

Intel® Carrier Grade Server TIGI2U User Guide

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

Order Number: D15006-004

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Preface

About this Manual

Thank you for purchasing and using the Intel® Carrier Grade Server TIGI2U (Telecom Industrial Grade Intel® Xeon™ processor 2U Server).

This manual is for system technicians who are responsible for troubleshooting, upgrading, and repairing this Carrier Grade Server. This document provides a brief overview of the features of the board/chassis, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Intel® Carrier Grade Server TIGI2U. For the latest version of this manual, refer to <http://support.intel.com/support/motherboards/server/TIGI2U>.

Manual Organization

Chapter 1 provides a brief overview of the Carrier Grade Server TIGI2U. In this chapter, you will find a list of the server board features, chassis features, photos of the product, and product diagrams to help you identify components and their locations.

Chapter 2 provides instructions on adding and replacing components. Use this chapter for step-by-step instructions and diagrams for installing or replacing components such as the memory, processor, front panel board, the battery, and other components.

Chapter 3 provides instructions on using the utilities that are shipped with the board or that may be required to update the system. This includes how to navigate through the BIOS (Basic Input/Output System) Setup screens, how to perform a BIOS update, and how to reset the password or CMOS (Complementary Metal Oxide Semiconductor). Information about the specific BIOS settings and screens is available in the Intel® Server Board TIGI2U Technical Product Specification. See “[Additional Information and Software](#)” for a link to the Technical Product Specification.

Chapter 4 provides troubleshooting information. In this chapter, you will find BIOS error messages and POST (Power-on Self Test) code messages. You will also find suggestions for performing troubleshooting activities to identify the source of a problem.

What Your Platform Includes

Your Intel® Carrier Grade Server TIGI2U includes the following components:

- One Intel® Server Board SE7502JR2
- One 2U rack-mount chassis
- Two hard disk drive carriers
- One bracket for installing a CD ROM or DVD-ROM drive
- One 600 W SSI (Server System Infrastructure) PFC (Power Factor Correction)
- Four-fan assembly for cooling the processor, DIMMs (Dual Inline Memory Modules), PCI slot and other internal components
- One processor air duct
- Front panel I/O board
- Cables and connectors
- CD-ROM drive
- One IMM Advanced Module

See the Intel® Carrier Grade Server TIGI2U Hardware Reference Guide for initial installation instructions.

Product Accessories

You may need or want to purchase one or more of the following accessory items for your server:

- One Intel® Xeon™ Processor: 3.2 GHz with an 800 MHz system bus
- One processor heat sink
- DDR2-400 memory DIMMs
- Hard disk drives (HDDs)
- PCI (Peripheral Component Interconnect) add-in card
- Rack mount kit
- Power cord (If not included with the platform. This product ships with a power cord in North America only.)

For information about the accessories, memory, processors, and third-party hardware that has been tested and can be used with your board, and for ordering information for Intel products, see <http://support.intel.com/support/motherboards/server/TIGI2U/compat.htm>.

Additional Information and Software

If you need more information about this product or information about the accessories that can be used with this Carrier Grade Server, go to

<http://support.intel.com/support/motherboards/server/TIGI2U/index.htm>

- In-depth technical information about the server board included with this Carrier Grade Server, including BIOS settings and chipset information
- The latest product information
- Accessories or other Intel server products
- Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product
- DIMMs that have been tested with this product
- The power budget for this product
- Software to manage your Carrier Grade Server
- Diagnostics testing software
- Firmware and BIOS updates
- System drivers

Safety Information



WARNING

Although you may be using this guide or another resource as a reference, before working with your server product pay close attention to the safety instructions. You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.



WARNING

All LAN ports of the equipment are considered Type 2 or Type 4 intra-building ports as described in NEBS GR-1089-CORE, Issue 4. The LAN ports are suitable for connection to intra-building or unexposed wiring or cabling only. The LAN ports of the equipment **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. All LAN ports must be installed with shielded cabling which must be grounded at both ends.

Emissions Disclaimer

To ensure EMC (Electromagnetic Compatibility) compliance with your local regional rules and regulations, the final configuration of your end system product may require additional EMC compliance testing. For more information, please contact your local Intel Representative.

See “[Regulatory and Integration Information](#)” for product Safety and EMC regulatory compliance information. This is an FCC (Federal Communications Commission) Class A device.

Intended Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in Central Offices, Telecommunication Centers, offices, schools, computer rooms, and similar commercial type locations where the National Electrical Code (NEC) applies. The suitability of this product for other product categories and environments (medical, industrial, OSP telecommunications, residential, alarm systems, test equipment, etc.), other than an ITE application, may require further evaluation.

WARNING

Anchor the equipment rack: The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of the rack on slides. You must also consider the weight of any other device installed in the rack. A crush hazard exists should the rack tilt forward which could cause serious injury.

If AC power supplies are installed:

Mains AC power disconnect: The AC power cord(s) is considered the mains disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s).

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the server power cord is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged into a wall AC outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a configured server is less than 6 amperes. It is intended that an external Surge Protective Device (SPD) will be utilized at the AC power service for the equipment.

If DC power supplies are installed:

Connection with a DC (Direct Current) source should only be performed by trained service personnel. The server with DC input is to be installed in a Restricted Access Location in accordance with articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC source. The DC source must be capable of providing up to 600 Watts of continuous power per feed pair.

Main DC power disconnect: You are responsible for installing a properly rated DC power disconnect for the server system. This mains disconnect must be readily accessible, and it must be labeled as controlling power to the server. The circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible and should be rated no more than 10 amps.

Grounding the server: To avoid the potential for an electrical shock hazard, you must reliably connect an earth grounding conductor to the server. The earth grounding conductor must be a minimum 14AWG connected to the earth ground stud(s) on the rear of the server. The safety ground conductor should be connected to the chassis stud with a Listed closed two-hole crimp terminal having 5/8 inch pitch. The nuts on the chassis earth ground studs should be installed with a 10 in/lbs torque. The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it. The battery return input terminal is designed as an isolated DC return (DC-I) from the frame earth ground per NEBS GR-1089-CORE.

Overcurrent protection: Overcurrent protection circuit breakers must be provided as part of each host equipment rack and must be incorporated in the field wiring between the DC source and the server. The branch circuit protection shall be rated minimum 75Vdc, 10 A maximum per feed pair. If the DC power system for the equipment rack is installed with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured is 10 amperes.



WARNING

Do not attempt to modify or use an AC power cordset that is not the exact type required. You must use a power cordset that meets the following criteria:

- **Rating:** In the U.S. and Canada, cords must be UL (Underwriters Laboratories, Inc.) Listed/CSA (Canadian Standards Organization) Certified type SJT, 18-3 AWG (American Wire Gauge). Outside of the U.S. and Canada, cords must be flexible harmonized (<HAR>) or VDE (Verband Deutscher Elektrotechniker, German Institute of Electrical Engineers) certified cord with 3 x 0.75 mm conductors rated 250 VAC (Volts Alternating Current).
- **Connector, wall outlet end:** Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be Listed and rated 125% of overall current rating of the server.
- **Connector, server end:** The connectors that plug into the AC receptacle on the server must be an approved IEC (International Electrotechnical Commission) 320, sheet C13, type female connector.
- **Cord length and flexibility:** Cords must be less than 4.5 meters (14.76 feet) long.



CAUTION

Temperature: The temperature, in which the server operates when installed in an equipment rack, must not go below 5 °C (41 °F) or rise above 40 °C (104 °F). Extreme fluctuations in temperature can cause a variety of problems in your server.

Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1023 BTU's (British Thermal Units) per hour for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server will be used.

Safety Cautions

Read all caution and safety statements in this document before performing any of the instructions. See also *Intel Server Boards and Server Chassis Safety Information* on the Resource CD and/or at

<http://support.intel.com/support/motherboards/server/sb/CS-010770.htm>.

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/support/motherboards/server/sb/CS-010770.htm>.

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/support/motherboards/server/sb/CS-010770.htm> 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/support/motherboards/server/sb/CS-010770.htm>.

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/support/motherboards/server/sb/CS-010770.htm>.

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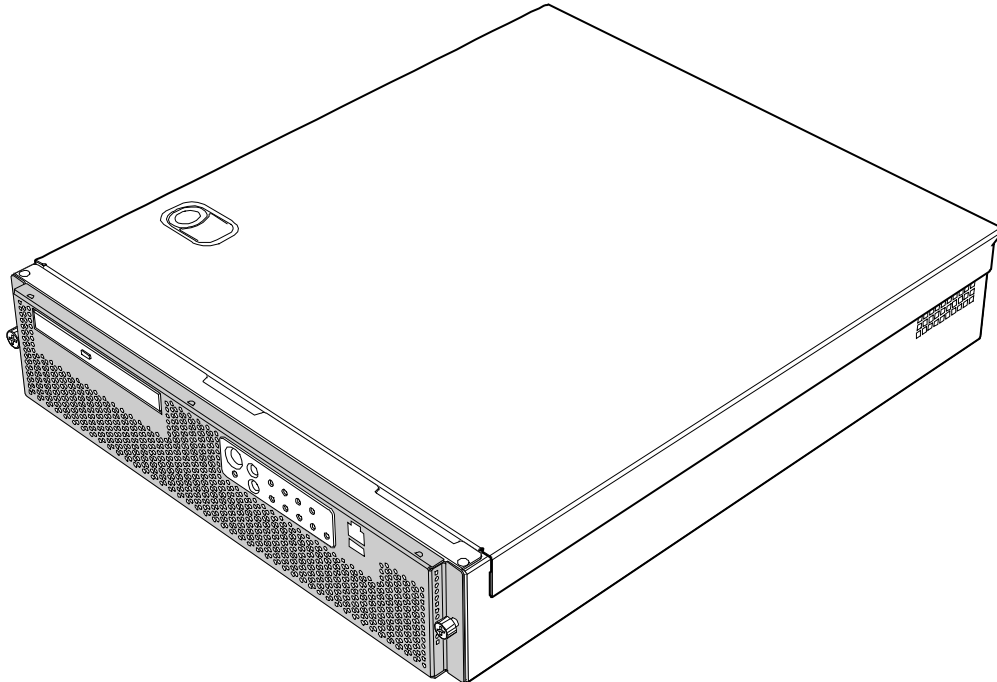
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Intel® Carrier Grade Server TIGI2U Features

This chapter briefly describes the main features of the Intel® Carrier Grade Server TIGI2U. This chapter provides a diagram of the product, a list of the server features, and diagrams showing the location of important components and connections on the server platform.

The Intel® Carrier Grade Server TIGI2U is shown in the following diagram.



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Figure 1. Intel® Carrier Grade Server TIGI2U

Server Platform Features

Table 1 summarizes the major features of the server platform.

Table 1. Server Platform Features

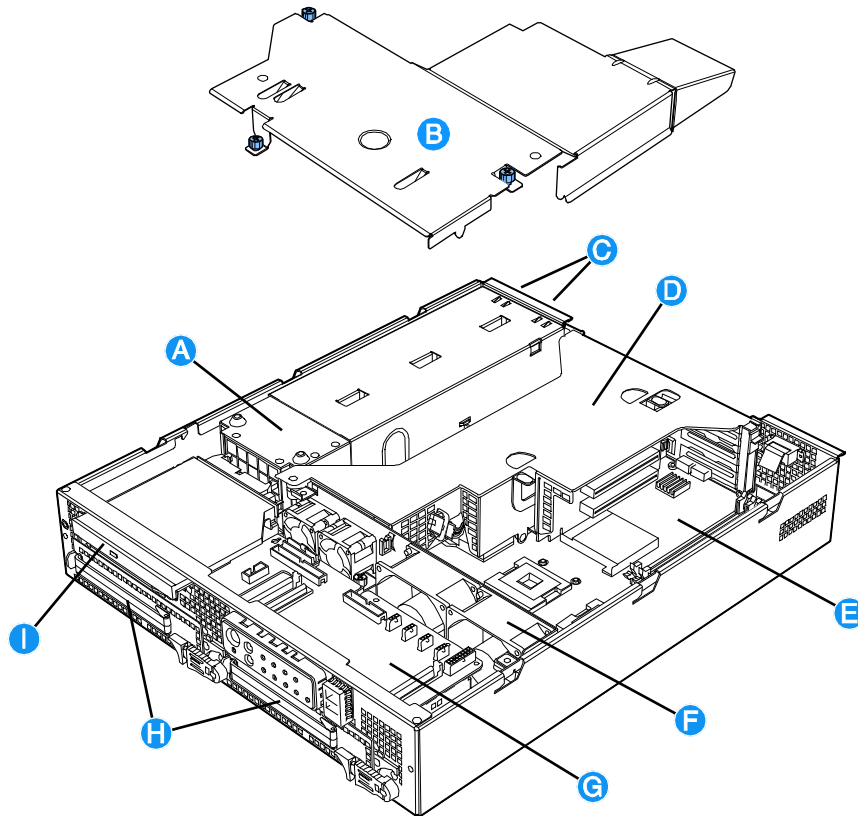
Feature	Description
Processors	Support for up to two Intel® Xeon™ processors with an 800 MT/s MHz front side bus at frequency 3.2 GHz with 2MB cache.
Memory	<ul style="list-style-type: none"> ▪ Memory mirroring and memory sparing options ▪ Six DIMM slots supporting DDR-2 400MHz memory
Chipset	Intel® E7520 chipset, including: <ul style="list-style-type: none"> ▪ E7520 MCH ▪ PXH ▪ Intel® 82801ER I/O Controller Hub 5-R (ICH-5R)
I/O Control	<p>External connections:</p> <ul style="list-style-type: none"> ▪ Stacked PS/2 ports for keyboard and mouse ▪ RJ45 Serial B port ▪ Two RJ45 NIC connectors for 10/100/1000 Mb connections ▪ Two rear USB 2.0 ports ▪ One front USB port - USB 2.0 compliant with less than ten feet of external cable ▪ U320 high-density 80-pin SCSI connector (channel B) <p>Internal connections:</p> <ul style="list-style-type: none"> ▪ Two USB port headers, each of which supports two USB 2.0 ports ▪ One DH10 Serial A header ▪ One Ultra320 80-pin SCSI connector (Channel A) ▪ One ATA-100 connector ▪ SSI-compliant 34-pin, high-density 100-pin, and alternate 50-pin control panel headers ▪ Intel® Management Module 120-pin connector, supporting the Professional and Advanced server management modules
Add-in Card	<ul style="list-style-type: none"> ▪ One low-profile riser slot that supports a riser card capable of supporting upto three low-profile PCI-X 64/100MHz add-in cards. ▪ One full-height riser slot, utilizing Intel® Adaptive Slot technology. Capable of supporting riser cards that follows PCI-X specifications. The riser card can support up to three full-height, full-length PCI-X 64/100 MHz add-in cards.
Video	On-board ATI* RAGE XL video controller with 8MB SDRAM

Continued

Server Platform Features

Feature	Description
Hard Drive	SCSI support: <ul style="list-style-type: none"> ▪ Dual-channel LSI Logic* 53C1030 Ultra320 SCSI controller <ul style="list-style-type: none"> — Implements LSI Logic* Fusion-MPT architecture — Supports LSI Logic* Integrated Mirroring and Striping technology ▪ Zero-channel RAID supporting the RUBI-2 specification
LAN	Dual Intel® 82546GB 10/100/1000 NICs
Fans	<ul style="list-style-type: none"> ▪ Two 80mm x 38mm fans ▪ Two 40mm x 28mm fans
Server Management / Diagnostics	<ul style="list-style-type: none"> ▪ On-board Platform Instrumentation using the National Semiconductor* PC87431M mini-Baseboard Management Controller (mBMC) (Default). ▪ Support for optional Intel® Management Module - Advanced Edition or Professional Edition ▪ Support for Intel® Server Management 8.x ▪ Intel® Light-Guided Diagnostics on all field replaceable units (FRUs)
Server Management	Intel® Server Management 5.8 support Telco Alarm Manager (TAM)

Server Platform Components

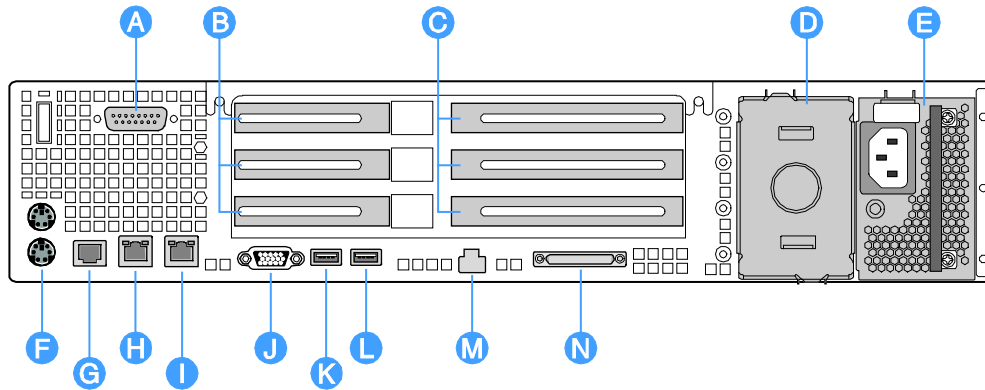


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- | | |
|----------------------------------|---|
| A. Power Distribution Board | F. System Fans |
| B. Processor Air Duct | G. Front Panel I/O Board |
| C. Power Supplies | H. SCSI Hard Disk Drive Carriers |
| D. PCI Riser Card Assembly | I. Peripheral Bay (CD-ROM or DVD-ROM drive) |
| E. Intel® Server Board SE7520JR2 | |

Figure 2. System Components

Server Platform Back Panel



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- | | | | |
|---|---|---|------------------------|
| A | DB15 Alarms Connector | H | RJ45 NIC 1 Connector |
| B | PCI Card Bracket (low-profile) | I | RJ45 NIC 2 Connector |
| C | PCI Card Bracket (full-height) | J | Video Connector |
| D | Optional second power supply or filler panel (filler panel shown) | K | USB 1 |
| E | Power Supply | L | USB 0 |
| F | PS/2 Mouse and Keyboard Connectors | M | Server Management Port |
| G | Rear Serial Port | N | SCSI Channel B |

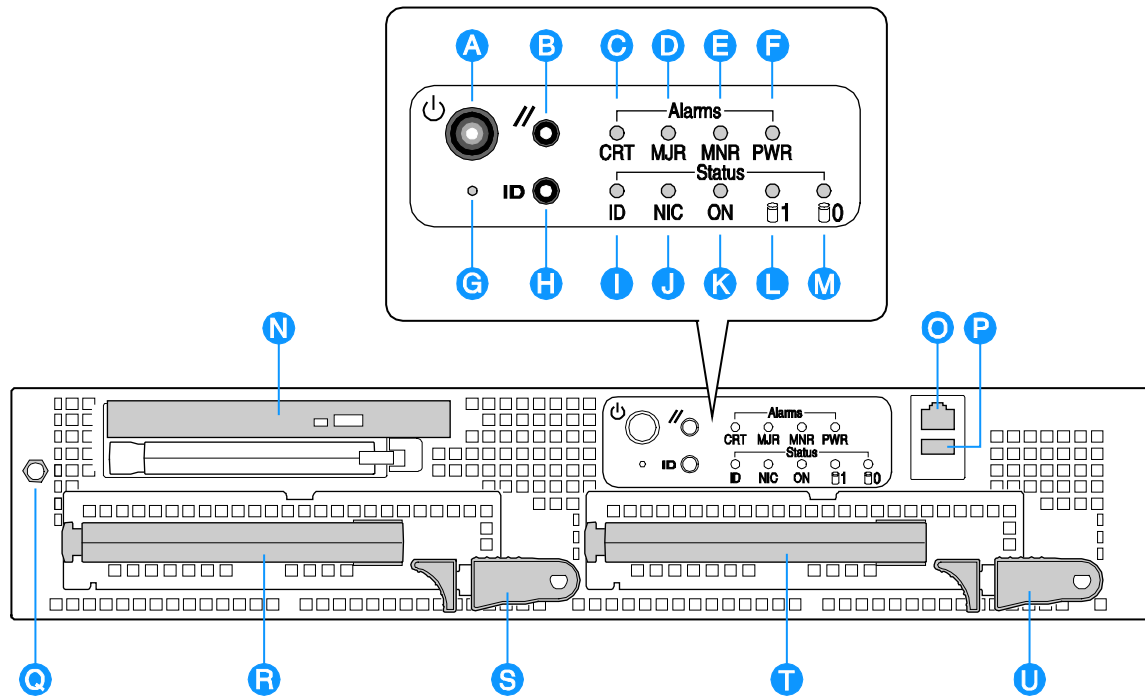
Figure 3. Platform Back

The NIC LEDs at the right and left of each NIC provide the following information.

