Intel® Blade Server Ethernet Expansion Card SBEGBE

Installation Guide

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

Order Number C90884-001

Contents

Safety and regulatory information

✏ **NOTE**

> The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that you are familiar with the 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 you leg muscles; this action removes the strain from the muscles in your back. Do not attempt to lift any object that weighs more than 16 kg (35lb) or any object that you think is too heavy for you.
- Do not perform any action that causes hazards to the customer, or makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing, or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

    Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical Safety

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

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

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⊠⊠ **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.

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⊠⊠ **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.

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1
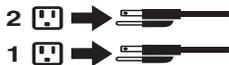
CAUTION:
Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.

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

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

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

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

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

警告使用者：

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

RRL Korea:

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

※ 비고

A급 기기 : 업무용 정보통신기기를 말한다.

B급 기기 : 가정용 정보통신기기를 말한다.

English translation of the notice above:

Device	User's Information
Class A device	This device complies with RRL EMC and is operated in 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.
✏ **NOTE** Class A device: operated in a commercial area. Class B device: operated in a residential area.	

1 Introduction

This *Installation Guide* contains instructions about installing and configuring your Intel® Blade Server Ethernet Expansion Card SBEGBE in an Intel® Blade Server SCSI Expansion Module SBESCSI.

The Ethernet expansion card has a dual-channel integrated Gigabit Ethernet controller capable of connecting to 10/100/1000-Mbps networks through an Ethernet switch module, or other supported I/O modules, on the SBCE unit. Communication signals are routed from the blade server through the I/O expansion connectors on the expansion card to I/O-module bay 3 and bay 4 in the SBCE unit.

✎ **NOTE**
>   The modules in I/O-module bay 3 and bay 4 in the SBCE unit must both be the same and must both be compatible with the expansion card.

The expansion card is available in two sizes; standard-form factor and small-form factor.

Related publications

This *Installation Guide* contains setup and installation instructions for your I/O expansion card, including information about getting started and how to configure your I/O expansion card. In addition to this *Installation Guide*, the following related documentation is provided with your blade server:

*   *Intel Server Compute Blade SBX82 Installation and User's Guide*

    This document contains instructions for setting up and configuring the SBX82 blade and basic instructions for installing some options. It also contains general information about the SBX82 blade unit.

*   *Intel Server Compute Blade SBX82 Hardware Maintenance Manual and Troubleshooting Guide*

    This document contains information to help you solve problems yourself. It also contains information for service technicians.

Features and specifications

The expansion card has the following features:

*   Connection to 1000BASE-TX environments
*   Compliance with U.S. and international safety and emissions standards
*   Full-duplex (FDX) capability, enabling simultaneous transmission and reception of data on the Ethernet local area network (LAN)
*   Wake on LAN* support
*   Failover support
*   Preboot Execution Environment (PXE) support

Inventory checklist

The expansion card option package contains the Intel Blade Server Ethernet Expansion Card SBEGBE.

For updated information about configuring your Ethernet expansion card, see the Intel Business Link (IBL) at http://www.intel.com/ibl/. From here, you can download documentation, current device drivers for your server, and software that supports advanced networking functions.

Notices and statements used in this book

The following types of notices and statements are may be 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 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.

2 Installing the Gigabit Ethernet I/O expansion card

This chapter provides details about installing the Gigabit Ethernet I/O expansion card.

The I/O expansion card comes in two form factors (standard-form factor and small-form factor) and can be installed in a blade server and a storage expansion unit.

Installation guidelines

Before you begin installing the I/O expansion card in your blade server, read the safety information beginning on page "Safety" on page vii and the guidelines in "Handling static-sensitive devices." This information will help you work safely with your blade server and options.

Handling static-sensitive devices

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

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

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to any *unpainted* metal surface of the SBCE chassis or any *unpainted* metal surface on any other grounded rack component in the rack you are installing the device in for at least 2 seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into the blade server without setting down the device. If it is necessary to set down the device, place it back into its static-protective package. Do not place the device on your blade server cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing the expansion card

See your Intel® Server Compute Blade SBX82 documentation for detailed instructions about installing the standard-form factor and small-form factor I/O expansion cards.

3 Troubleshooting

If you are having a problem, use the following information to help you determine the cause of the problem and the action to take. Additional troubleshooting and debugging procedures are available in the *Hardware Maintenance Manual and Troubleshooting Guide* for your blade server. This guide is available on the *Intel Server Compute Blade SBX82 Resource CD*.

Make sure you are using the latest versions of device drivers, firmware, and BIOS for your blade server and management module. If these items are obsolete, the SBCE unit might not recognize the expansion card and might not turn it on. See the Intel Business Link (IBL) support site for the latest information about upgrading the device drivers, firmware, and BIOS for SBCE components. The latest instructions are in the documentation that come with the updates.

To determine whether your installation problem is caused by the hardware, perform the following tasks:

- Verify that the expansion card is installed correctly.
- Verify that all peripheral devices connected to the I/O modules are turned on, operating properly, and are properly connected.
- Verify that the I/O modules used by the expansion card are installed in the correct I/O-module bays of the SBCE unit.

To determine whether your installation problem is caused by the software, verify that the correct Ethernet device driver is installed. The Intel Blade Server Ethernet Expansion Card SBEGBE uses new Ethernet device drivers that are compatible with the integrated Ethernet controllers on the blade server system board. To download or get information about the latest supported device drivers, utilities, and documentation, See the IBL support site at http://www.intel.com/ibl. Also see the *Installation and User's Guide* for your blade server.

To determine whether your installation problem is caused by the system configuration, check the Ethernet configuration settings using the blade server Configuration/Setup Utility program. See the *Installation and User's Guide* for your blade server on the Resource CD for additional information.

If you still have a system configuration problem, see the documentation that comes with your SBCE unit, or contact your Intel technical-support representative to determine whether your system board requires a special configuration.

A Getting help and technical assistance

If you need help, technical assistance, or just want more information about Intel products, you will find a wide variety of sources available from Intel to assist you. This appendix contains information about where to go for additional information about Intel and Intel products, what to do if you experience a problem with your Blade server system.

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. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* on the Resource CD that came with your Blade Server or Blade Chassis.

You can solve many problems without outside assistance by following the troubleshooting procedures in the publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most Intel systems and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes.

Using the documentation

Information about your Intel Blade Server Ethernet Expansion Card SBEGBE is available in the documentation that comes with your system. That documentation may include printed books, online books, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. Use the Intel Business Link (IBL) or contact your Intel support representative to obtain the latest technical information and download device drivers and updates.

Getting help and information from the World Wide Web

IBL includes up-to-date information about the Intel Blade Server Ethernet Expansion Card SBEGBE. IBL is at http://www.intel.com/ibl. You may also find support at the Intel support site: http://support.intel.com/support/motherboards/server/blade.htm.

Index