connector and their corresponding pin assignments.



*Table 1. Standard Ethernet cable, RJ-45 pin assignment*

Contact (pin number)	Label	Media direct interface signal
1	TPO+	Tx + (transmit)
2	TPO-	Tx - (transmit)
3	TP1+	Rx + (receive)
4	TP2+	Not used
5	TP2-	Not used
6	TP1-	Rx - (receive)
7	TP3+	Not used
8	TP3-	Not used



## B Cable Lengths

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Use the following table as a guide for the maximum cable lengths:

*Table 2. Maximum cable lengths*

<b>Standard</b>	<b>Data transmission rate</b>	<b>Media type</b>	<b>Maximum distance</b>
1000BASE-T	1000 Mbps	Category 5e UTP cable Category 5 UTP cable	100 meters (328.1 ft)
100BASE-TX	100 Mbps	Category 5 UTP cable	100 meters (328.1 ft)
10BASE-T	10 Mbps	Category 3 UTP cable	100 meters (328.1 ft)



# C Getting Help and Technical Assistance

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This appendix contains information about where to go for additional information on Intel products, what to do if you experience a problem with your server platform, 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 that Intel provides in the publications that are provided on the Resource CD that ships with your system and software. The documentation 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 server platform and pre installed software, if any, is available on the Resource CD that comes with your system. The Resource CD includes user manuals, maintenance manuals and troubleshooting guides. 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. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software.

## Hardware and software service and support

Contact your Intel Support Representative for hardware and software service and support.



# D Notices

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## Safety and regulatory information

### — NOTE

These 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.
- Do not perform any action that causes hazards to the customer, or that makes the 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.
- 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.

### **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 to 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 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 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**

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.

 **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 Interruptions
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 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:**

기종별	주요특징
A급 기기	이 기기는 업무용으로 전자파 적합증을 받은 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바랍니다. 관와 잘못판매 또는 구입하였을 때에는 가령용으로 교환하시기 바랍니다.
B급 기기	이 기기는 가령용으로 전자파 적합증을 받은 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

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

**English translation of the previous notice:**

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