Table 2. NIC LEDs

NIC	LED Color	LED State	Description
NIC1 / NIC2 (Gigabit)	Left LED	Off	No network connection
		Solid Amber	Network connection in place
		Blinking Amber	Transmit/receive activity
	Right LED	Off	10 Mbps connection (if left LED is on or blinking)
		Solid Amber	100 Mbps connection
		Solid Green	1000 Mbps connection

Server Platform Front Panel



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Front Panel Buttons

A	Power button	Toggles the system power
B	Reset button	Resets the system
G	NMI button	Assert NMI to baseboard
H	ID button	Toggles system ID LED

Front Panel LEDs

C	Critical (amber)	When continuously lit, indicates the presence of a Critical System Fault. A critical system fault is an error or event that is detected by the system with a fatal impact to the system. In this case, the system cannot continue to operate. An example is the loss of a large section of memory that renders the system not operational. The front panel critical alarm relay will be engaged.
D	Major (amber)	When continuously lit, indicates the presence of a Major System Fault. A major system fault is an error or event that is detected by the system that has discernable impact to system operation. In this case, the system can continue to operate but in a "degraded" fashion (reduced performance or loss of non-fatal feature reduction). An example is the loss of one of two mirrored disks. The front panel major alarm relay will be engaged.
E	Minor (amber)	When continuously lit, indicates the presence of a Minor System Fault. A minor system fault is an error or event that is detected by the system but has little impact on actual system operation. An example is a correctable ECC error. The front panel minor alarm relay will be engaged.
F	Power (amber)	When continuously lit, indicates the presence of a Power System Fault. The front panel power alarm relay will be engaged.
I	System ID LED (white)	Continuously lit when activated either by a software command or by the front panel ID button.

continued

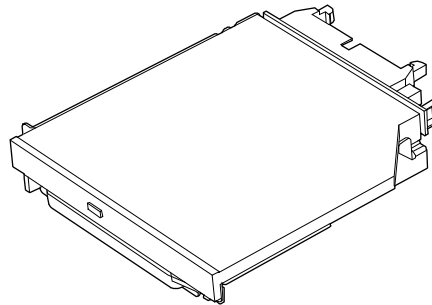
Server Platform Features

J	NIC activity LED (green)	Indicates activity on either NIC.
K	Main power LED (green)	When continuously lit, indicates the presence of DC power in the server. The LED goes out when the power is turned off or if the power source is disrupted.
L	Disk 1 Activity/Fault LED (green/amber)	Indicates disk 1 SCSI hard drive activity when green, or a disk 1 SCSI hard drive fault when amber.
M	Disk 0 Activity/Fault LED (green/amber)	Indicates disk 0 SCSI hard drive activity when green, or a disk 0 SCSI hard drive fault when amber.
Front of Server Platform		
N	Optional CD-ROM or DVD-ROM Drive	
O	Serial B via RJ45	
P	USB 2	
Q	Anti-static Connection	
R	Drive Carrier 0	
S	Drive Release Lever	
T	Drive Carrier 1	
U	Drive Release Lever	

Figure 4. Front of Server Platform

Server Platform Peripherals

The platform provides for a peripheral location to install either a CD-ROM or a DVD-ROM drive. The platform comes with a CD-ROM drive installed. For information on replacing the CD-ROM drive, see “Replacing the CD-ROM Drive”.



TP01647

Figure 5. Optional Peripheral CD-ROM or DVD-ROM Drive

Server Board Connector and Component Locations

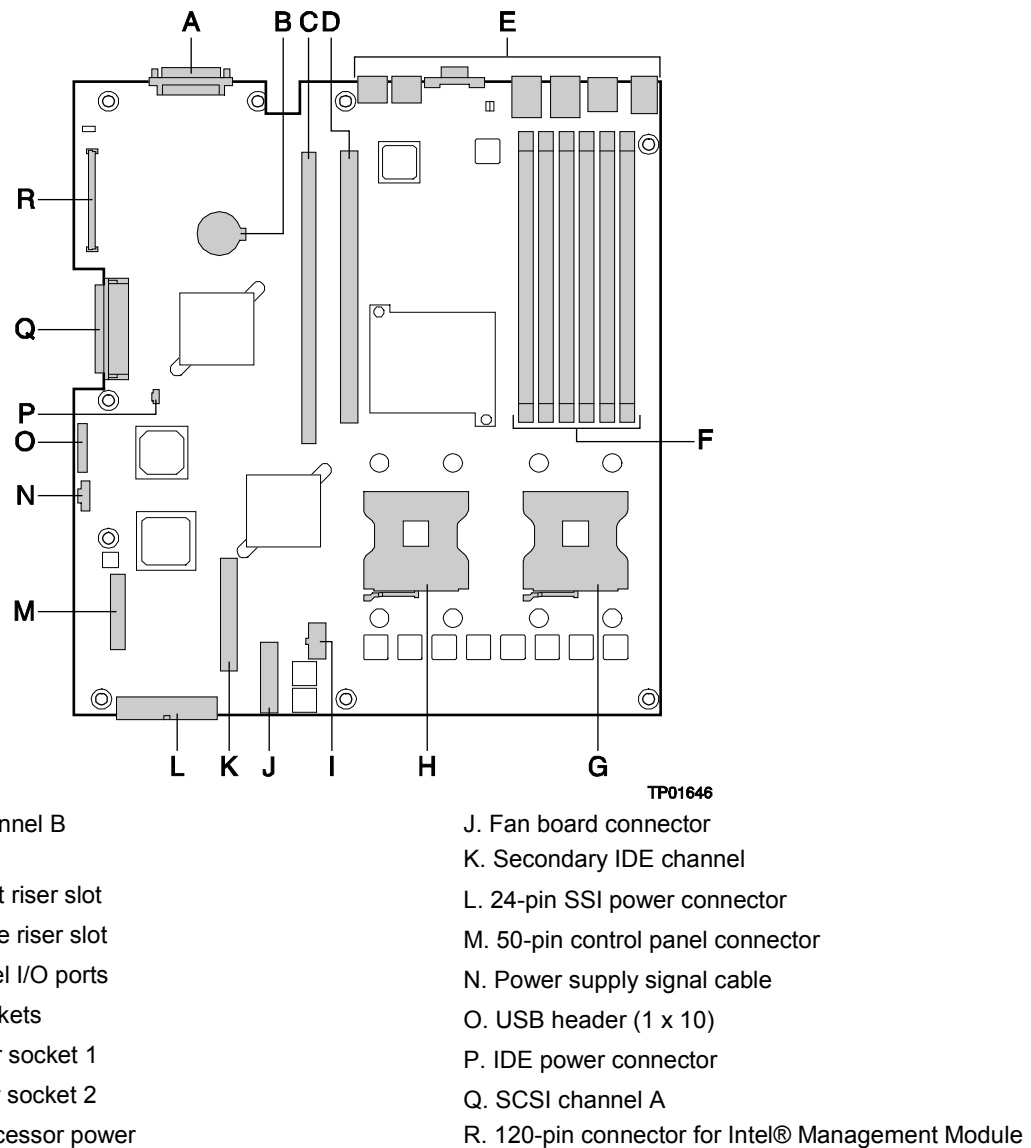


Figure 6. Intel® Server Platform TIGI2U Board Diagram

Configuration Jumpers

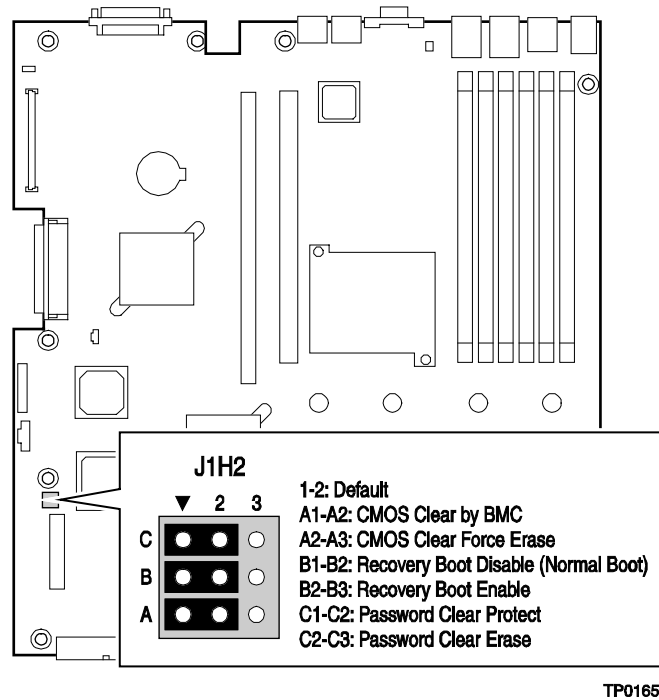


Figure 7. Configuration Jumper Location

Table 3. Configuration Jumper [J1H2]

Jumper Name	Pins	What happens at system reset...
Password Clear (line "A" in figure above)	1-2	These pins should be jumpered for normal system operation.
	2-3	If these pins are jumpered, administrator and user passwords will be cleared on the next reset. These pins should not be jumpered for normal operation.
Recovery Boot (line "B" in figure above)	1-2	These pins should be jumpered for normal system operation.
	2-3	If these pins are jumpered, the system will attempt to recover the BIOS by loading the BIOS code into the flash device from a floppy disk. This jumper is typically used when the BIOS has become corrupted. These pins should not be jumpered for normal operation.
CMOS Clear (line "C" in figure above)	1-2	These pins should be jumpered for normal system operation.
	2-3	If these pins are jumpered, the CMOS settings will be cleared on the next reset. These pins should not be jumpered for normal operation.

Front Panel IO (FPIO) System Board

Features

The TIGI2U server system has the following FPIO features:

- Four switches to control power-on, reset, NMI, and the system ID LED
- One system ID LED that can be controlled remotely or by the system ID switch
- Two system activity LEDs that indicate power-on and NIC activity
- Two hard drive activity/fault LEDs that indicate activity/fault status for drives 1 and 2
- Four system fault LEDs that indicate critical, major, minor, and power system fault status
- Four system fault relays for external critical, major, minor, and power fault indicators
- One SCSI bus with hot-swap circuitry for controlling hot-swap SCSI disk drives 1 and 2
- IDE Bus from IDE Connector to blind mate connector
- One blind mate connector for interfacing to CDROM or floppy drive carrier assembly
- Connectors for interfacing to the power supply, server baseboard, drive carrier assemblies, and hot plug disk drives 1 and 2

FPIO SCSI Subsystem Status LEDs

The status LEDs give the user a visual indication of the drives' condition. There is a single LED for each drive. The LEDs are bi-colored and use a combination of color and blinking frequency to indicate multiple conditions. The LEDs are mounted on the FPIO board, and the light is directed to the front panel through the use of a light pipe assembly. See Table 4 for LED activity definitions. See the Firmware EPS for definitions of the different blink rates.

Table 4. LED Activity Definitions

LED State	Drive Active	Fault Condition
Solid Green		
Blinking Green	X	
Blinking Yellow/Green		X
Blinking Yellow/Blank		X
Blank		

Peripheral Bay

One peripheral drive (either a slim-line CD-ROM drive or a slim-line DVD-ROM drive) can be mounted in the system using a blind-mate peripheral drive carrier inserted into the peripheral drive bay. The peripheral drive bay is located above the hard drive tray and to the left.

Hard Disk Drives

The platform ships with two drive carriers for mounting hot swap Ultra320 SCSI hard disk drives in the chassis.

For information on how to install these drives, see “[Installing or Removing a Hard Drive](#)”.



NOTE

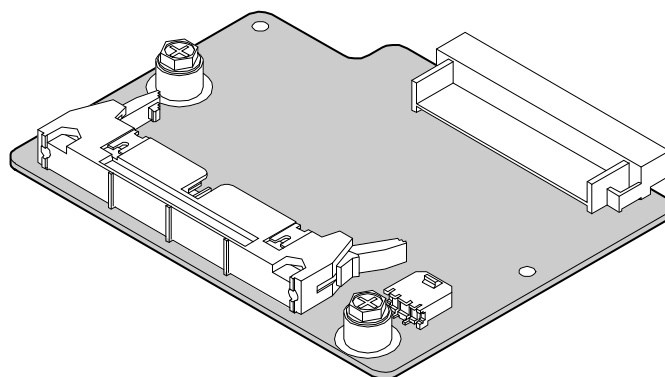
The Intel® Carrier Grade Server TIGI2U does not support all SCSI hard drives. For a list of validated hard drive manufacturers and hard drive types, see

<http://support.intel.com/support/motherboards/server/TIGI2U>

Drives can consume up to 17 watts of power each. Drives must be specified to run at a maximum ambient temperature of 45 °C.

Interconnect System (SysCon) Board

The interface board is used in the CD-ROM drive carrier assembly as the signal and power interface between the CD-ROM drive and the FPIO system board. The interface board has standard IDE and power connectors for interfacing to the CD-ROM drive, and has a high-density blind-mate connector for interfacing to the FPIO system board.



TP01691

Figure 8. SysCon Board

Power Supply

The power supply cage supports up to two hot-swap power supplies (either AC input or DC input) in a (1+1) redundant configuration. A power supply filler module for the empty power supply site is supplied for systems without redundancy. Only the DC input version is NEBS certified.

The power subsystem supports the implementation of remote management features including remote enable, which permits power to be activated from a variety of sources.

The power supply is rated for 600 watts of power at the following voltages.

DC Power Supply:

PARAMETER	MIN	RATED	MAX	Max Input Current
DC Voltage	-38 VDC	-48VDC/-60VDC	-75VDC	20.5ADC

AC Power Supply:

PARAMETER	MIN	RATED	MAX	Start-up Vac	Power Off Vac	Max Input AC Current	Max Rated Input AC Current
Line Voltage (110)	90V _{rms}	100-127 V _{rms}	140V _{rms}	85Vac ±4Vac	75Vac ±5Vac	10.0 A _{rms} ^{1,3}	8.9A _{rms} ⁴
Line Voltage (220)	180V _{rms}	200-240 V _{rms}	264V _{rms}	-	-	5.0 A _{rms} ^{2,3}	4.5A _{rms} ⁴
Frequency	47 Hz	50/60Hz	63 Hz				

Notes:

1. Maximum input current at low input voltage range shall be measured at 90Vac, at max load.
2. Maximum input current at high input voltage range shall be measured at 180VAC, at max load.
3. This is not to be used for determining agency input current markings.
4. Maximum rated input current is measured at 100VAC and 200VAC

System Cooling

All system components except the power supply cage are cooled by a set of fans mounted near the middle of the chassis and behind the hard drive bays. The TIGI2U system comes in a non-redundant, four-fan configuration that consists of two 80mm x 38mm fans and two 40mm x 28mm fans.

Air flows in through the front bezel over the peripheral bay and the hard drive bays, passes through the fans and over the baseboard, and exhausts through the rear of the chassis. Each fan provides tachometer signal output to the server baseboard to indicate a fan failure.

The cooling subsystem contains a fan array consisting of two 80 x 38 mm fans and two 40 x 28 mm fans to cool the server board and other components. A fan failure is indicated by one of the fault LEDs located on the front panel.

Hardware Requirements

To avoid integration difficulties and possible board damage, your system must meet the requirements outlined below. For a list of qualified components, see the links under [“Additional Information and Software.”](#)

Processor

The server board accommodates two Intel® Xeon™ 3.2 GHz processors operating at 800 MHz FSB with 2MB cache.

Memory

The Server Board SE7520JR2 provides six DIMM sockets across two channels, Channel A and Channel B. Channel A consists of DIMM sockets 1A, 2A, and 3A. Channel B consists of DIMM sockets 1B, 2B, and 3B.

If six DIMMs are installed, the following maximum capacities are possible:

- For DDR-2 400: Maximum capacity of 16 GB

A minimum of one 256MB DIMM is required in DIMM socket 1A or 1B. This uses single-channel interleave. However, for dual-channel interleave, providing optimum performance, a minimum of two DIMMs should be installed in DIMM sockets 1A and 1B. Except for the option of installing a single DIMM in socket 1A or 1B, DIMMs must be installed in pairs and populated as follows:

- DIMM1A and DIMM 1B: Populate these two sockets together first
- DIMM 2A and DIMM 2B: Populate these sockets in addition to DIMM 1A and DIMM 2A if four DIMMs are to be used.
- DIMM 3A and DIMM3B: Populate these sockets after DIMM 1A, DIMM1B, DIMM2A, and DIMM2B have been populated.

DIMMs must meet the following requirements:

- Use only DDR2-400 ECC, registered DDR DIMM modules
- Use only DIMMs that comply with the DDR specifications.
- Use only DIMMs with DIMM organization of x72 ECC
- Use only 240pin DIMMs



NOTE

When using DDR2-400 DIMM technologies, a maximum of four loads per memory channel is supported. When all DIMMs used in the system match this technology, a maximum of four DIMMs can be populated. Refer to the *Intel® Server Board SE7520JR2 Technical Product Specification* for additional information regarding the memory sub-system.

In determining your memory requirements, the need for memory sparing or memory mirroring must be considered.

Memory Sparing and Mirroring

The Intel® E7520 chipset includes hardware that supports memory mirroring and memory on-line sparing. Both memory mirroring and memory on-line sparing provide a way to prevent data loss in case a DIMM fails.

With memory mirroring the system maintains two copies of all data in the memory subsystem. If a DIMM fails, the data is not lost because the second copy of the data is available from the mirrored DIMM in the opposite channel. The system will not fail due to memory error unless both the primary and the mirrored copy of the data become corrupt at the same time.

Server Platform Features

In a mirrored system, the maximum usable memory is one-half of the installed memory, with a minimum of four DIMMs installed. Since the data is duplicated across DIMMs, it means that up to one-half of the installed DIMMs are actively in use at any one time. The remaining DIMMs are used for mirroring.

Two methods for memory mirroring are available:

- Four identical DIMMs are used in DIMM sockets 1A, 1B, 2A, and 2B.
 - If the DIMM in socket 1A fails, the DIMM in socket 2B takes over.
 - If the DIMM in socket 1B fails, the DIMM in socket 2A takes over.
- Four DIMMs are used with identical single-ranked DIMMs in Banks 2 and 3. DIMMs in sockets 1A and 1B must be dual-ranked and identical.
 - If the DIMM in socket 1A fails, the DIMM in socket 1B takes over.
 - If the DIMM in socket 2A fails, the DIMM in socket 3B takes over.
 - If the DIMM in socket 2B fails the DIMM in socket 3A takes over.

For memory on-line sparing, one DIMM per channel is used as the memory spare. The spare DIMM is not available for use, but is kept in reserve. If a DIMM begins to fail, the content of the failing DIMM is copied to the spare DIMM in that channel. When all of the data is copied to the spare DIMM, the primary DIMM is removed from service and the spare DIMM takes its place.

When memory on-line sparing is used, the spare DIMMs must be equal to or larger than the largest in-service DIMM in that channel.



NOTE

Memory mirroring and memory sparing are mutually exclusive. Only one can be active at a time. Refer to the *Intel® Server Board SE7520JR2 Technical Product Specification* for additional information regarding the memory sub-system.

All memory components and DIMMs used with the Intel® Carrier Grade Server TIGI2U must comply with the DDR specifications. For a complete list of supported memory DIMMs, see the links under [“Additional Information and Software.”](#)



NOTES

Although the server board architecture allows the user to mix various sizes of DIMMs between channels, DIMMs must be identical within each bank.

To be fully compliant with all applicable DDR SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance. If non-SPD memory is installed, the BIOS will attempt to correctly configure the memory settings, but performance and reliability may be impacted or the DIMMs may not function under the determined frequency.

For ECC functionality, all installed DIMMs must be ECC.

Platform Installations and Upgrades

Before You Begin

Before working with your server product, pay close attention to the safety instructions at the beginning of this manual. See “[Safety Information](#).”

Tools and Supplies Needed

- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- Needle nosed pliers
- Antistatic wrist strap and conductive foam pad (recommended). To mitigate damage to equipment from static electricity discharge an antistatic wriststrap connected to earth ground must be worn by service personnel.

System References

All references to left, right, front, top, and bottom are based on the reader facing the front of the platform as it would be positioned for normal operation.

Cable Routing Reference

It is important for cables to be connected correctly. The diagram below provides information about the location of the cable connections. Use this diagram as a reference when following the installation steps in this chapter.

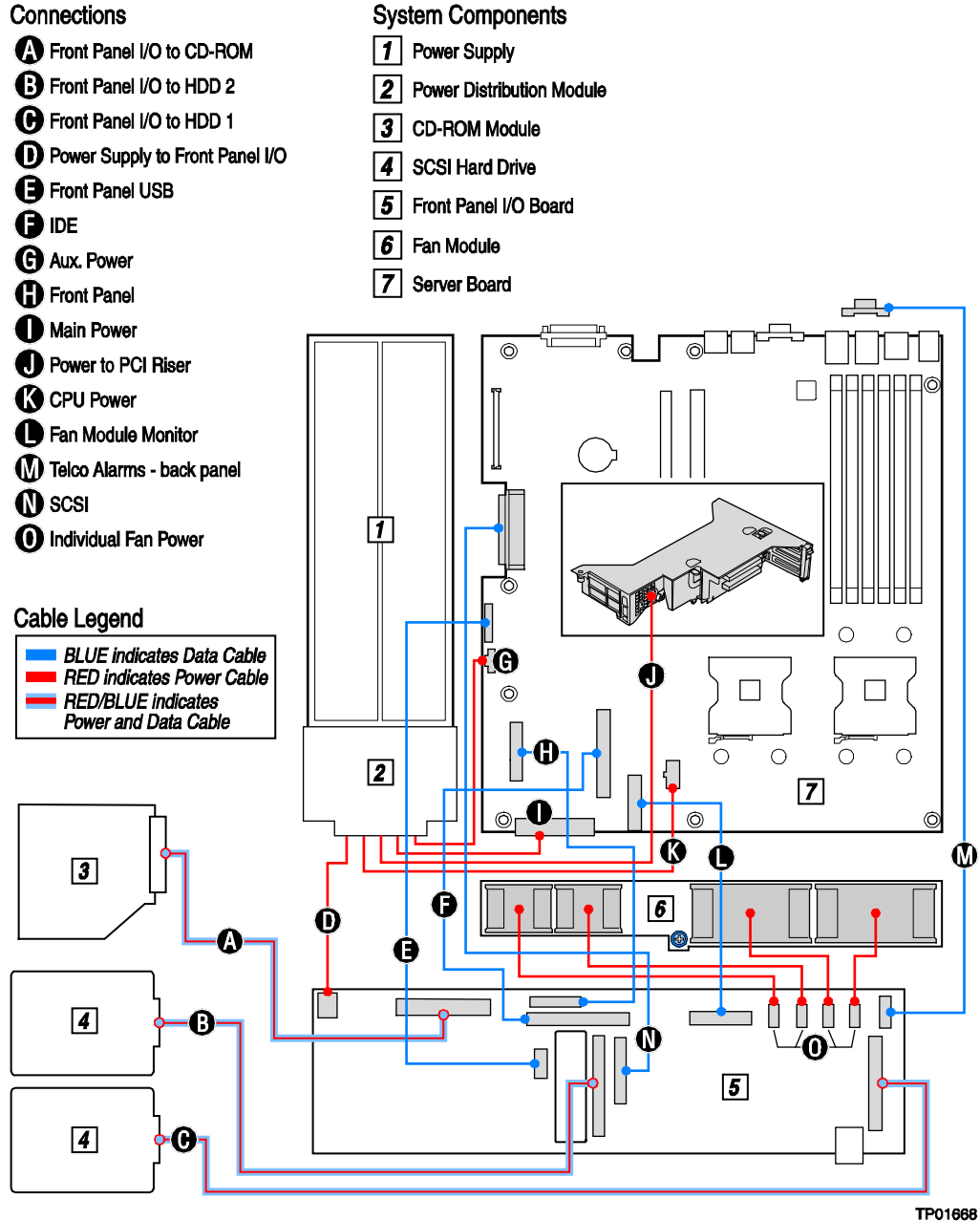


Figure 9. System Cable Routing

Removing and Installing the Chassis Cover

Removing the Chassis Cover

The Intel® Carrier Grade Server TIGI2U must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the platform. Before removing the top cover, power down the server system and unplug all peripheral devices and the AC power cable or disconnect the DC mains. None of the components inside the platform are hot-swappable.

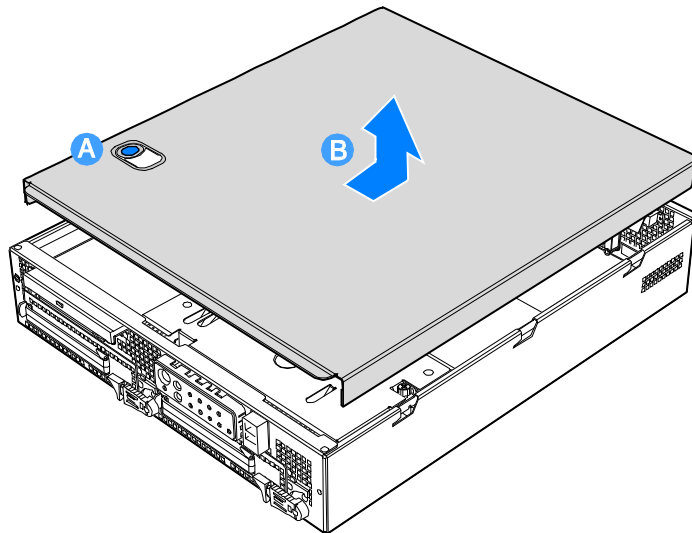
To mitigate damage to equipment from static electricity discharge an antistatic wriststrap connected to earth ground must be worn by service personnel.



NOTE

A nonskid surface or a stop behind the platform may be needed to prevent the platform from sliding on your work surface.

1. Observe the safety and ESD precautions at the beginning of this section.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord or disconnect the DC mains.
4. While holding the blue button at the top of the chassis in (see letter “A”), slide the top cover back until it stops (see letter “B”).
5. Lift the cover straight up to remove it from the platform.

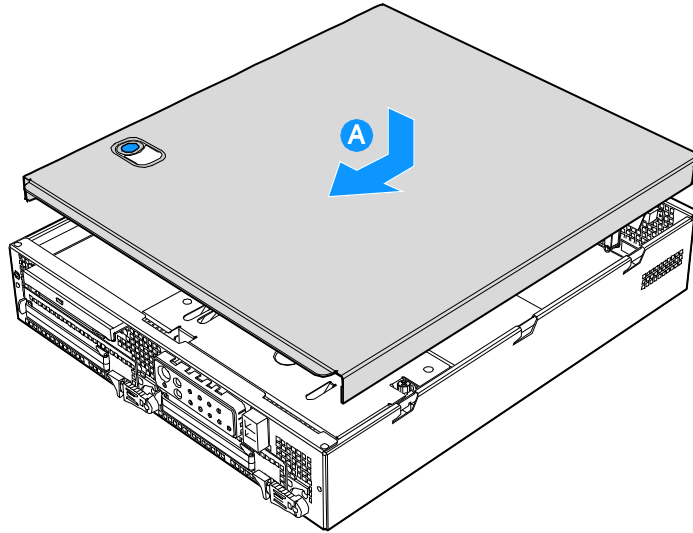


TP01648

Figure 10. Removing the Chassis Cover

Installing the Chassis Cover

1. Place the cover over the chassis so that the side edges of the cover sit just inside the chassis sidewalls, with the front of the cover with about 1/8-inch gap showing between the chassis cover and the sheet-metal at the front of the chassis.
2. Press down slightly on the chassis cover behind the CD-ROM / DVD-ROM drive area and slide the cover forward until it clicks into place (see letter “A”).
3. Reconnect all peripheral devices and the AC power cord or the DC mains.



TP01649

Figure 11. Installing the Chassis Cover

Removing and Installing the Front Bezel

The front bezel needs to be removed only to install or remove hot-swap hard drives or the CDROM drive.

Removing the Front Bezel

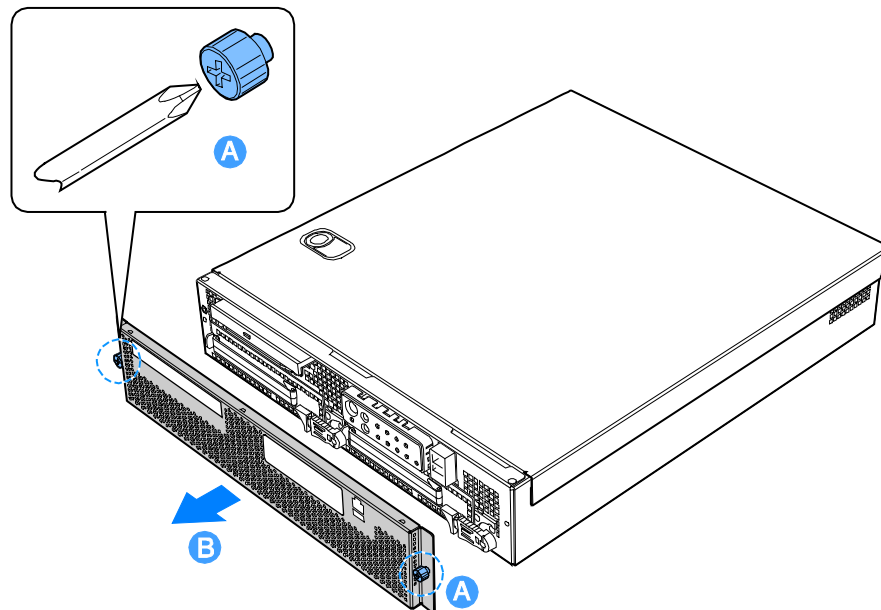
1. Loosen the captive screws at the left and right edges of the front bezel (one screw at the right and one screw at the left; see letter “A”).



NOTE

Hold the bezel in place while you loosen the screws. After both screws are loosened, the bezel will drop from the chassis.

2. Remove the front bezel from the chassis (see letter “B”).

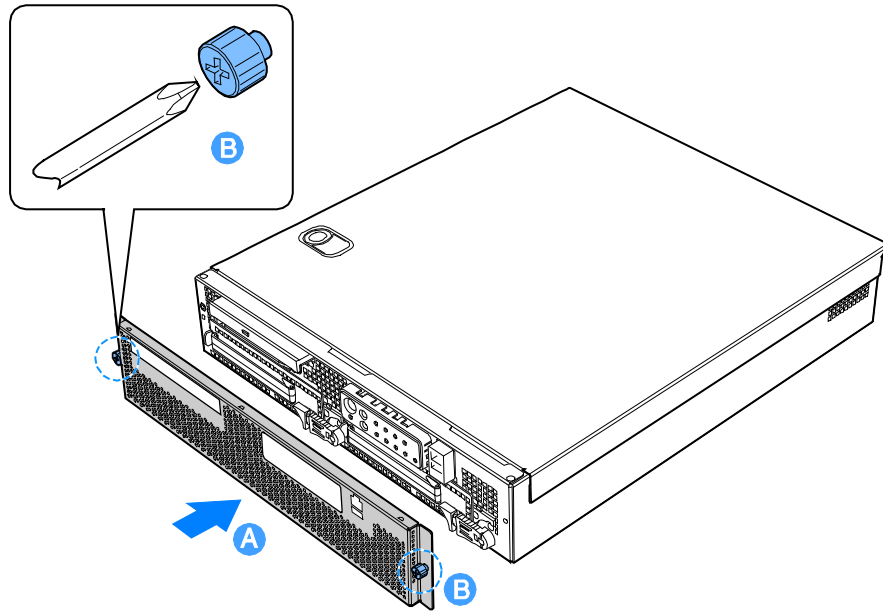


TP01650

Figure 12. Removing the Front Bezel

Installing the Front Bezel

1. While holding the front bezel in place (see letter “A”), tighten the captive screws at the left and right edges of the bezel (see letter “B”).



TP01651

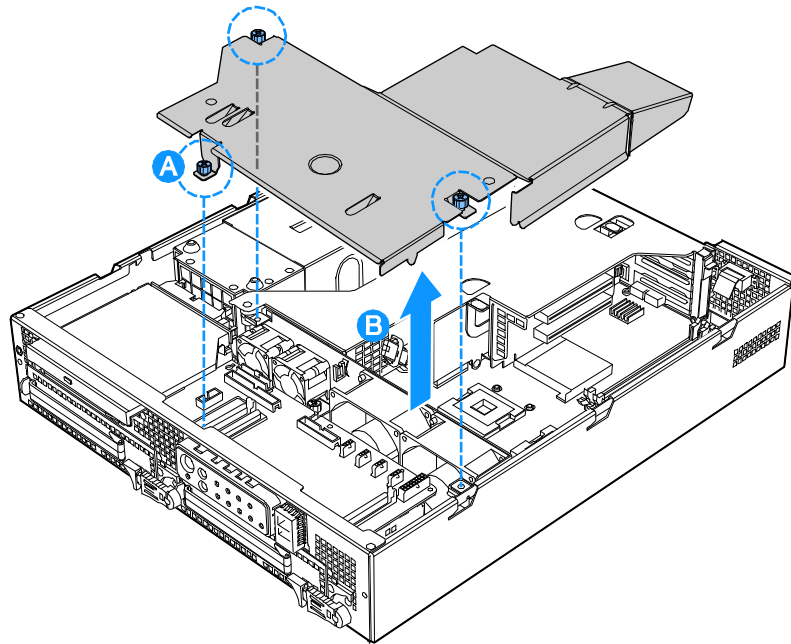
Figure 13. Installing the Front Bezel

Removing and Installing the Processor Air Duct

The air duct must be removed to access the processor assembly and the four-fan assembly. The processor air duct is required for proper airflow within the chassis. Be sure the air duct is in place before installing the chassis cover.

Removing the Processor Air Duct

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the screws at the top of the air duct (see letter “A”).
4. Lift the air duct from the server platform (see letter “B”).

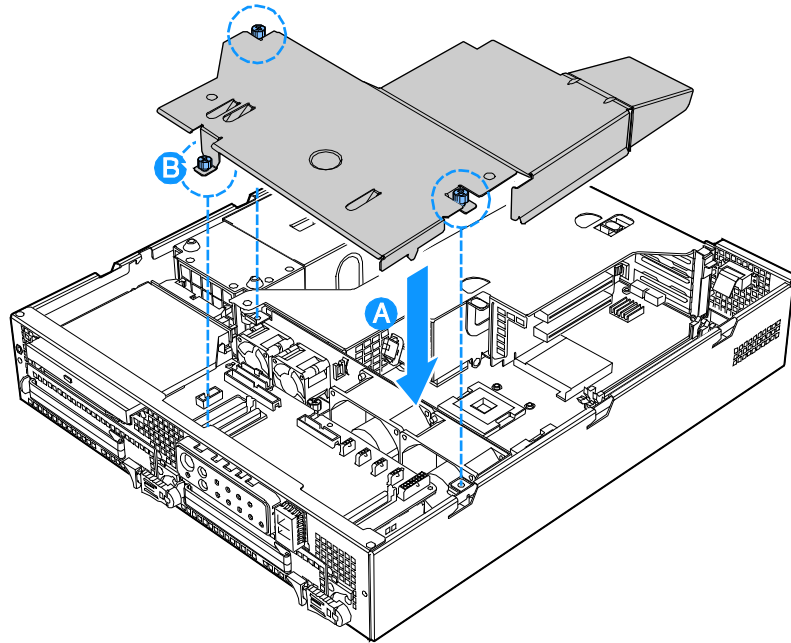


TP01670

Figure 14. Removing the Processor Air Duct

Installing the Processor Air Duct

1. Place the processor air duct over the processor socket and four-fan assembly, using caution to make sure you do not pinch any wires beneath the edges of the air duct (see letter “A”).
2. Tighten the screws at the top of the air duct (see letter “B”). The top of the installed air duct should be flush with the top surface of PCI adapter assembly.
3. Replace the chassis cover if you have completed all work inside of the chassis. For instructions, see [“Installing the Chassis Cover.”](#)



TP01671

Figure 15. Installing the Processor Air Duct

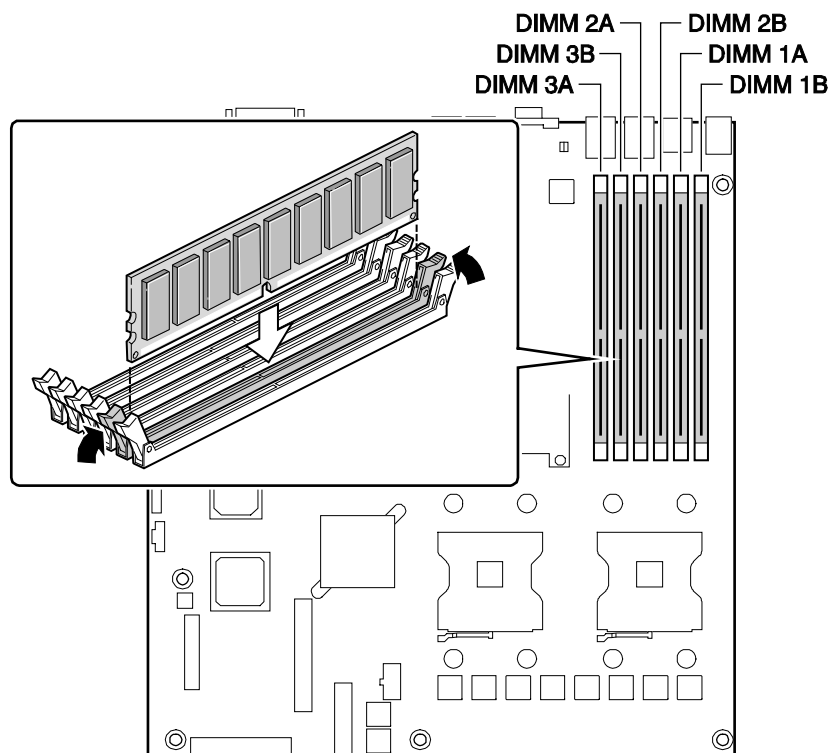
Installing and Removing Memory DIMMs

The silkscreen on the board for the DIMMs displays DIMM1B, DIMM1A, DIMM2B, DIMM2A, DIMM3B and DIMM3A, starting from the outside of the board. DIMM1B is the socket closest to the outside edge of the server board.

Installing DIMMs

To install DIMMs, follow these steps:

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Locate the DIMM sockets. See below.



TP01661

Figure 16. Installing Memory DIMMs

4. Push the clips at each end of the DIMM socket(s) outward to the open position. See [Figure 16](#).
5. Holding the DIMM by the edges, remove it from its anti-static package.
6. Position the DIMM above the socket. Align the small notch in the bottom edge of the DIMM with the keys in the socket.
7. Insert the bottom edge of the DIMM into the socket.
8. Push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.

9. Replace the chassis cover if you have completed all work inside of the platform. For instructions, see [“Installing the Chassis Cover.”](#)

Removing DIMMs

To remove a DIMM, follow these steps:

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Locate the DIMM(s). See [Figure 16](#).
4. Push the clips at each end of the DIMM socket(s) outward to the open position. The DIMM lifts from the socket.
5. Holding the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
6. Replace the chassis cover if you have completed all work inside of the platform. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the Processor



NOTE

Use the instructions provided below to replace a processor instead of using the instructions that came with the processor.



CAUTIONS

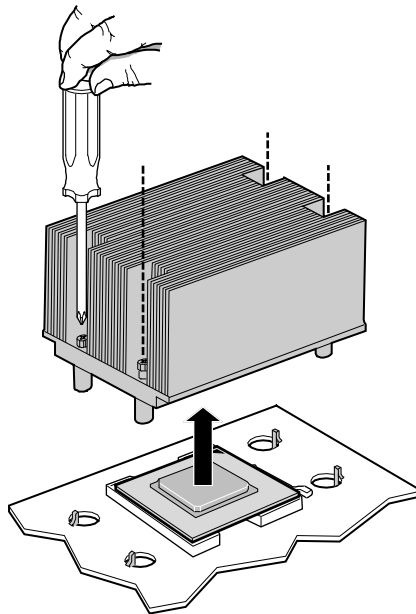
Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server. See [“Additional Information and Software”](#) for a link to the list of compatible processors.

ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

Follow the instructions below to remove and then install a processor.

Removing the Processor

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the processor air duct that covers the processor. For instructions, see [“Removing the Processor Air Duct.”](#)
4. Loosen the four captive screws on the corners of the heat sink.



TP01660

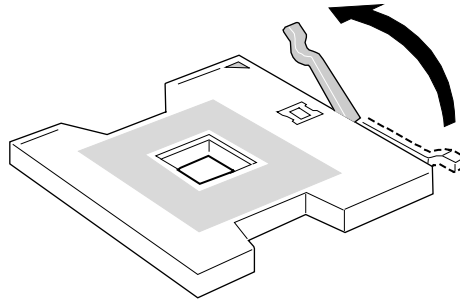
Figure 17. Removing Heat Sink

5. Twist the heat sink slightly to break the seal between the heat sink and the processor.
6. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again. **Do not force the heat sink from the processor. Doing so could damage the processor.**
7. Lift the processor lever.
8. Remove the processor.

Installing the Processor

To install a processor, follow these instructions:

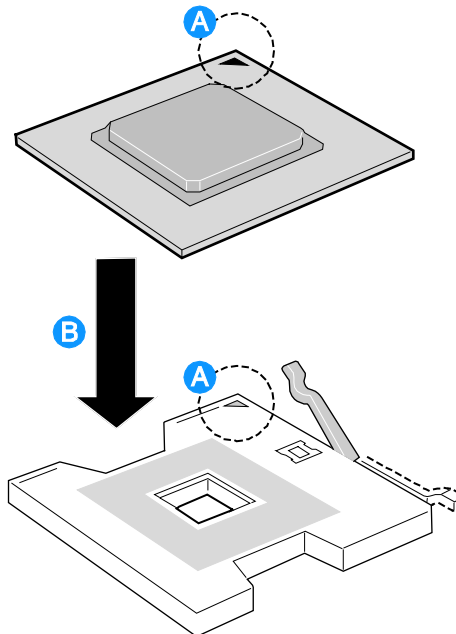
1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the processor air duct that covers the processor. For instructions, see [“Removing the Processor Air Duct.”](#)
4. Locate the processor socket and raise the socket handle completely. See Figure 18.



TP01656

Figure 18. Open the Processor Socket Lever

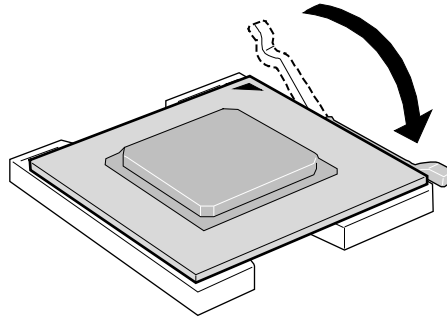
5. Aligning the pins of the processor with the socket (see letter “A”), insert the processor into the socket (see letter “B”). See Figure 19.



TP01657

Figure 19. Installing the Processor in the Processor Socket

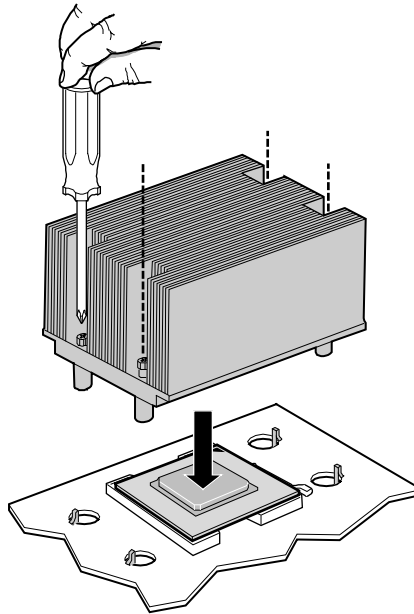
6. Close the handle completely. See Figure 20.



TP01658

Figure 20. Close Processor Socket Lever

6. The heat sink has Thermal Interface Material (TIM) located on the bottom of it. If the TIM has a covering sheet on it, remove the covering sheet.
7. Set the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor. Use caution and make sure that cables are not pinched beneath the heat sink.
8. Loosely screw in the captive screws on the heat sink corners in a diagonal manner. Do not fully tighten one screw before tightening another.
9. Gradually and equally tighten each captive screw until each is firmly tightened.



TP01659

Figure 21. Installing Heat Sink

10. Install the processor air duct. The air duct must be in place for proper system cooling. For instructions, see [“Installing the Processor Air Duct.”](#)

Installing or Removing a Hard Drive

Up to two hot-swappable SCSI drives can be installed in your chassis. It is not necessary to remove the chassis cover to add or replace a hot-swap hard drive. It is necessary to remove the front bezel from the chassis.



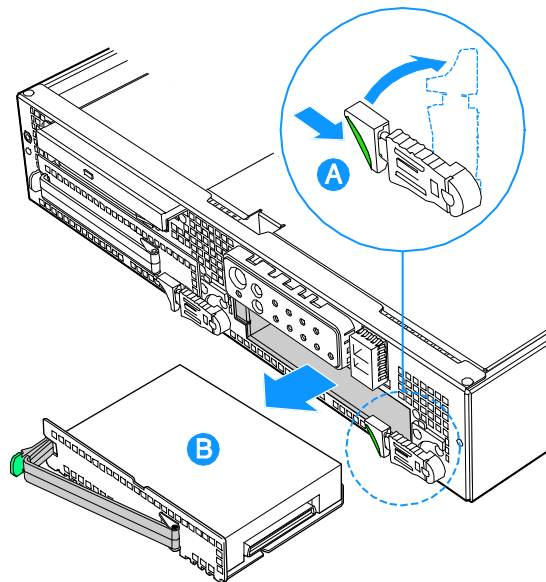
CAUTION

The Intel® Carrier Grade Server TIGI2U does not support all hard drives. To see a list of validated manufacturers and hard drive types, see:

<http://support.intel.com/support/motherboards/server/TIGI2U>

Installing a Hard Drive

1. Remove the front bezel. For instructions, see “[Removing the Front Bezel.](#)”
2. Press in on the green latch on the front of the hard drive carrier (see letter “A”).
3. Pull out on the black lever to slide the carrier from the chassis (see letter “B”).

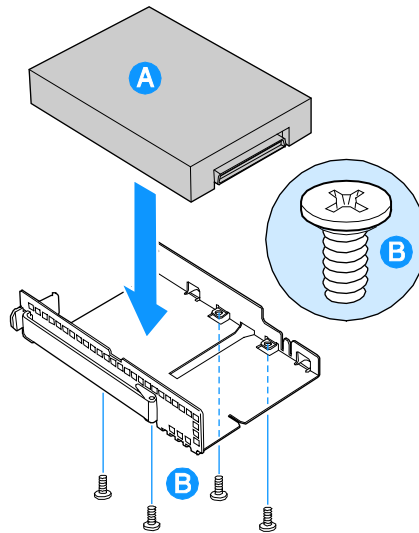


TP01662

Figure 22. Removing Hard Drive Carrier from Chassis

4. Remove the hard drive from its wrapper and place it on an antistatic surface.
5. Set any jumpers and/or switches on the drive according to the drive manufacturer’s instructions.
6. With the drive circuit-side down, position the connector end of the drive so that it is facing the rear of the drive carrier (see letter “A”).

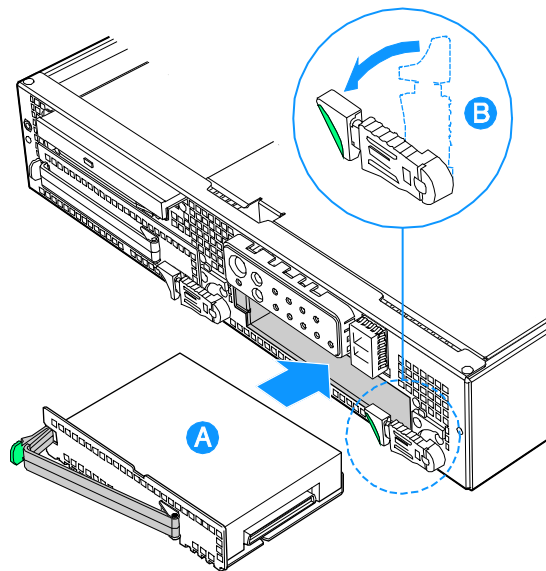
7. Align the holes in the drive to the holes in the drive carrier and attach it to the carrier using four screws that meet the drive vendor's recommendation (see letter "B").



TP01663

Figure 23. Attaching a Hard Disk Drive to a Carrier

8. With the black lever in the fully open position, slide the drive assembly into the chassis. Insert the primary drive in the right bay (see letter "A"). The green latch at the front of the drive carrier must be to the right. Do not push on the black drive carrier lever until the lever begins to close by itself.
9. When the black drive carrier lever begins to close by itself, push on it to lock the drive assembly into place (see letter "B").



TP01664

Figure 24. Inserting Hard Disk Drive Assembly into Chassis

10. Install the front bezel. Install the front bezel. For instructions, see [“Installing the Front Bezel.”](#)

Removing a Hard Drive

1. Remove the front bezel. For instructions, see [“Removing the Front Bezel.”](#)
2. Press in on the green latch at the front of the hard drive carrier.
3. Pull out on the black lever to slide the carrier from the chassis.
4. Remove the four screws that attach the hard drive to the drive carrier. Lift the drive from the carrier. Store the drive in an anti-static bag.
5. (optional) Place the plastic retention device into the drive carrier, using the four screws you removed from the hard drive.
6. Insert the screws that held the drive in the carrier into the screw locations on the carrier.
7. With the black lever in the fully open position, slide the drive carrier into the chassis. The green latch must be to the right. Do not push on the black lever until the lever begins to close by itself.
8. When the black lever begins to close by itself, push on it to lock the drive carrier into place.
9. Install the front bezel. For instructions, see [“Installing the Front Bezel.”](#)

Replacing the CD-ROM Drive

Your Intel® Carrier Grade Server TIGI2U comes with a CD-ROM drive installed in it. As an option, you can replace the CD-ROM drive with a DVD-ROM drive. It is necessary to remove the chassis cover and the front bezel from the chassis to remove or replace the drive.

The peripheral bay supports either a CD-ROM drive carrier assembly or a DVD-ROM drive carrier assembly. Both the blind-mate CD-ROM drive carrier assembly and the blind-mate DVD-ROM drive carrier assembly can be inserted or removed when the system power is off. After the drive carrier assembly is installed into the system, a horizontal handle is used to secure it to the chassis.



CAUTION

The CD-ROM / DVD-ROM drive is NOT hot-swappable. Before removing or replacing the drive, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Removing the CD-ROM / DVD-ROM Drive

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the front bezel. For instructions, see [“Removing the Front Bezel.”](#)
4. Pull out on the drive carrier handle (see letter “A”).
5. Slide the CD-ROM / DVD-ROM drive assembly from the chassis (see letter “B”).
6. Remove the screw at the left side of the drive assembly and save for future use.

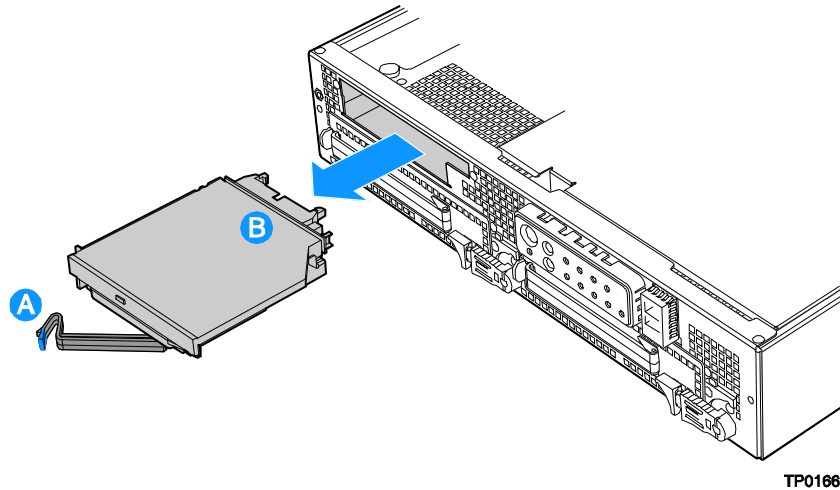


Figure 25. Removing CD-ROM / DVD-ROM Drive Assembly from Chassis

Installing the CD-ROM / DVD-ROM Drive

1. Lining up the pins on each side of the bracket (two on each side) to the holes in the drive, set the replacement CD-ROM or DVD-ROM drive into the drive bracket. You may need to push gently on one side of the bracket to push the pins into place.
2. Install the screw at the left side of the drive assembly.
3. Slide the CD-ROM / DVD-ROM drive assembly into the chassis (see letter “A”).
4. With the black drive carrier handle in the fully open position, slide the drive assembly into the chassis (see letter “B”).
5. Attach the drive power and data cables at the rear of the drive. When the cables are firmly installed, the cable retention clips will lock into place.

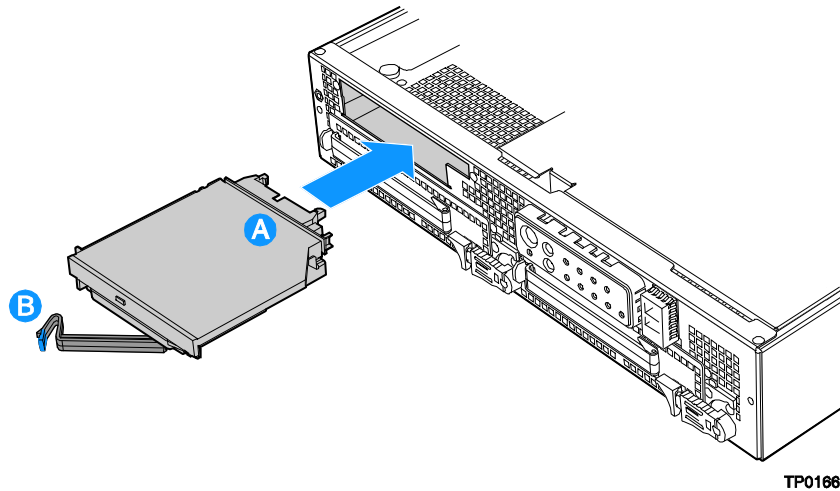


Figure 26. Install CD-ROM Drive or DVD-ROM Drive Assembly into Chassis

6. Install the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
7. Install the front bezel. For instructions, see [“Installing the Front Bezel.”](#)

Installing or Removing a PCI Add-in Card

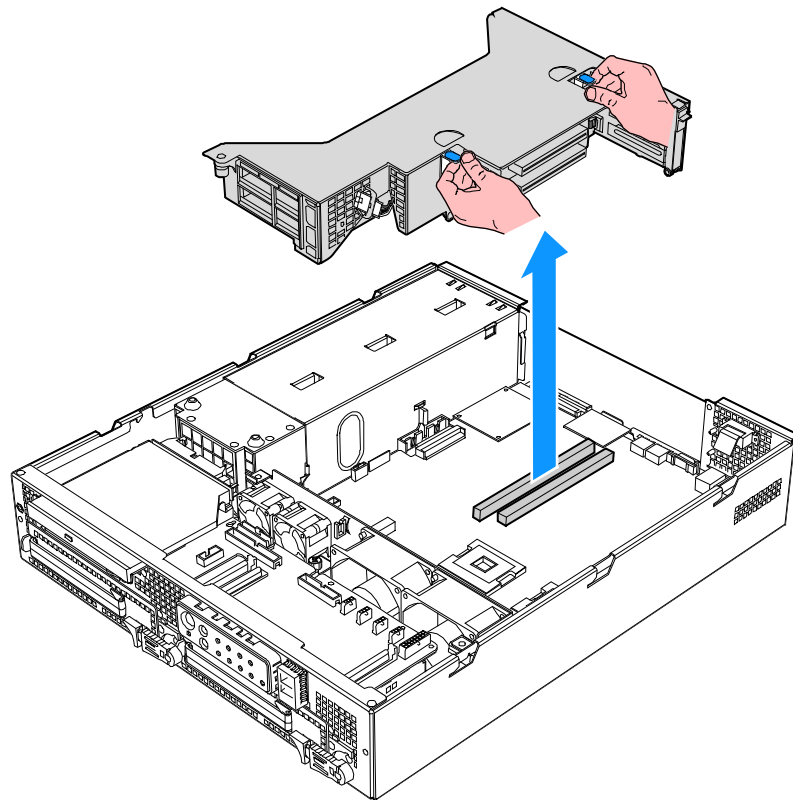


CAUTION

PCI cards in this system are NOT hot swappable. Before removing or replacing the PCI card, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Installing a PCI Add-in Card

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Disconnect the power cable to the riser card assembly.
4. Lift blue tabs and pull up on the riser to remove the riser card assembly from the chassis.



TP01683

Figure 27. Removing Riser Assembly from Chassis

5. Place riser assembly as shown.
 - To install a low-profile PCI card (see Figure 28): Unlock the tool-less retention bar as shown (see letter “A”) and insert the card into one of the slots on the riser connector (see letter “B”). Lock the tool-less retention bar into place.
 - To install a full-height PCI card (see Figure 29): Insert the card into one of the slots on the riser connector (see letter “A”) and screw the PCI card bracket into place as shown (see letter “B”). Close the retention bar and lock it in place (see letter “C”).



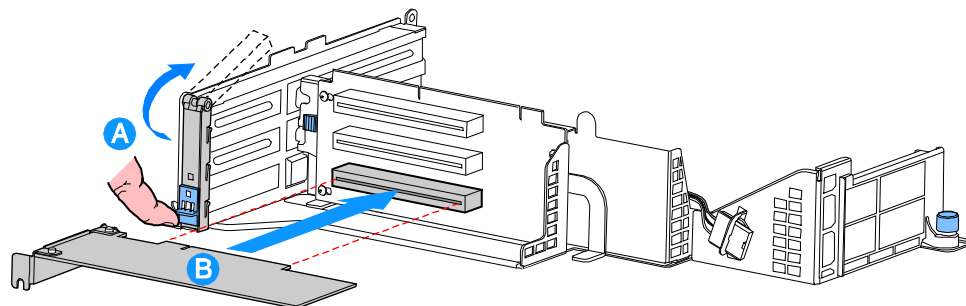
NOTE

When populating add-in cards, the add-in cards must be installed starting with the slot furthest from the server board. For example, when using a three slot riser, a single add-in card must be installed in the top PCI slot. A second add-in card must be installed in the middle slot, and so on.



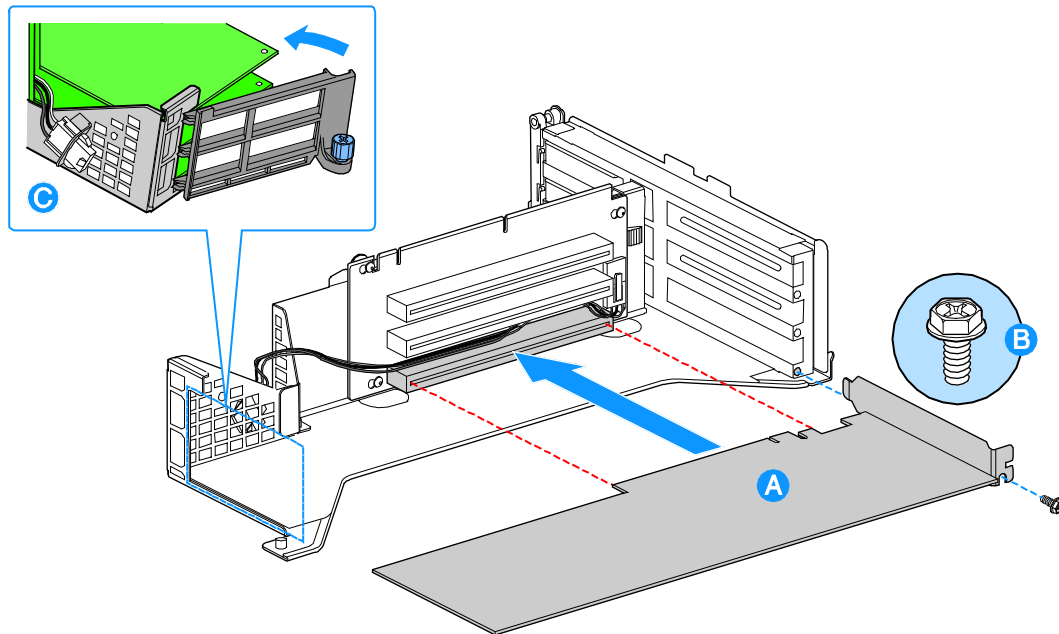
CAUTION

Press the riser card straight into the slot. Tipping it in the slot while installing it may damage the riser card, board slot, or the PCI card.



TP01685

Figure 28. Installing Low-Profile PCI Card into Riser



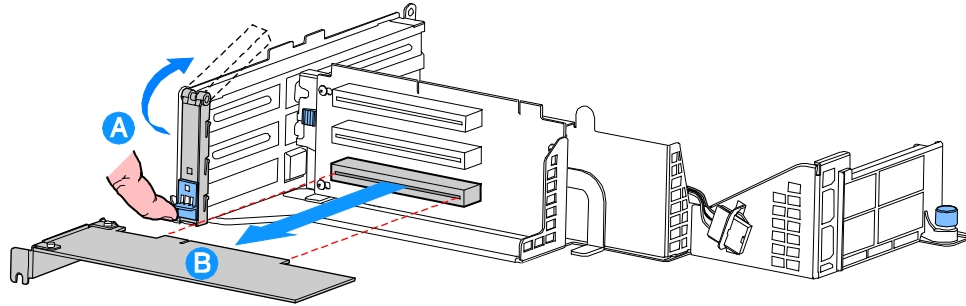
TP01695

Figure 29. Installing Full Length PCI Card into Riser

6. Insert the PCI riser assembly into the chassis.
7. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

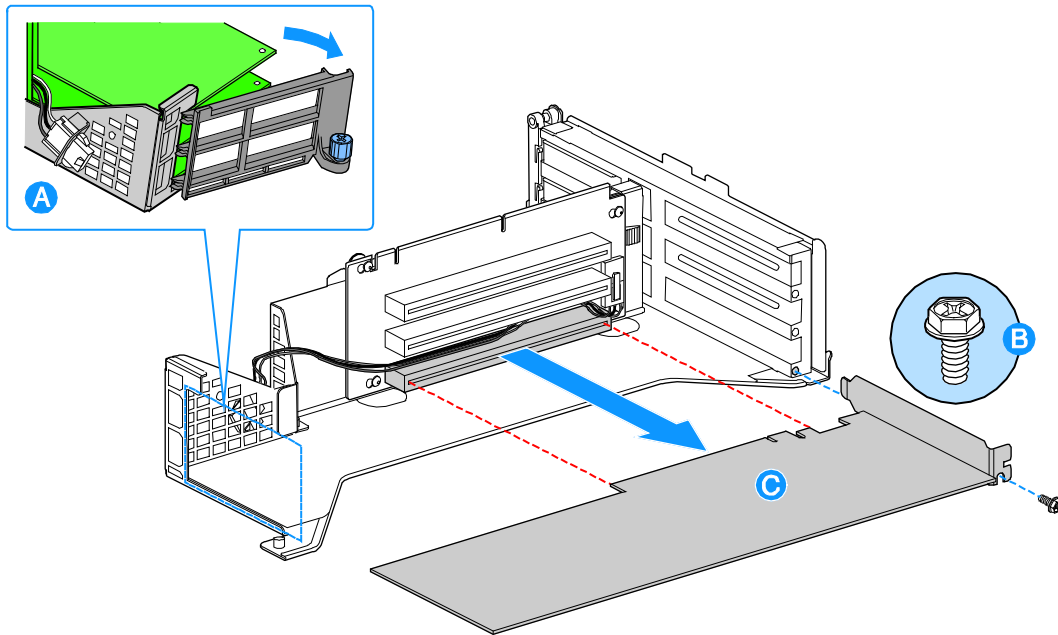
Removing a PCI Add-in Card

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Disengage the power connector from the PCI riser card assembly.
4. Lift blue tabs and pull up on the riser to remove the PCI riser card assembly from the chassis (see Figure 27).
5. Place riser assembly as shown.
 - To remove a low-profile PCI card (see Figure 30): Unlock the tool-less retention bar as shown (see letter “A”) and pull the PCI card from the riser card slot (see letter “B”).
 - To remove a full-height PCI card (see Figure 31): Unlock the retention bar as shown (see letter “A”). Unscrew the PCI card bracket (see letter “B”) and pull the PCI card from the riser card slot (see letter “C”).



TP01684

Figure 30. Removing a Low-Profile PCI Card



TP01696

Figure 31. Removing a Full Height PCI Card

6. Insert the empty PCI riser assembly into the chassis.
7. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the Power Supply



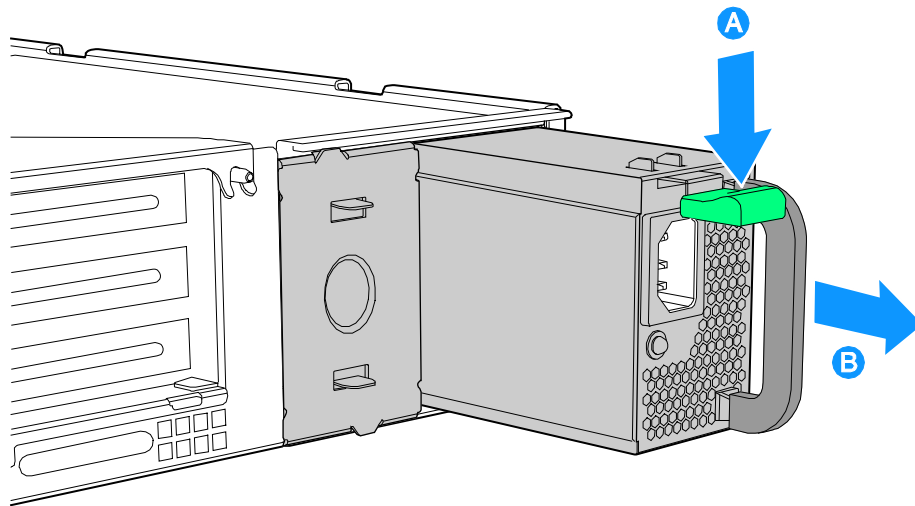
CAUTION

Your server does not have a redundant power supply unless you have purchased the optional second power supply. Before replacing the power supply, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

If you have a second power supply in your server, you can skip step one in the instructions below.

Removing the Power Supply

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Depress and hold the green lever to disengage the power supply (see letter “A”).
3. Grasp the black handle and pull the power supply from the chassis (see letter “B”).

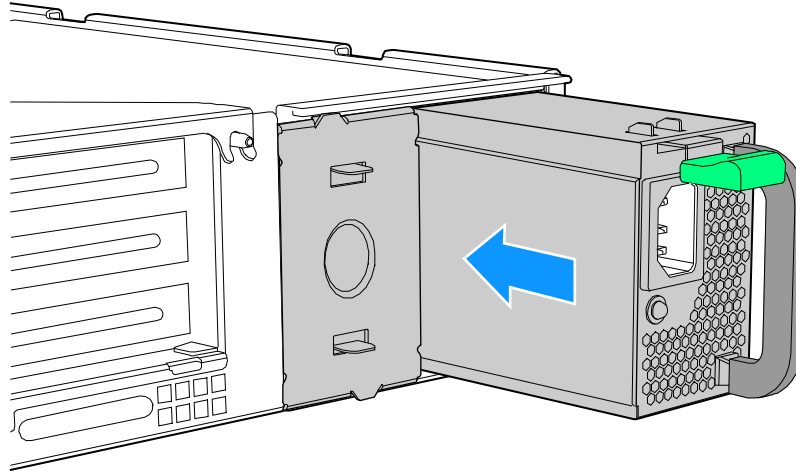


TP01653

Figure 32. Removing the Power Supply

Installing the Power Supply

1. When inserting the new power supply, make sure the green handle is depressed downward while sliding the module into the power supply cage.



TP01654

Figure 33. Installing the Power Supply

2. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

DC Power In Male Connector Configuration

Please use the following instructions when installing or replacing a DC power supply.

1. Slide open top of male connector to reveal screw holes (see letter “A” in Figure 34).
2. Strip wire insulation as shown. Note minimum wire gauge (see letter “B” in Figure 34).
3. Insert each wire all the way and tighten to 24 in-lb (2.7 N-m) torque (see letter “C” in Figure 34).

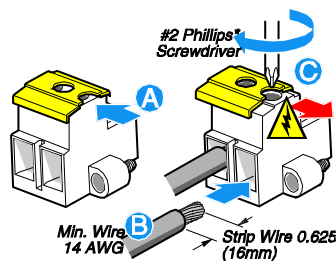


Figure 34. DC Power In Male Connector Configuration

Grounding a DC Powered System

The DC chassis provides two #10-32 threaded studs for chassis enclosure grounding. A single 90° standard barrel two-hole compression terminal lug with 5/8-inch pitch suitable for #14-10 AWG conductor (such as the Thomas & Betts terminal lug p/n 256-31426-141) must be used for proper safety grounding.



NOTE

A crimping tool may be needed to secure the terminal lug to the grounding cable.

Figure 35 shows how the four #10-32 nuts connect to the 90° two-hole terminal lug. Tighten each to 10 in-lb torque.

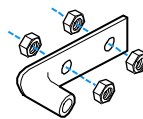


Figure 35. Connecting the Terminal Lug

Replacing the Four-Fan Assembly

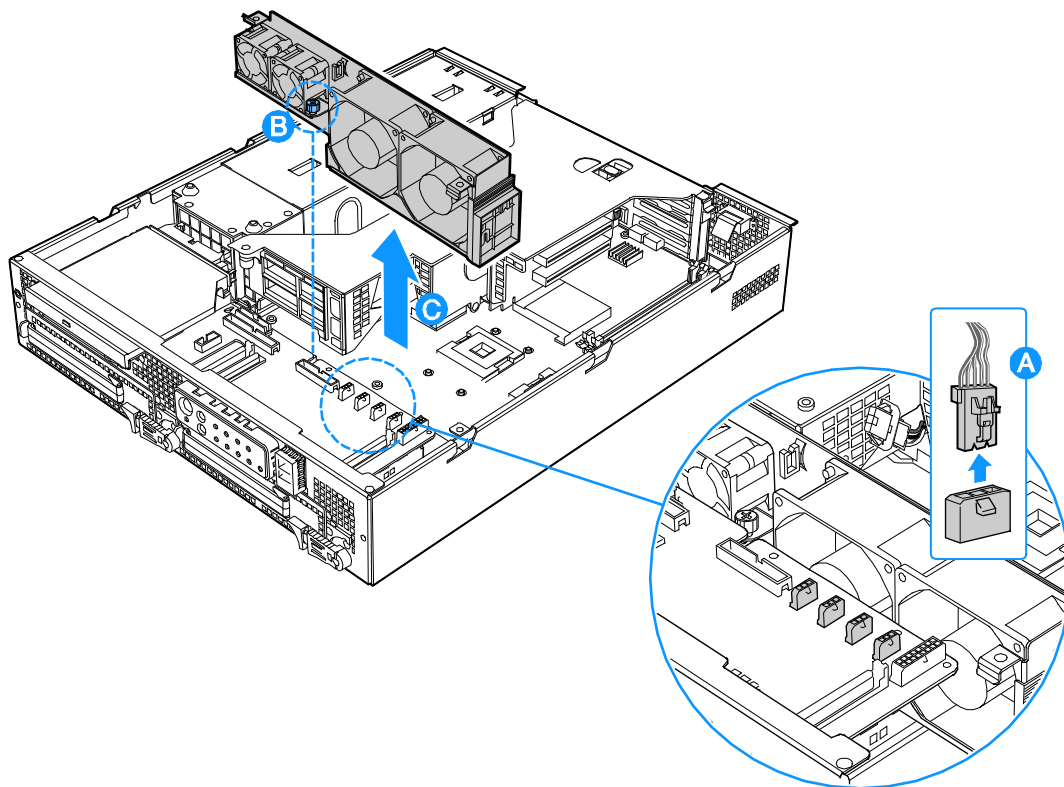


CAUTION

Your server does not have hot-swappable fans. Before replacing any of the fans, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Removing the Four-Fan Assembly

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct.”](#)
4. Disconnect the fan connectors from the front panel I/O board (see letter “A” in Figure 36).
5. Remove the captive screw that attaches the four-fan assembly to the chassis (see letter “B” in Figure 36).
6. Lift the fan module and remove it from the chassis (see letter “C” in Figure 36).

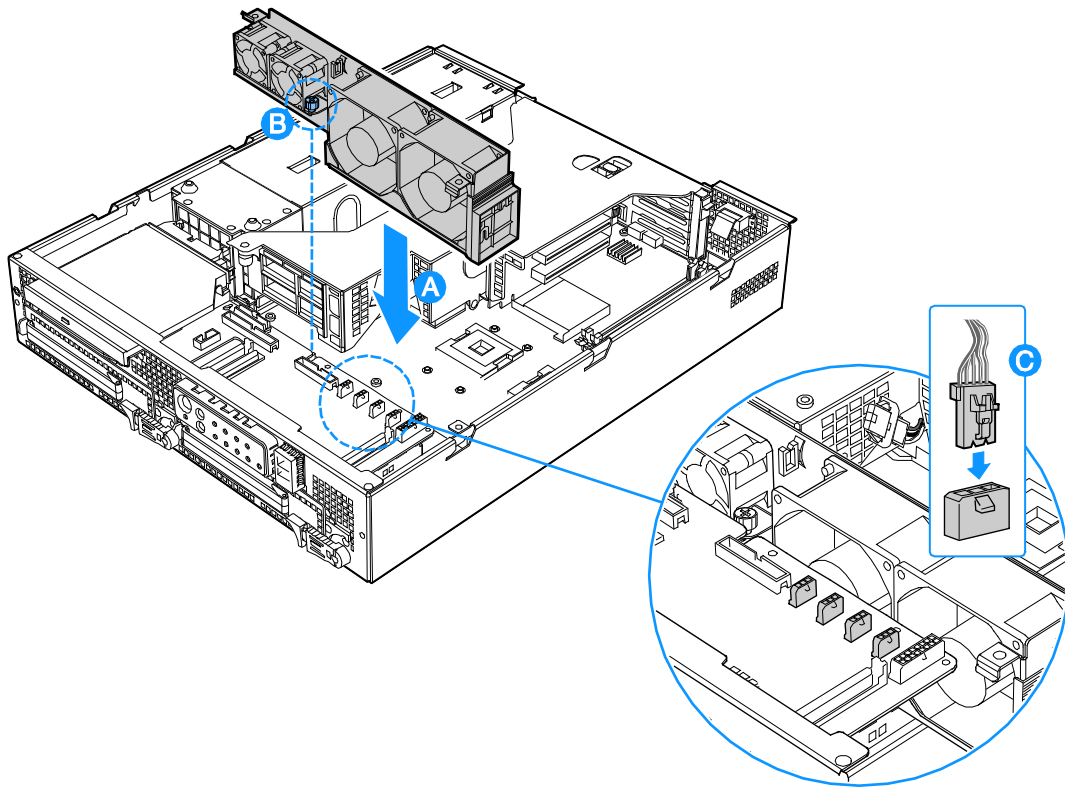


TP01672

Figure 36. Removing the Four-Fan Assembly

Installing the Four-Fan Assembly

1. Lower the fan module into place (see letter “A”).
2. Tighten the captive screw (see letter “B”).
3. Connect the fan cables to the correct fan connectors on the front panel I/O board (see letter “C”). The fan connectors are labeled on the front panel I/O board.



TP01673

Figure 37. Installing the Four-Fan Assembly

Replacing the Mini-Bezel

The mini bezel is installed over the front panel controls and LEDs. To replace the mini bezel, use the following instructions. It is not necessary to power down the server to replace the mini-bezel.

1. Remove the front bezel. For instructions, see [“Removing the Front Bezel.”](#)
2. Insert your thumb or a finger between the power button and the NIC / USB connectors (see letter “A”). Do not press the power button.
3. Squeeze gently to the right while pulling out on the mini bezel (see letter “B”). The left side of the bezel will disengage from the chassis.
4. Unhook the clip at the right of the mini-bezel.
5. Press the replacement bezel firmly into place, one side at a time.
6. While pressing in, move the mini bezel from left to right to make sure it is firmly seated.
7. Install the front bezel. For instructions, see [“Installing the Front Bezel.”](#)

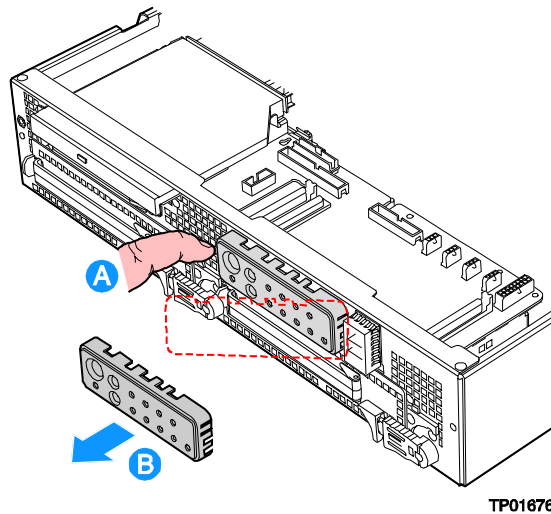


Figure 38. Removing the Mini Bezel

Replacing the Front Panel I/O Board

The Front Panel I/O Board provides an interface to the controls at the front of the server system, the power interconnect for the server board, the USB2 and Serial B interface, and the front panel LED interface connect. To replace the Front Panel I/O Board, the following components must be removed:

- All cable connections on the Front Panel I/O Board and selected connections from other board / components
- Processor Air Duct
- Power supply
- Power distribution board
- Light pipe

Use the instructions below to remove the Front Panel I/O Board, remove and replace the light pipe, and install a replacement front panel board.



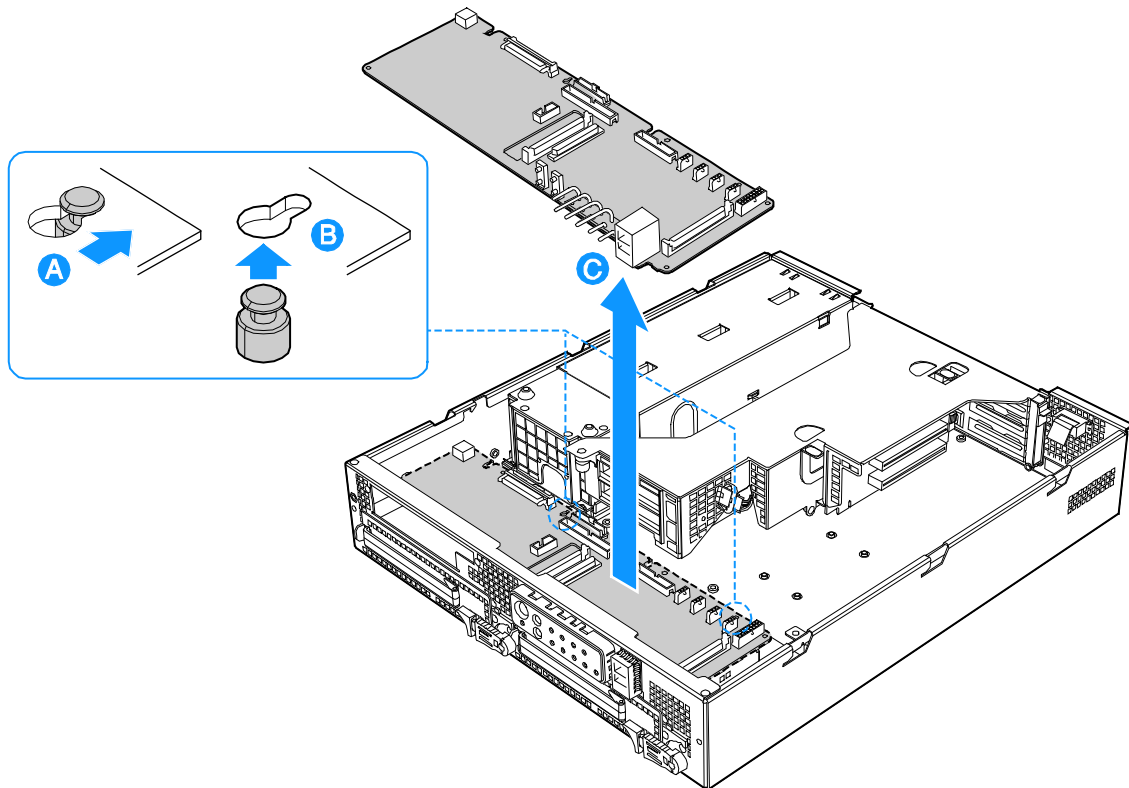
CAUTION

Before replacing any of the server boards, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Removing the Front Panel I/O Board

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the power supply. For instructions, see [“Removing the Power Supply.”](#)
4. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct”](#).
5. Remove the power interface board. For instructions, see [“Removing the Power Interface Board.”](#)
6. Remove the four-fan assembly. For instructions, see [“Removing the Four-Fan Assembly.”](#)

7. Disconnect the following cables on the Front Panel I/O Board:
 - Power interface board power from J1A1
 - CD-ROM / DVD-ROM data and power cables from the rear of the CD-ROM or DVD-ROM drive
 - Front panel data from J5A1
 - HDD connector from J5A2
 - Front panel USB from J4B1
 - System fan control connector from J7A1
 - Fan connectors from J7A2, J8A1, J8A2 and J9A1
 - Telco Alarms cable from J9A2
 - SCSI channel from J5B1
 - SCSI flex 1 from J9D1
 - SCSI flex 2 from J5C1
8. Remove the screws near the blind-mate connector (J2A1) and the fan assembly connector (J7A1).
9. Gently work the front panel I/O board backward (see letter “A” in Figure 39), toward the rear of the chassis to disengage the light pipe from behind the front mini-bezel.
10. Pull the front panel I/O board up over the placement pegs (see letter “B” in Figure 39) and lift it from the chassis (see letter “C” in Figure 39).



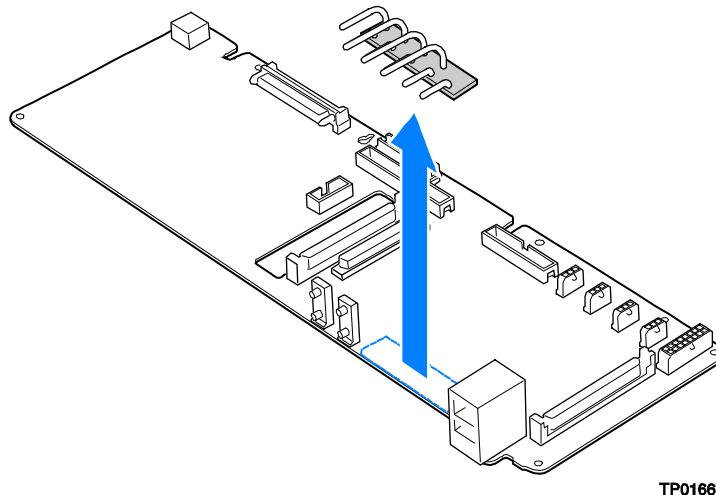
TP01655

Figure 39. Removing the Front Panel Board

Replacing the Light Pipe

Light pipe replacement instructions are included as part of the instructions to replace the front panel I/O board. To replace the light pipe using an existing front panel I/O board, use the instructions under the following headings, replacing the existing front panel I/O board instead of installing a replacement board:

- “Removing the Front Panel I/O Board”
 - “Replacing the Light Pipe” (the steps below)
 - “Installing the Front Panel I/O Board”
1. Note the position of the light pipes so that you will be able to correctly position it on the Front Panel I/O Board during the re-installation process. The pipes extend outward from the Front Panel I/O Board.
 2. Remove the light pipe by gently pressing the four plastic clips from the underside of the Front Panel I/O Board until the bottom of the clips are flush with the bottom of the Front Panel I/O Board.
 3. Gently ease the light pipe from the Front Panel I/O Board.
 4. Insert the four plastic clips on the light pipe or the replacement light pipe into the matching holes in the new Front Panel I/O Board. Insert the clips gently and evenly – do not insert one clip fully without first partially pressing the others into place.

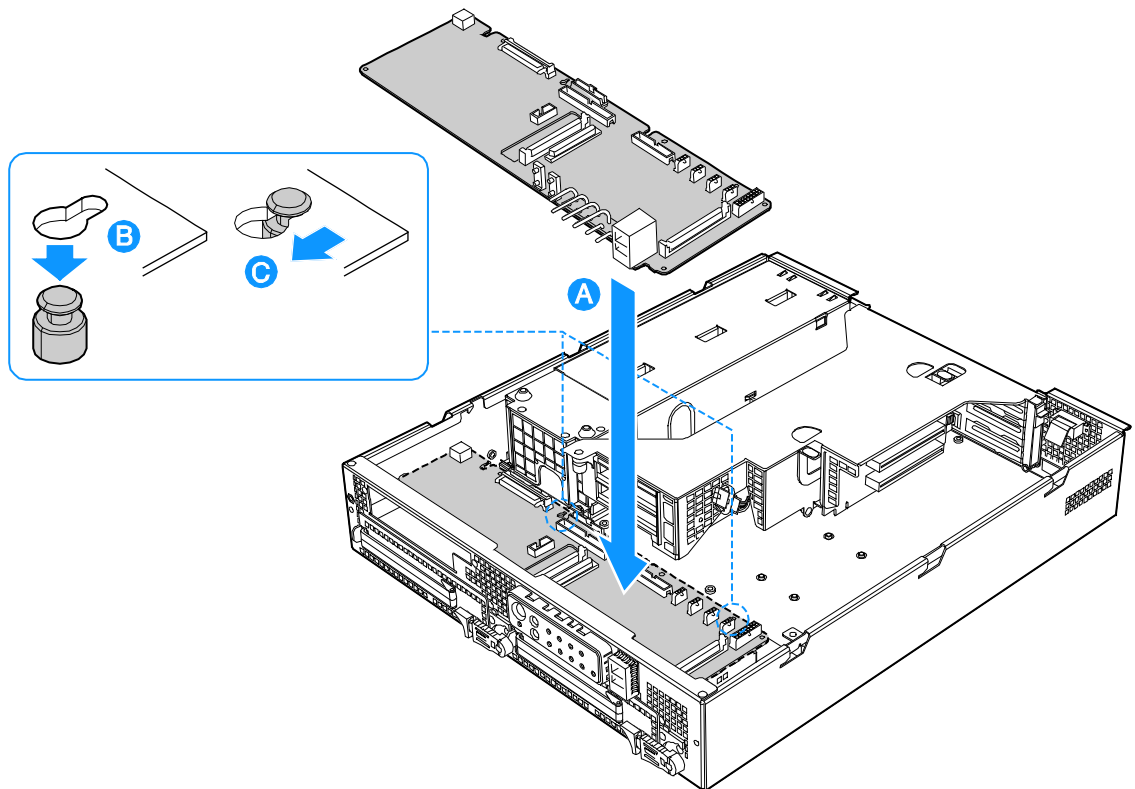


TP01667

Figure 40. Replacing the Light Pipe

Installing the Front Panel I/O Board

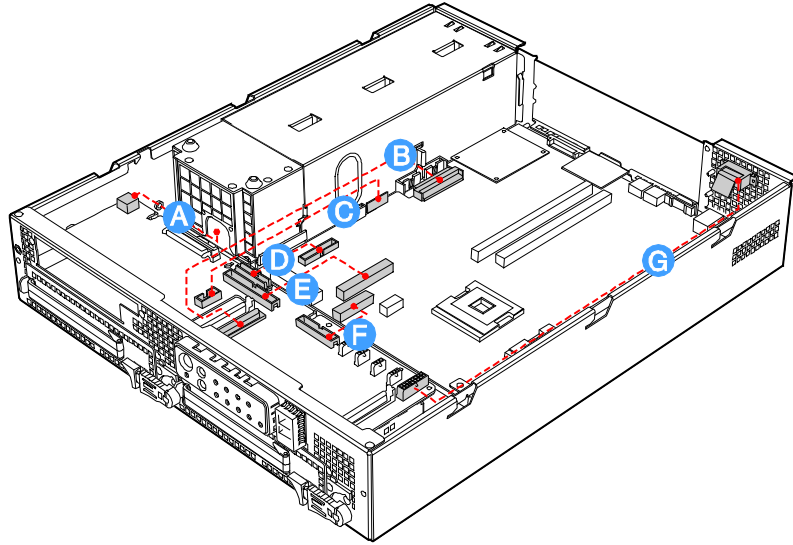
1. Lower the replacement Front Panel I/O Board into the chassis (see letter “A”).
2. While holding the rear edge of the board, ease the board forward, sliding the NIC connector and USB port through the matching cutout at the front of the chassis.
3. Lower the rear of the board into position fitting the board over the placement pegs (see letter “B”).
4. Push the board forward, locking the board onto the placement pegs (see letter “C”).
5. Replace the screws you removed previously, near the blind-mate connector (J2A1) and the fan assembly connector (J7A1).



TP01700

Figure 41. Inserting the Front Panel Board

6. Install the power interface board. For instructions, see [“Installing the Power Interface Board.”](#)
7. Install the power supply. For instructions, see [“Installing the Power Supply.”](#)
8. Reconnect all cables to the Front Panel I/O Board. Note that most connectors are labeled to match the connection point on the boards.



TP01675

Figure 42. Cabling to Front Panel Board

- A. Power
- B. SCSI Channel B Cable
- C. USB
- D. Front Panel Connector
- E. IDE Cable
- F. Fan Connector Cable
- G. Telco Alarms Cable

9. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the PCI Riser Board

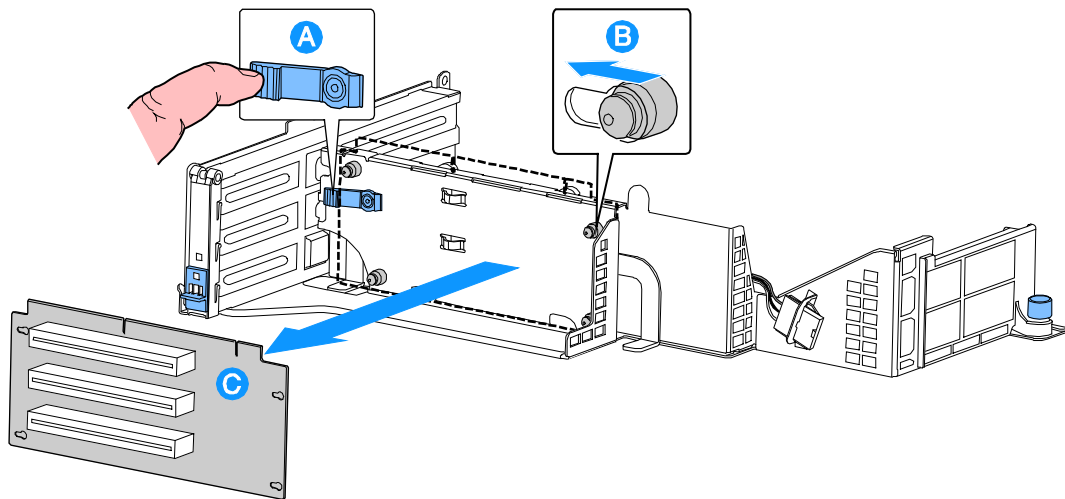


CAUTION

Before replacing any of the server boards, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

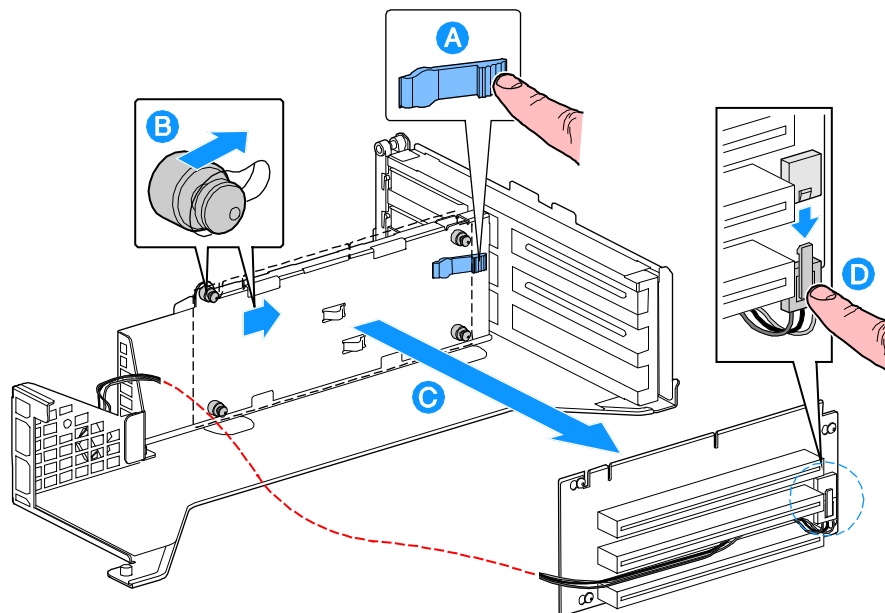
Use the following instructions to replace the PCI riser board.

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Disengage the power from the PCI riser assembly.
4. Remove the PCI card(s). For instructions, see [“Removing a PCI Add-in Card.”](#)
5. Depress and hold the blue retention mechanism (see letter “A” in the figures below).
6. Slide the riser board over the placement peg(s) (see letter “B” the figures below) and remove the riser board (see letter “C” in the figures below).
7. If replacing the full-height riser board, unplug the 5V power cable from the riser board (see letter “D” in Figure 44).



TP01692

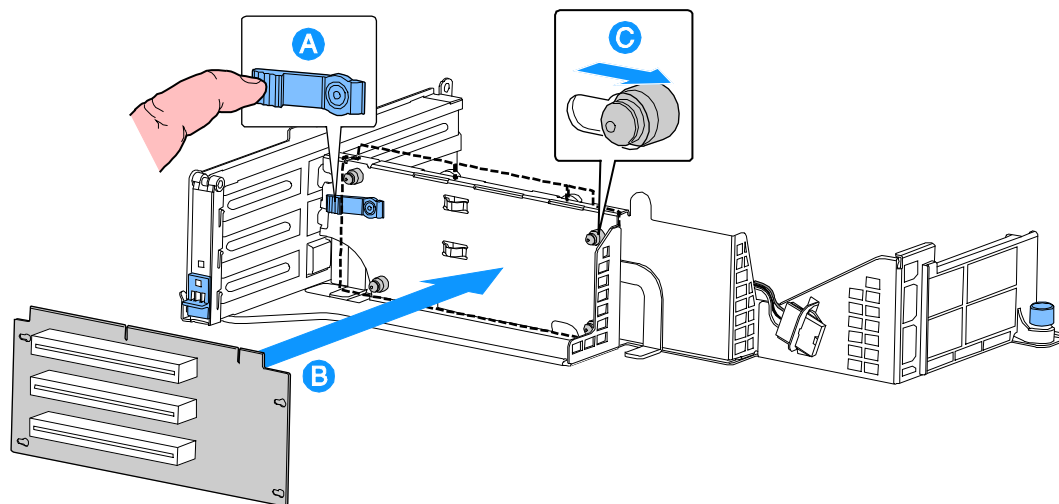
Figure 43. Removing the Low-Profile PCI Riser Board



TP01698

Figure 44. Removing the Full Height PCI Riser Board

8. If replacing the full-height riser board, first plug the 5V power cable into the riser board (see letter “A” in Figure 46).
9. Depress and hold the blue retention mechanism (for low-profile riser board see letter “A” in Figure 45; for full-height riser board see letter “B” in Figure 46).
10. Put the replacement riser board over the placement peg(s) as shown (for low-profile riser board see letter “B” in Figure 45; for full-height riser board see letter “C” in Figure 46) and slide gently to lock in place (for low-profile riser board see letter “C” in Figure 45; for full-height riser board see letter “D” in Figure 46).



TP01694

Figure 45. Installing the Low-Profile PCI Riser Board

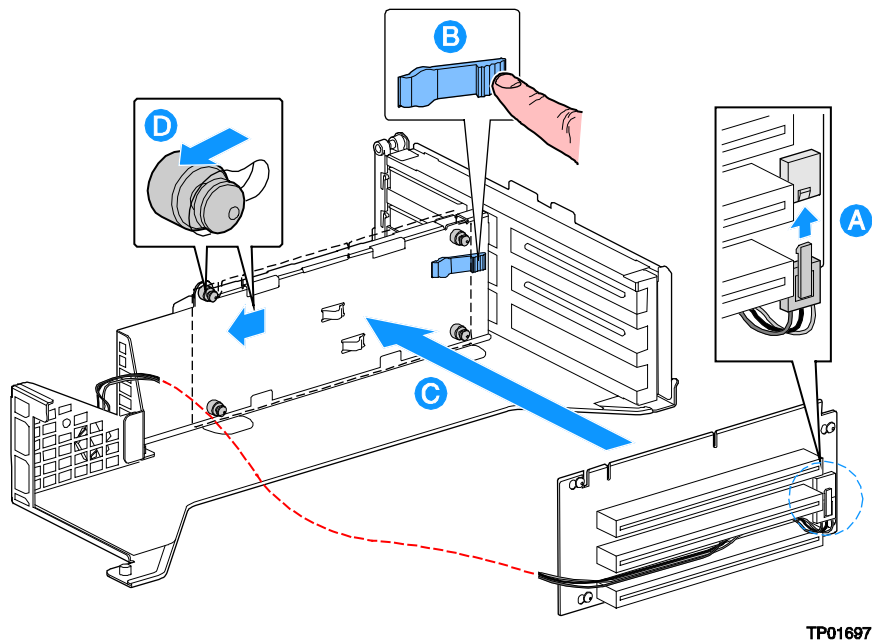


Figure 46. Installing the Full Height PCI Riser Board

11. Install the PCI card(s). For instructions, see [“Installing a PCI Add-in Card.”](#)
12. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the Power Interface Board

The power interface board routes power from the power supply to the rest of the server system. To replace the power interface board, the PCI riser assembly and the power supply must be removed. Use the following instructions to replace the power interface board.

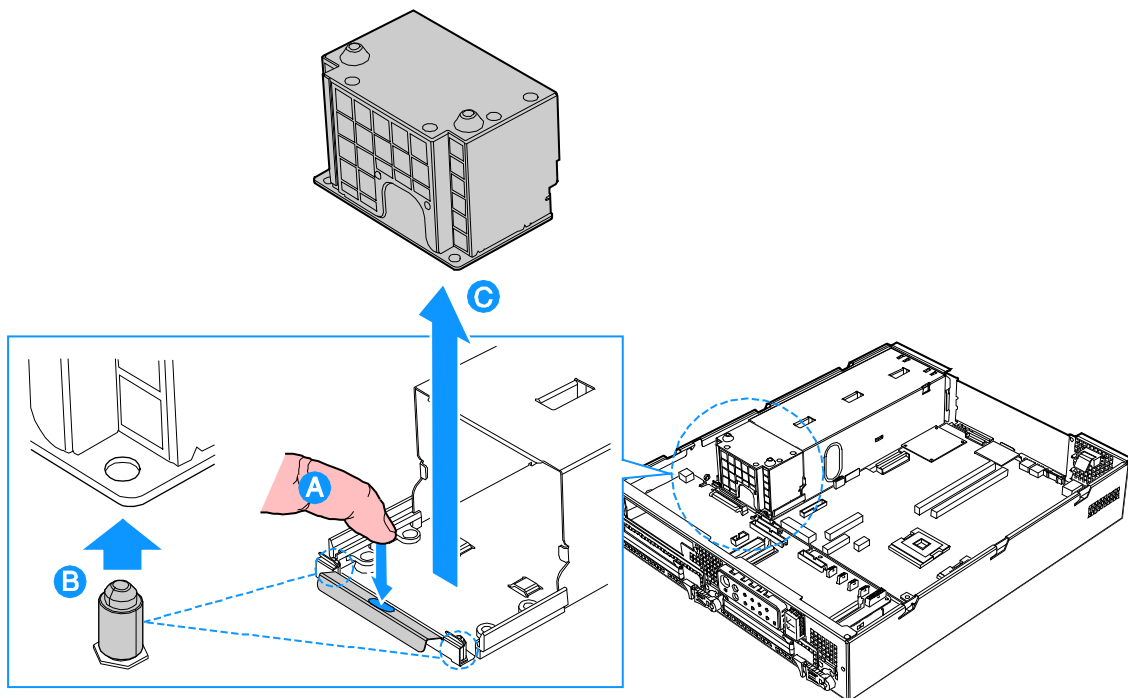


CAUTION

Before replacing any of the server boards, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Removing the Power Interface Board

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the PCI riser assembly. For instructions, see [“Removing a PCI Add-in Card.”](#) steps 3 – 4.
4. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct.”](#)
5. Remove the peripheral bay drive. For instructions, see [“Removing the CD-ROM / DVD-ROM Drive.”](#)
6. Remove the power supply. For instructions, see [“Removing the Power Supply.”](#)
7. Disconnect all power cables from the power interface board.
8. Press down on the power interface retention lever (see letter “A”) and pull up to release the power interface board from the placement pegs (see letter “B”).
9. Lift the power interface board from the chassis (see letter “C”).

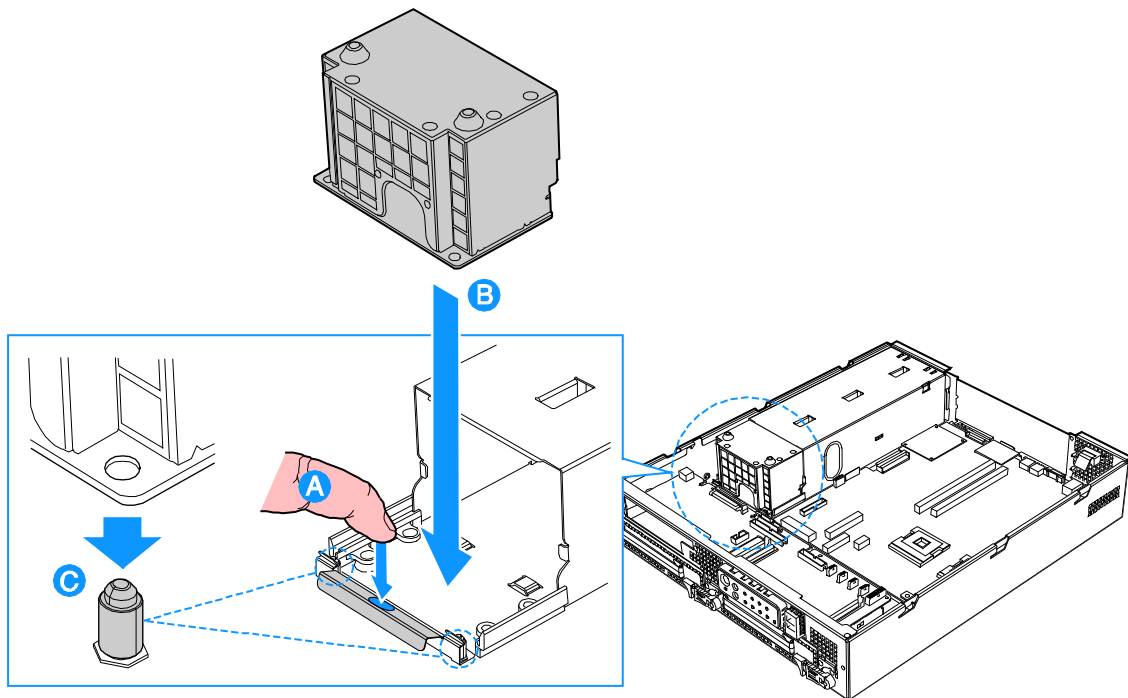


TP01701

Figure 47. Removing the Power Interface Board

Installing the Power Interface Board

1. Press down on the power interface retention lever (see letter “A”) and lower the replacement power interface board into place (see letter “B”).
2. Make sure that the power interface board is placed over the placement pegs and gently push down (see letter “C”).



TP01702

Figure 48. Installing the Power Interface Board

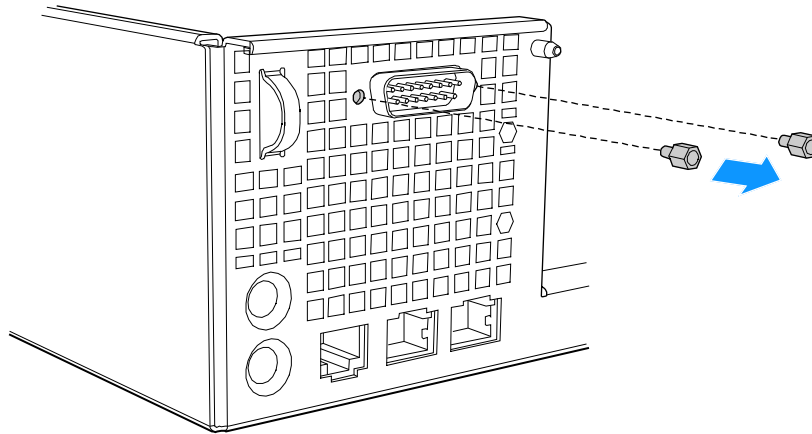
3. Connect all power cables.
4. Install the power supply. For instructions, see [“Installing the Power Supply.”](#)
5. Install the peripheral bay drive. For instructions, see [“Installing the CD-ROM / DVD-ROM Drive.”](#)
6. Install the processor air duct. For instructions, see [“Installing the Processor Air Duct.”](#)
7. Install the PCI riser assembly. For instructions, see [“Installing a PCI Add-in Card.”](#)
8. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the Serial/Alarms Cable

The Intel® Carrier Grade Server TIG12U includes a serial/alarms cable. To replace the serial/alarms cable, use the following instructions.

Removing the Serial/Alarms Cable

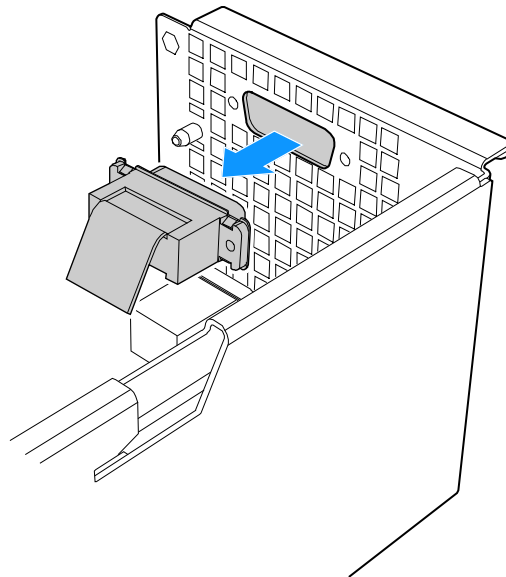
1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the threaded standoffs as shown in Figure 49.



TP01679

Figure 49. Removing the Serial/Alarms Cable Threaded Standoffs

4. Remove the serial/alarms connector from the chassis.

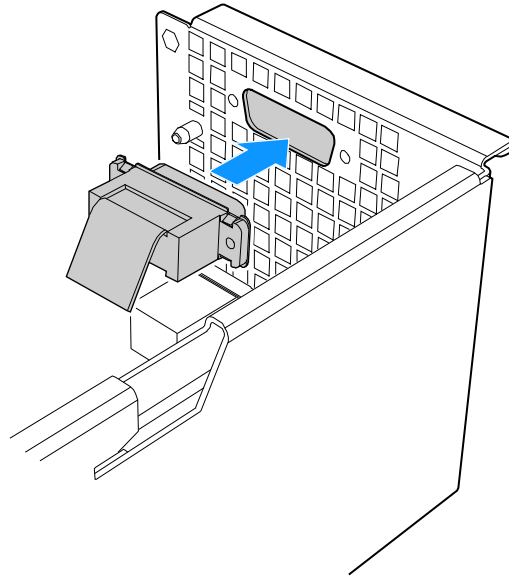


TP01680

Figure 50. Removing the Serial/Alarms Connector from the Chassis

Installing the Serial/Alarms Cable

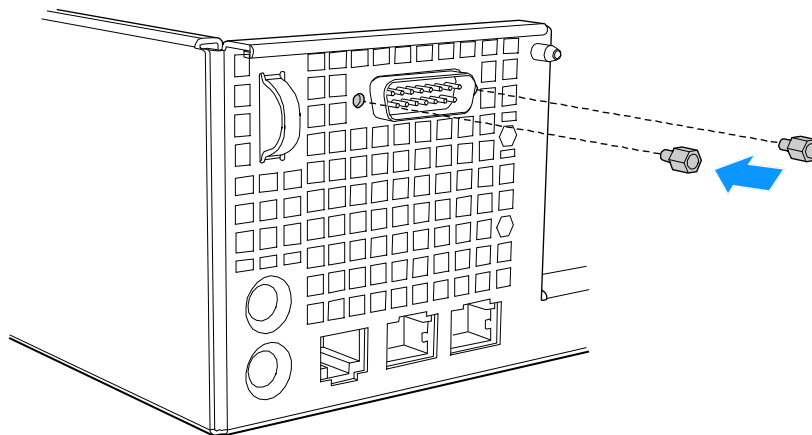
1. Install the serial/alarms connector into the chassis. See Figure 51.



TP01681

Figure 51. Installing the Serial/Alarms Connector into Chassis

2. Install the threaded standoffs as shown in Figure 52.



TP01682

Figure 52. Installing the Serial/Alarms Cable Threaded Standoffs

Replacing the Server Board

The Intel® Carrier Grade Server TIGI2U uses the Intel® Server Board SE7520JR2. To replace the server board, the following components must be removed:

- All cable connections on the server board
- Heat sink(s)
- Processor(s)
- All DIMMs
- PCI riser assembly
- Four-fan assembly

To replace the server board, use the following instructions.

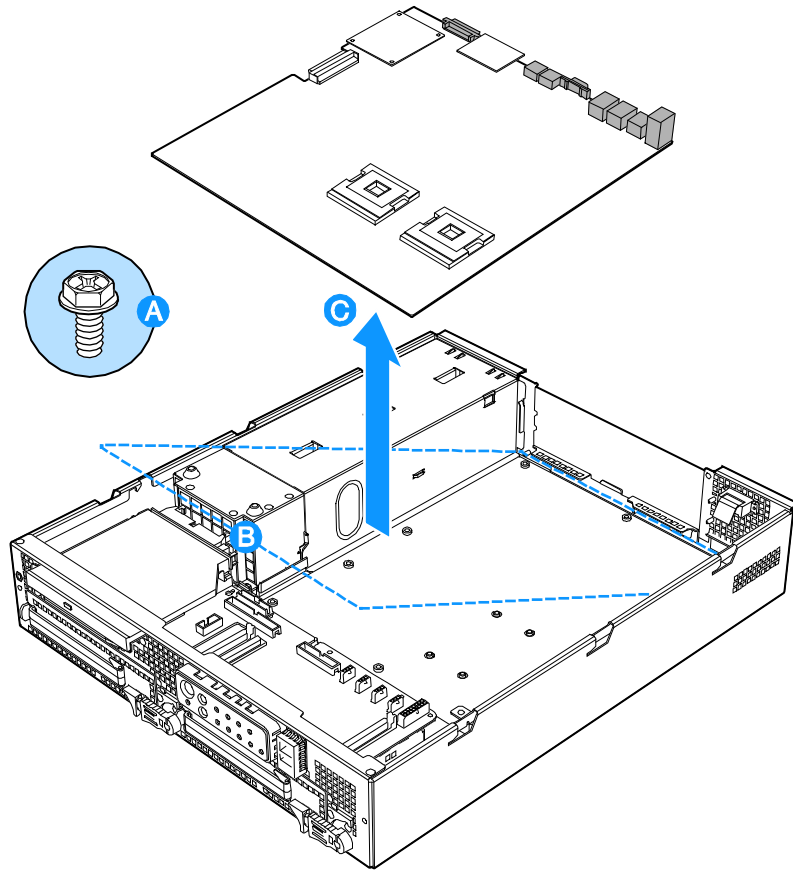


CAUTION

Before replacing any of the server boards, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.

Removing the Server Board

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Remove the PCI riser assembly. For instructions, see [“Removing a PCI Add-in Card,”](#) steps 3 – 4.
4. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct.”](#)
5. Remove all DIMMs. For instructions, see [“Removing DIMMs.”](#)
6. Remove the heat sink and processor. For instructions, see [“Removing the Processor.”](#)
7. Remove the four-fan assembly. For instructions, see [“Removing the Four-Fan Assembly.”](#)
8. Disconnect all cables from the server board.
9. Remove the eight screws that attach the server board to the chassis.
10. Lift the server board from the chassis. Use caution in pulling it out from beneath the Serial B connector at the rear of the chassis.

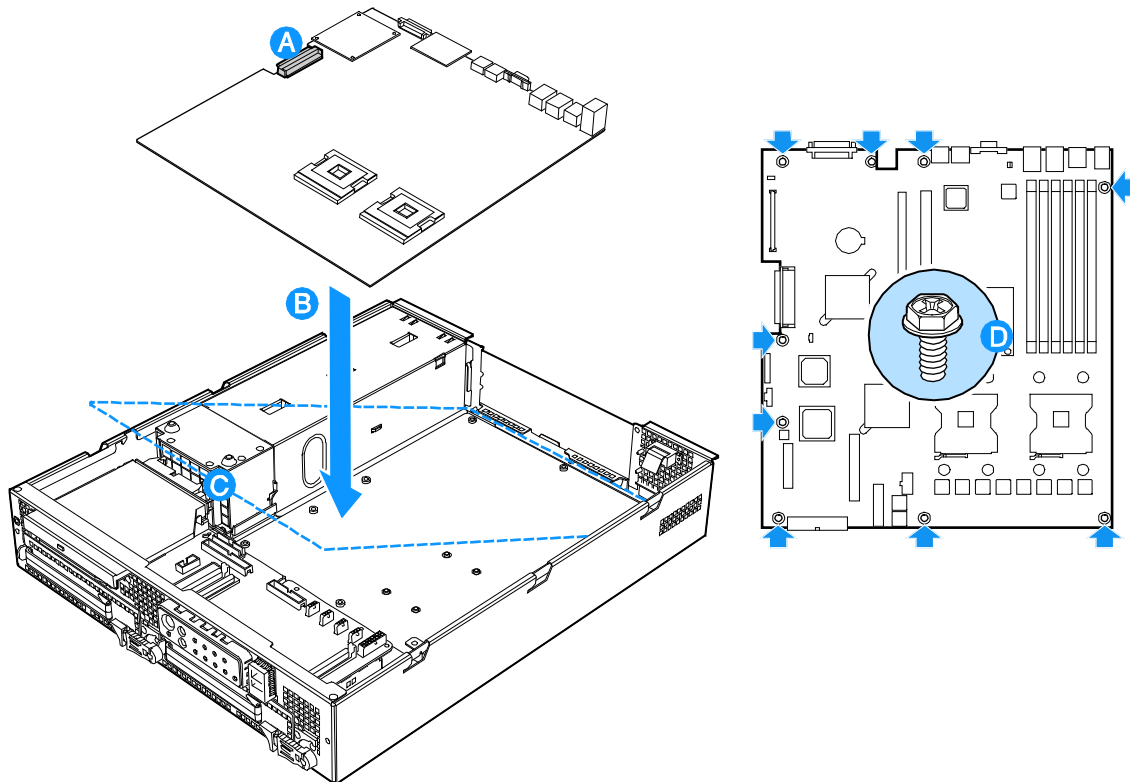


TP01674

Figure 53. Removing the Server Board

Installing the Server Board

1. If you have a SCSI cable to connect, do this first before installing the server board (see letter “A” in the figure below).
2. Set the replacement board into place (see letter “B” in the figure below), using caution to make sure no cables are pinched under the board. Insert the rear edge of the board first, and line up the I/O ports at the rear of the system.
3. Make sure the standoff locations line up correctly and reinsert the eight screws removed in step 9, under “[Removing the Server Board.](#)” See letter “D” in the figure below.



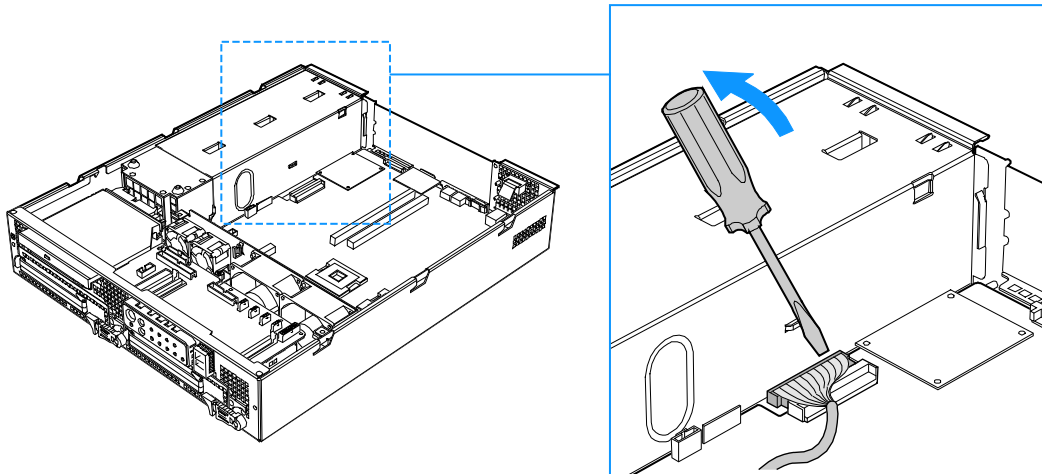
TP01689

Figure 54. Installing the Server Board

4. Connect all cables to the server board.

Note:

If you forgot to install your SCSI cable prior to installing the server board, or you need to replace the SCSI cable without replacing the server board, secure the SCSI cable to the board connector and make sure it is fully seated with a #2 flat-blade screwdriver, as shown in the figure below.



TP01690

Figure 55. Securing SCSI Cable to Server Board Connector

5. Install the four-fan assembly. For instructions, see [“Installing the Four-Fan Assembly.”](#)
6. Install the processor and heat sink. For instructions, see [“Installing the Processor.”](#)
7. Install all DIMMs. For instructions, see [“Installing DIMMs.”](#)
8. Push the handle on the front panel to baseboard connector towards the rear of the chassis.
9. Install the processor air duct. For instructions, see [“Installing the Processor Air Duct.”](#)
10. Install the PCI riser assembly. For instructions, see [“Installing a PCI Add-in Card.”](#)
11. Install the chassis cover. For instructions, see [“Installing the Chassis Cover.”](#)

Replacing the Backup Battery

The lithium battery on the server board powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings (for example, the date and time) stored in CMOS RAM (Random Access Memory) in the RTC (Real Time Clock) may be wrong. Contact your customer service representative or dealer for a list of approved devices.



CAUTION

Before replacing the battery, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet or disconnect the DC mains.



WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



WARNING

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.



ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.



WARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.



VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suositteluun tyypin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

1. Power down the server system and unplug all peripheral devices and the AC power cable or the DC mains.
2. Remove the chassis cover. For instructions, see [“Removing the Chassis Cover.”](#)
3. Locate the battery.
4. Insert the tip of a small flat bladed screwdriver, or an equivalent, under the tab in the plastic retainer. Gently push down on the screwdriver to lift the battery.
5. Remove the battery from its socket.

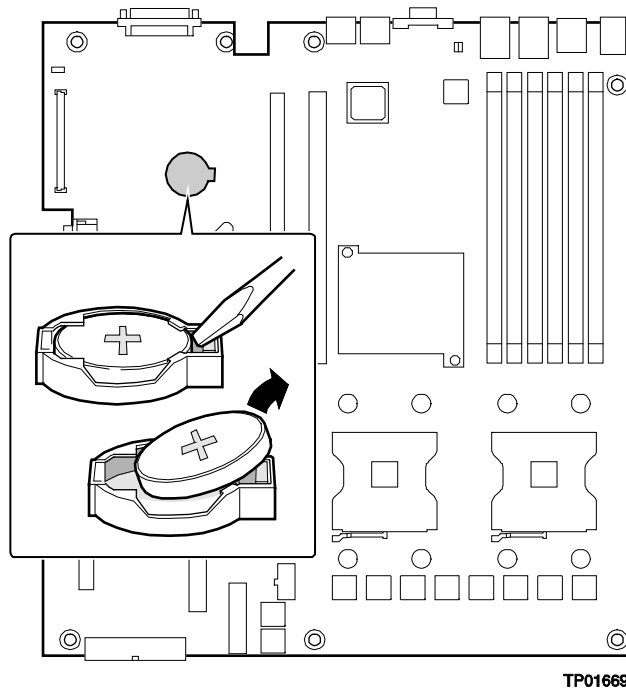


Figure 56. Replacing the Battery

6. Dispose of the battery according to local ordinance.
7. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.
8. Close the chassis.
9. Run Setup to restore the configuration settings to the RTC.

Installing or Replacing the Power Cord



NOTE

If you will be placing your server in a rack, wait to install the power cord until after the server is in the rack.

Plug the power cord into the power supply.

Installing the Platform into a Rack

Installation instructions for the standard bracket kit and the optional rail kit are included with each kit. These instructions can also be found on the TIGI2U Resource CD and at <http://support.intel.com/support/motherboards/server/chassis/TIGI2U/>

Equipment Rack Precautions



CAUTION

ANCHOR THE EQUIPMENT RACK: The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The equipment rack must be installed according to the manufacturer's instructions. You must also consider the weight of any other device installed in the rack.

If AC power supplies are installed:

Mains AC power disconnect: The AC power cord(s) is considered the mains disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s). To remove all power, two AC cords must be removed.

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the server power cord is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged into a wall AC outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured with two power supplies is less than 4 amperes.

If DC power supplies are installed:

The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC or DC source. The DC source must be capable of providing up to TBD Watts of continuous power per feed pair. Connection with a DC source should only be performed by trained service personnel. If the DC power supply is installed in the unit and the unit is not located in a Restricted Access Location, then the DC source must be supplied from the secondary of a Listed regulated power supply located within the same rack as the equipment.

Main DC power disconnect: You are responsible for installing a DC power disconnect for the entire rack unit. This mains disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the servers(s). The circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible.

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. The safety grounding conductor must be a minimum 14AWG connected to the earth ground stud on the rear of the server. The safety ground conductor should be connected to the chassis stud with a two-hole crimp terminal with a maximum width of 0.25 inch. The nuts on the chassis studs should be installed with a 10 in/lbs torque. The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: Overcurrent protection circuit breakers must be provided as part of each host equipment rack and must be installed between the DC source and the server. The server is designed for a DC line voltage power source with up to 10 amperes of overcurrent protection per feed pair. If the DC power system for the equipment rack is installed with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured with two power supplies is less than 8 amperes.



CAUTION

Temperature: The operating temperature of the server, when installed in an equipment rack, must not go below 5 °C (41 °F) or rise above 35 °C (95 °F). Extreme fluctuations in temperature can cause a variety of problems in your server.

Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. It must also include ventilation sufficient to exhaust a maximum of 1200 BTU per hour for a fully loaded server system using the Intel® Carrier Grade Server TIGI2U.

It is important to note that this measurement is the maximum, and a minimum or typical system could be much less. You may want to calculate the BTU/hr measurement more accurately for your configuration. An extra 500 BTU/hr over many systems would translate into a large error calculating air conditioning capacity.

Server Utilities

Using the BIOS Setup Utility

This section describes the BIOS Setup Utility options, which is used to change server configuration defaults. You can run BIOS Setup with or without an operating system being present. See “[Additional Information and Software](#)” for a link to the Technical Product Specification where you will find details about specific BIOS setup screens.

Starting Setup

You can enter and start BIOS Setup under several conditions:

- When you turn on the server, after POST completes the memory test
- When you have moved the CMOS jumper on the server board to the “Clear CMOS” position (enabled)

In the two conditions listed above, during the Power On Self Test (POST), you will see this prompt:

```
Press <F2> to enter SETUP
```

In a third condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

```
Warning: CMOS checksum invalid  
Warning: CMOS time and date not set
```

In this condition, the BIOS will load default values for CMOS and attempt to boot.

If You Cannot Access Setup

If you are not able to access BIOS Setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see “Clearing the CMOS”.

Setup Menus

Each BIOS Setup menu page contains a number of features. Except for those features that are provided only to display automatically configured information, each feature is associated with a value field that contains user-selectable parameters. These parameters can be changed if the user has adequate security rights. If a value cannot be changed for any reason, the feature’s value field is inaccessible.

Table 5 describes the keyboard commands you can use in the BIOS Setup menus.

Table 5. Keyboard Commands

Press	Description
<F1>	Help - Pressing F1 on any menu invokes the general Help window.
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.
↑	Select Item up - The up arrow is used to select the previous value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
↓	Select Item down - The down arrow is used to select the next value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
F5/-	Change Value - The minus key or the F5 function key is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.
F6/+	Change Value - The plus key or the F6 function key is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.
<Enter>	Execute Command - The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key will undo the pick list, and allow another selection in the parent menu.
<Esc>	Exit - The ESC key provides a mechanism for backing out of any field. This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.
<F9>	Setup Defaults - Pressing F9 causes the following to appear: <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Setup Confirmation</p> <hr/> <p style="text-align: center;">Load default configuration now?</p> <p style="text-align: center;">[Yes] [No]</p> </div> <p>If "Yes" is selected and the Enter key is pressed, all Setup fields are set to their default values. If "No" is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.</p>
<F10>	Save and Exit - Pressing F10 causes the following message to appear: <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Setup Confirmation</p> <hr/> <p style="text-align: center;">Save Configuration changes and exit now?</p> <p style="text-align: center;">[Yes] [NO]</p> </div> <p>If "Yes" is selected and the Enter key is pressed, all changes are saved and Setup is exited. If "No" is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.</p>

Upgrading the BIOS

The upgrade utility allows you to upgrade the BIOS in flash memory. The code and data in the upgrade file include the following:

- On-board system BIOS, including the recovery code, BIOS Setup Utility, and strings.
- On-board video BIOS, SCSI BIOS, and other option ROMs for devices embedded on the server board.
- OEM binary area
- Microcode
- A means to change the BIOS Language

Preparing for the Upgrade

The steps below explain how to prepare to upgrade the BIOS, including how to record the current BIOS settings and how to obtain the upgrade utility.



NOTE

In the unlikely event that a BIOS error occurs during the BIOS update process, a recovery process may need to be followed to return the system to service. See [“Additional Information and Software”](#) for a link to necessary software and instructions.

Recording the Current BIOS Settings

1. Boot the computer and press <F2> when you see the message:

```
Press <F2> Key if you want to run SETUP
```
2. Write down the current settings in the BIOS Setup program.



NOTE

Do not skip step 2. You will need these settings to configure your computer at the end of the procedure.

Obtaining the Upgrade

Download the BIOS image file to a temporary folder on your hard drive. See [“Additional Information and Software”](#) for a link to the update software.



NOTE

Review the instructions and release notes that are provided in the readme file distributed with the BIOS image file before attempting a BIOS upgrade. The release notes contain critical information regarding jumper settings, specific fixes, or other information to complete the upgrade.

Upgrading the BIOS

Follow the instructions in the readme file that came with the BIOS upgrade. When the update completes, remove the bootable media from which you performed the upgrade.



NOTES

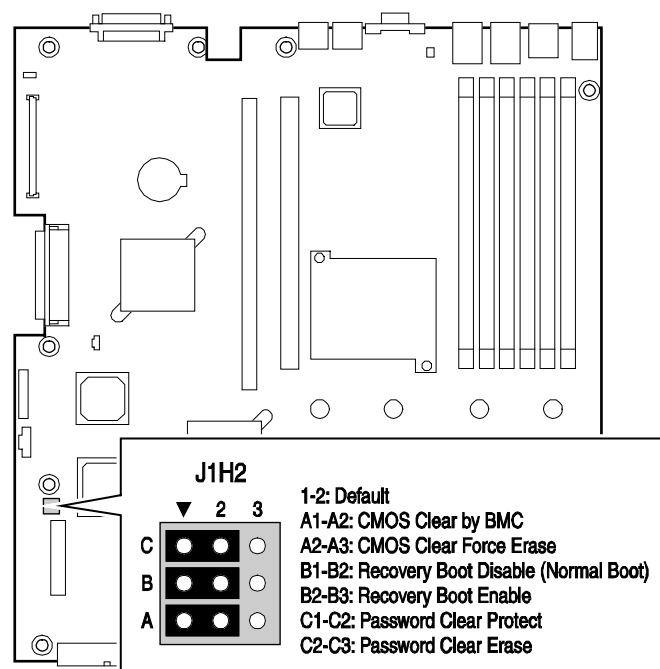
Do not power down the system during the BIOS update process! The system will reset automatically when the BIOS update process is completed.

You may encounter a CMOS Checksum error or other problem after reboot. If this happens, shut down the system and boot it again. CMOS checksum errors require that you enter Setup, check your settings, save your settings, and exit Setup.

Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the “clear” position clears both passwords. The password clear jumper must be restored to its original position before a new password(s) can be set. The password clear jumper is shown on the line labeled “A” in the figure below.

1. Power down the system and disconnect the AC power or DC mains.
2. Open the server chassis.
3. Move the jumper from the normal operation position, Password Clear Protect, at pins 1 and 2 to the Password Clear Erase position, covering pins 2 and 3 as indicated in the following diagram.



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Figure 57. Password Recovery Jumper

4. Reconnect the AC power or DC mains, power up the system.
5. Power down the system and disconnect the AC power or DC mains.
6. Return the Password Clear jumper to the Password Clear Protect position, covering pins 1 and 2.
7. Close the server chassis.
8. Reconnect the AC power or DC mains, and power up the server.

Clearing the CMOS

If you are not able to access the BIOS setup screens, the CMOS Clear jumper will need to be used to reset the configuration RAM. The CMOS Clear jumper is shown below.

1. Power down the system and disconnect the AC power or DC mains.
2. Open the server.
3. Move the jumper from the normal operation position, CMOS Clear by BMC, at pins 1 and 2 to the CMOS Clear Force Erase position, covering pins 2 and 3 as indicated in the following diagram.

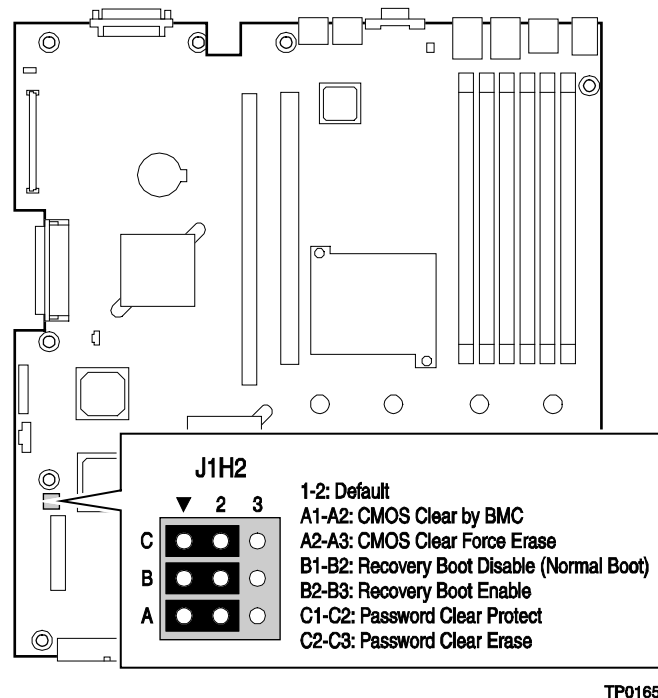


Figure 58. CMOS Recovery Jumper

4. Reconnect the AC power or DC mains, and power up the system.
5. When the system begins beeping, power it down and disconnect the AC power or DC mains.
6. Return the CMOS Clear jumper to the CMOS Clear by BMC location, covering pins 1 and 2.
7. Close the server chassis.
8. Reconnect the AC power or DC mains, and power up the system.

Troubleshooting

This chapter helps you identify and solve problems that might occur while you are using the system.

For any issue, first ensure you are using the latest firmware and files. Firmware upgrades include updates for BIOS and the baseboard management controller (BMC). See [“Additional Information and Software”](#) for a link to the software updates. In addition to the server firmware and files, also update any drivers used for components you have installed in your system, such as video drivers, network drivers, and SCSI drivers.

Intel provides a package called the “Platform Confidence Test” that may help with your diagnostics. See [“Additional Information and Software”](#) for a link to this software.

If you are unable to resolve your server problems on your own, see [“Getting Help”](#) for assistance.

Resetting the System

Before going through in-depth troubleshooting, attempt first to perform reset your system using one of the methods below.

To do this:	Press:
Soft boot reset to clear the system memory and reload the operating system.	<Ctrl+Alt+Del>
Clear system memory, restart POST, and reload the operating system.	Reset button
Cold boot reset. Turn the system power off and then on. This clears system memory, restarts POST, reloads the operating system, and halts power to all peripherals.	Power off/on

Problems following Initial System Installation

Problems that occur at initial system startup are usually caused by an incorrect installation or configuration. Hardware failure is a less frequent cause. If the problem you are experiencing is with a specific software application, see [“Problems with Newly Installed Application Software.”](#)

First Steps Checklist

- AC system only: Is AC power available at the wall outlet?
- DC system only: Is the DC mains connected?
- Are the power supplies plugged in? Check the power cable on the back of the platform and at the power source.
- Are all cables correctly connected and secured?
- Are the processors fully seated in their sockets on the server board?
- Are all standoffs in the proper location and not touching any components, causing a potential short?
- Are all add-in PCI boards fully seated in their slots on the server board?
- Are all jumper settings on the server board correct?
- Are all jumper and switch settings on add-in boards and peripheral devices correct? To check these settings, refer to the manufacturer’s documentation that comes with them. If applicable, ensure that there are no conflicts—for example, two add-in boards sharing the same interrupt.
- Are all peripheral devices installed correctly?
- If the system has a hard disk drive, is it properly formatted or configured?
- Are all device drivers properly installed?
- Are the configuration settings made in Setup correct?
- Is the operating system properly loaded? Refer to the operating system documentation.
- Did you press the system power on/off switch on the front panel to turn the server on (power on light should be lit)?
- AC system only: Is the system power cord properly connected to the system and plugged into a NEMA (National Electrical Manufacturing Association) 5-15R outlet for 100-120 V~ or a NEMA 6-15R outlet for 200-240 V~?
- DC system only: Is the 48Vdc power properly grounded?
- Are all integrated components from the tested components lists? Check the tested memory list and the supported hardware and operating system list. See [“Additional Information and Software”](#) for links to the tested component lists.

Hardware Diagnostic Testing

This section provides a more detailed approach to identifying a hardware problem and locating its source.



CAUTION

Turn off devices before disconnecting cables: Before disconnecting any peripheral cables from the system, turn off the system and any external peripheral devices. Failure to do so can cause permanent damage to the system and/or the peripheral devices.

1. Turn off the system and all external peripheral devices. Disconnect each of devices from the system, except for the keyboard and the video monitor.
2. AC system only: Make sure the system power cord is plugged into a properly grounded AC outlet.
3. DC system only: Make sure the system is correctly plugged into the DC mains and is properly grounded.
4. Make sure your video display monitor and keyboard are correctly connected to the system. Turn on the video monitor. Set its brightness and contrast controls to at least two thirds of their maximum ranges (see the documentation supplied with your video display monitor).
5. If the operating system normally loads from the hard disk drive, make sure there is disk in the CD-ROM or DVD-ROM drive.
6. If the power LED does light, attempt to boot from a CD-ROM / DVD-ROM disk.
7. Turn on the system. If the power LED does not light, see [“Power Light Does Not Light.”](#)

Verifying Proper Operation of Key System Lights

As POST determines the system configuration, it tests for the presence of each mass storage device installed in the system. As each device is checked, its activity light should turn on briefly. Check for the following:

- If system LEDs are illuminated, see [“LED Information”](#) for a description of the LED lights and steps that need to be taken to correct the problem.

Confirming Loading of the Operating System

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear, see [“No Characters Appear on Screen.”](#)

Specific Problems and Corrective Actions

This section provides possible solutions for these specific problems:

- Power light does not light.
- No characters appear on screen.
- Characters on the screen appear distorted or incorrect.
- System cooling fans do not rotate.
- Diskette drive activity light does not light.
- Hard disk drive activity light does not light.
- CD-ROM drive activity light does not light.
- There are problems with application software.
- The bootable CD-ROM is not detected.

Try the solutions below in the order given. If you cannot correct the problem, contact your service representative or authorized dealer for help.

Power Light Does Not Light

Check the following:

- Did you press the power-on button?
- Is the system operating normally? If so, the power LED might be defective or the cable from the front panel to the server board might be loose.
- AC system only: Have you securely plugged the server AC power cord into the power supply?
- DC system only: Have you securely plugged the server into the DC mains?
- Is the power supply correctly set to 110 V or 235 V, depending on your power output?
- Will other items plugged into the same power outlet function correctly?
- Remove all add-in cards and see if the system boots. If successful, re-insert the cards one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs have been populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor complies with the system requirements.
- Remove the processor and re-seat it.

No Characters Appear on Screen

Check the following:

- Is the keyboard functioning? Test it by turning the “Num Lock” function on and off to make sure the Num Lock light is functioning.
- Is the video monitor plugged in and turned on? If you are using a switch box, is it switched to the correct system?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Is the video monitor signal cable properly installed?
- Does this video monitor work correctly if plugged into a different system?
- Is the onboard video controller enabled in the BIOS?
- Remove all add-in cards and see if the video returns. If successful, re-insert the cards one at a time with a reboot between each addition.
- Make sure the memory DIMMs comply with the system requirements.
- Make sure the memory DIMMs have been populated according to the system requirements.
- Remove the memory DIMMs and re-seat them.
- Make sure the processor complies with the system requirements.
- Remove the processor and re-seat it.

If you are using an add-in video controller board, do the following:

1. Verify that the video works using the onboard video controller.
2. Verify that the video controller board is fully seated in the server board connector.
3. Reboot the system for changes to take effect.
4. If there are still no characters on the screen after you reboot the system and POST emits a beep code, write down the beep code you hear. This information is useful for your service representative.
5. If you do not receive a beep code and characters do not appear, the video display monitor or video controller may have failed. Contact your service representative or authorized dealer for help.

Characters Are Distorted or Incorrect

Check the following:

- Are the brightness and contrast controls properly adjusted on the video monitor? See the manufacturer’s documentation.
- Are the video monitor’s signal and power cables properly installed?
- Does this video monitor work correctly if plugged into a different system?

System Cooling Fans Do Not Rotate Properly

If the system cooling fans are not operating properly, it is an indication of possible system component failure.

Check the following:

- Is the power-on light lit? If not, see [“Power Light Does Not Light”](#)
- Are any other front panel LEDs lit?
- Have any of the fan motors stopped? Use the server management subsystem to check the fan status.
- Have your fans speeded up in response to an overheating situation?
- Have your fans speeded up in response to a fan that has failed?
- Are the fan power connectors properly connected to the server board?
- Is the cable from the front panel board connected to the both the front panel board and to the server board?
- Are the power supply cables properly connected to the server board?
- Are there any shorted wires caused by pinched-cables or have power connector plugs been forced into power connector sockets the wrong way?

CD-ROM Drive or DVD-ROM Drive Activity Light Does Not Light

Check the following:

- Are the CD-ROM/DVD-ROM drive’s power and signal cables properly installed?
- Are all relevant switches and jumpers on the drive set correctly?
- Is the drive properly configured?

Cannot Connect to a Server

- Make sure the network cable is securely attached to the correct connector at the system back panel.
- Try a different network cable.
- Make sure you are using the correct and the current drivers. See [“Additional Information and Software”](#) for a link to the current drivers.
- Make sure the driver is loaded and the protocols are bound.
- Make sure the hub port is configured for the same duplex mode as the network controller.
- Make sure the correct networking software is installed.
- If you are directly connecting two servers (without a hub), you will need a crossover cable.
- Check the network controller LEDs next to the NIC connectors.

Problems with Network

The server hangs when the drivers are loaded.

- Certain drivers may require interrupts that are not shared with other PCI drivers. For these drivers, it may be necessary to alter settings so that interrupts are not shared. See the documentation that came with your PCI card(s) for information on changing interrupts.

Diagnostics pass but the connection fails.

- Make sure the network cable is securely attached.
- Make sure you specify the correct frame type in your NET.CFG file.

The controller stopped working when an add-in adapter was installed.

- Make sure the cable is connected to the port from the onboard network controller.
- Make sure your BIOS is current. See [“Additional Information and Software”](#) for a link to the current version.
- Make sure the other adapter supports shared interrupts. Make sure your operating system supports shared interrupts.
- Try reseating the add-in adapter.

The add-in adapter stopped working without apparent cause.

- Try reseating the adapter first; then try a different slot if necessary.
- The network driver files may be corrupt or deleted. Delete and then reinstall the drivers.
- Run the diagnostics.

System Boots when Installing PCI Card

System Server Management features require full-time “standby” power. This means some parts of the system have power going to them whenever the power cord is plugged in, even if you have turned the system power off with the power button on the front panel. If you install a PCI card with the AC power cord plugged in or the DC mains attached, a signal may be sent to command the system to boot. Before installing a PCI card, you should always:

- Turn off the server power by using the power button on the front of the system.
- Unplug the AC power cord or DC mains from the server.

Problems with Newly Installed Application Software

Problems that occur when you run new application software are usually related to the software, not the server hardware. Faulty equipment is unlikely, especially if other software runs correctly.

Check the following:

- Make sure the system meets the minimum hardware requirements for the software. See the software documentation.
- Make sure the software is properly installed and configured for the system. See the software documentation.
- Use only an authorized copy. Unauthorized copies often do not work.
- If you are running the software from a diskette, CD-ROM or DVD-ROM, try a different diskette.
- Make sure the correct device drivers installed.

If the problems persist, contact the software vendor's customer service representative.

Problems with Application Software that Ran Correctly Earlier

Problems that occur after the system hardware and software have been running correctly sometimes indicate equipment failure. However, they can also be caused by file corruption or changes to the software configuration.

Check the following:

- If you are running the software from a diskette, CD-ROM or DVD-ROM, try a different diskette.
- Uninstall and reinstall the software. Make sure all necessary files are installed.
- If the problems are intermittent, there may be a loose cable, dirt in the keyboard (if keyboard input is incorrect), a marginal power supply, or other random component failures.
- If you suspect that a transient voltage spike, power outage, or brownout might have occurred, reload the software and try running it again. Symptoms of voltage spikes include a flickering video display, unexpected system reboots, and the system not responding to user commands.



NOTE

Random errors in data files: If you are getting random errors in your data files, they may be getting corrupted by voltage spikes on your power line. If you are experiencing any of the above symptoms that might indicate voltage spikes on the power line, you may want to install a surge suppressor between the power outlet and the system power cord.

Devices are not Recognized under Device Manager (Windows* Operating System)

The Windows* operating systems do not include all of the drivers for the Intel® chipsets, onboard NICs, and other components. See [“Additional Information and Software”](#) for a link to the current drivers and chipset files.

Hard Drive(s) are not Recognized

Check the following:

- Make sure the drive is not disabled in BIOS Setup.
- Make sure the drive is connected correctly and that it is plugged into the power supply.
- Make sure the drive is compatible. See [“Additional Information and Software”](#) for a link to the tested drives.
- Make sure you have not exceeded the power budget for the server. See [“Additional Information and Software”](#) for a link to software to check your power budget.
- If using SCSI drives, verify that each SCSI ID number is unique on the SCSI bus. See your drive documentation for details on setting the SCSI ID for your drives.

Bootable CD-ROM Is Not Detected

Check the following:

- Make sure the BIOS is configured to allow the CD-ROM to be the first bootable device.

LED Information

The Intel® Server Board TIGI2U includes LEDs that can aid in troubleshooting your system. A table of these LEDs with a description of their use is listed below.

LED Name	Function	Location	Color	Notes
ID	Aid in server identification from the back panel	Control panel and board rear left corner	Blue	Press ID LED button or user Server Management software to turn on the LED.
System fault	Visible fault warning	Control panel and board rear left corner	Green or Amber	Green = No Fault Green Blink = degraded Amber = critical error or non-recoverable Amber blink = non-critical
ATA drive activity	Control panel	Control panel	Green	Blinking = Activity. No action required.
Memory fault 1–6	Identify failing memory module	DIMM end rear of board	Amber	On = Fault
Diagnostic LEDs. 1–4 (LSB, bit1, bit2, MSB)	Displays port 80 POST codes	Center back edge of board	Each LED can be Off, Green, Amber, Red	See the POST code table
CPU 1 & 2 Fan Fault	Identify fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fault	Identify processor failure	1" behind processor socket	Amber	On = Fault
5v Standby	Identify 5v standby power on state	Front left board	Amber	On = 5v standby power on
Power LED	Identify the power state of the system	Control Panel	Green	Off = Power is off (off or S5) On = Power on or S0) Slow Blink = Low power state (S1 – S3)

BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem.

Table 6. BIOS Error Messages

Error Message	Explanation
GA20 Error	An error occurred with Gate A20 when switching to protected mode during the memory test.
Pri Master HDD Error Pri Slave HDD Error Sec Master HDD Error Sec Slave HDD Error	Could not read sector from corresponding drive.
Pri Master Drive - ATAPI Incompatible Pri Slave Drive - ATAPI Incompatible Sec Master Drive - ATAPI Incompatible Sec Slave Drive - ATAPI Incompatible	Corresponding drive is not an ATAPI (Advanced Technology Attachment Packet Interface) device. Run Setup to make sure device is selected correctly.
A: Drive Error	No response from diskette drive.
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Display Type Wrong	The display type is different from what has been stored in CMOS. Check Setup to make sure type is correct.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
CMOS Settings Wrong	CMOS values are not the same as the last boot. Either these values have been corrupted or the battery has failed.
CMOS Date/Time Not Set	The time and/or date values stored in CMOS are invalid. Run Setup to set correct values.
DMA Error	Error during read/write test of DMA (Direct Memory Access) controller.
FDC Failure	Error occurred trying to access diskette drive controller.
HDC Failure	Error occurred trying to access hard disk controller.
Checking NVRAM.....	NVRAM (Non-Volatile Random Access Memory) is being checked to see if it is valid.
Update OK!	NVRAM was invalid and has been updated.
Updated Failed	NVRAM was invalid but was unable to be updated.
Keyboard Error	Error in the keyboard connection. Make sure keyboard is connected properly.
KB/Interface Error	Keyboard interface test failed.

continued

BIOS Error Messages (continued)

Error Message	Explanation
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
Memory Size Increased	Memory size has increased since the last boot. If no memory was added, there may be a problem with the system.
Memory Size Changed	Memory size has changed since the last boot. If no memory was added or removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.
Off Board Parity Error	A parity error occurred on an off-board card. This error is followed by an address.
On Board Parity Error	A parity error occurred in onboard memory. This error is followed by an address.
Parity Error	A parity error occurred in onboard memory at an unknown address.
NVRAM / CMOS / PASSWORD cleared by Jumper	NVRAM, CMOS, and passwords have been cleared. The system should be powered down and the jumper removed.
<CTRL_N> Pressed	CMOS is ignored and NVRAM is cleared. User must enter Setup.

BIOS POST Beep Codes

The table below lists the POST error beep codes. Prior to system video initialization, the BIOS uses these beep codes to inform users of error conditions. Please note that not all error conditions are supported by BIOS beep codes.

Table 7. POST Error Beep Codes

Number of Beeps	Reason for the beeps and action to take
1, 2, or 3	Memory error. Reseat the memory or replace the DIMMs with known good modules.
4 – 7 or 9 – 11	Fatal error indicating a possible serious system problem. Remove all add-in cards and re-start the system. If the error still occurs, contact your system manufacturer. If the beep codes are not generated after the add-in cards are removed, insert the cards one at a time, booting the system between each card addition, until the beeps again occur to reveal the malfunctioning card.
8	Replace or reseat the system video add-in card. If on-board video is being used, the server board may be faulty.

In addition to the beep codes above, additional beep codes are provided if an Intel® Management Module is installed. The Intel Management Modules provide the following additional beep codes.

Table 8. Error Beep Codes Provided by Intel® Management Modules

Beep Code	Reason for the beeps and action to take
1	Control panel CMOS clear has been initiated.
1-5-1-1	Processor failure. Reseat or replace the failed processor.

Troubleshooting

1-5-2-1	No processor is installed or the CPU 1 socket is empty. Reseat or replace the failed processor.
1-5-2-3	Processor configuration error or CPU 1 socket is empty. Reseat or replace the failed processor. In a two-processor system, make sure the processors are identical.
1-5-2-4	Front-side bus select configuration error.
1-5-4-2	DC power unexpectedly lost.
1-5-4-3	Chipset control failure.
1-5-4-4	Power control failure.

Regulatory and Certification Information

Product Regulatory Compliance

Product Safety Compliance

The Server Board TIGI2U complies with the following safety requirements:

- UL60950 – CSA 60950(USA / Canada)
- EN60950 (Europe)
- IEC60950 (International)
- CB Certificate & Report, IEC60950 (report to include all country national deviations)
- GS License (Germany)
- GOST R 50377-92 - License (Russia)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- GB4943- CNCA Certification (China)

Product EMC Compliance – Class A Compliance

The Server Board TIGI2U has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations.

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- CISPR (International Special Committee on Radio Interference) 22 – Emissions
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- EN61000-3-2 - Harmonics (Europe)
- EN61000-3-3 - Voltage Flicker (Europe)
- CE (Community European) – EMC Directive 89/336/EEC (Europe)
- VCCI (Voluntary Control Council for Interference) Emissions (Japan)
- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI (Bureau of Standards, Metrology and Inspection) CNS13438 Emissions (Taiwan)
- GOST R 29216-91 Emissions (Russia)
- GOST R 50628-95 Immunity (Russia)
- RRL MIC Notice No. 1997-41 (EMC) & 1997-42 (EMI) (Korea)
- GB 9254 - CNCA Certification (China)
- GB 17625 - (Harmonics) CNCA Certification (China)




Certifications / Registrations / Declarations

- UL Certification (US/Canada)
- CE Declaration of Conformity (CENELEC Europe)
- FCC/ICES-003 Class A Attestation (USA/Canada)
- VCCI Certification (Japan)
- C-Tick Declaration of Conformity (Australia)
- BSMI Certification (Taiwan)
- GOST R Certification / License (Russia)
- RRL Certification (Korea)
- CNCA Certification (China)
- Ecology Declaration (International)

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 9. Product Certification Markings

Regulatory Compliance	Country	Marking
cULus Listing Marks	USA/Canada	
GS Mark	Germany	
CE Mark	Europe	
FCC Marking (Class A)	USA	This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. Manufactured by Intel Corporation
EMC Marking (Class A)	Canada	CANADA ICES-003 CLASS A CANADA NMB-003 CLASSE A
VCCI Marking (Class A)	Japan	この装置は、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。VCCI-A

continued

Table 10. Product Certification Markings

Regulatory Compliance	Country	Marking
BSMI Certification Number & Class A Warning	Taiwan	
		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
GOST R Marking	Russia	
RRL MIC Mark	Korea	
China Compulsory Certification Mark	China	

Electromagnetic Compatibility Notices

FCC (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124
1-800-628-8686

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

Industry Canada (ICES-003)

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.

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.

VCCI (Japan)

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 (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

BSMI (Taiwan)

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

The BSMI Certification Marking and EMC warning is located on the outside rear area of the product.

Korean RRL Compliance



1. 기기의 명칭(모델명) :
2. 인증번호 :
3. 인증받은 자의 상호 :
4. 제조년월일 :
5. 제조자/제조국가 :

English translation of the notice above:

1. Type of Equipment (Model Name): On License and Product
2. Certification No.: On RRL certificate. Obtain certificate from local Intel representative
3. Name of Certification Recipient: Intel Corporation
4. Date of Manufacturer: Refer to date code on product
5. Manufacturer/Nation: Intel Corporation/Refer to country of origin marked on product

Regulated Specified Components

To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following conditions must be adhered to and the following regulated components must be used. Interchanging or using other components will void the UL listing and other product certifications and approvals.

- **Add-in boards**—must have a printed wiring board flammability rating of minimum UL94V-1. Add-in boards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in board containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.
- **Peripheral Storage Devices**—must be a UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

Getting Help

World Wide Web

<http://support.intel.com/support/motherboards/server/TIGI2U>

Telephone

All calls are billed at US \$25.00 per incident, and levied in local currency at the applicable credit card exchange rate plus applicable taxes. (Intel reserves the right to change the pricing for telephone support at any time without notice).

Before calling, fill out an “[Intel® Server Issue Report Form](#).” A sample form is provided on the following pages. However, for the fastest service, please submit your form via the Internet.

In U.S. and Canada		1-800-404-2284	
In Europe			
UK	0870 6072439	Finland	9 693 79297
France	01 41 918529	Denmark	38 487077
Germany	069 9509 6099	Norway	23 1620 50
Italy	02 696 33276	Sweden	08 445 1251
Spain	91 377 8166	Holland	020 487 4562
In Asia-Pacific region			
Australia	1800 649931	Indonesian	001-803 65 7249
Hong Kong	852 2 844 4456	Malaysia	1-800 80 1390
Korea	822 767 2595	New Zealand	0800 444 365
PRC	800 820 1100	Pakistan	632 6368415 (IDD via Philippines)
Singapore	65 213-1311	Philippines	1-800 1 651 0117
Taiwan	2 2545-1640	Thailand	1-800 6310003
India	0006517-830 3634	Vietnam	632 6368416 (IDD via Philippines)
In Japan			
0120-868686 (Domestic)		81-298-47-0800 (outside country)	
In Latin America			
Brazil	0021-0811-408-5540	Ecuador	999-119, 800-628-8686 (via AT&T)
Mexico	001-800-628-8686	Guatemala	99-99-190, 800-628-8686 (via AT&T)
Colombia	980-9-122-118	Venezuela	800-11-120, 800-628-8686 (via AT&T)
Costa Rica	0-800-011-0395	Argentina	001-800-222-1001, 800-628-8686 (via AT&T)
Panama	001-800-628-8686	Paraguay	008-11, 800-628-8686 (via AT&T)
Chile	800-532-992	Peru	0-800-50000, 800-628-8686 (via AT&T)
Miami	1-800-621-8423	Uruguay	000-410, 800-628-8686 (via AT&T)

For an updated support contact list, see <http://www.intel.com/support/9089.htm/>

Intel® Server Issue Report Form



NOTE

An on-line / automatic submission version of this form is available at <http://support.intel.com/support/motherboards/server/TIGI2U> . For the fastest service, please submit your form via the Internet.

Date Submitted: _____

Company Name: _____

Contact Name: _____

Email Address: _____

Intel Server Product: _____

Priority (Critical, Hot, High, Low): _____

Brief Problem Description. Provide a brief description below. See the last page for space to include a detailed problem description.

Board / Chassis Information

Baseboard Revision – PBA#:	DIMM Configuration
Baseboard Serial Number:	DIMM1A MB:
CPU1 Speed/Stepping/Spec:	DIMM1A Vendor/part number:
System BIOS Version:	DIMM1B MB:
Platform Model	DIMM1B Vendor/part number:
<input type="checkbox"/> Intel® TIGI2U	DIMM2A MB:
	DIMM2A Vendor/part number:
	DIMM2B MB:
	DIMM2B Vendor/part number:
	DIMM3A MB:
	DIMM3A Vendor/part number:
	DIMM3B MB:
	DIMM3B Vendor/part number:

Operating System Information

Operating System _____

Version _____

Service Pack _____

Peripheral Information

Check each box below that is used, and provide the requested information

Peripheral	Card Or Peripheral Description	Driver Revision	IRQ #	I/O Base Address	FW Rev#
Low-profile Riser					
<input type="checkbox"/>	PCI Slot 1				
<input type="checkbox"/>	PCI Slot 2				
<input type="checkbox"/>	PCI Slot 3				
Full-height Riser					
<input type="checkbox"/>	PCI Slot 1				
<input type="checkbox"/>	PCI Slot 2				
<input type="checkbox"/>	PCI Slot 3				
Video					
<input type="checkbox"/>	On-Board Video				
<input type="checkbox"/>	Add-in Video				
NIC					
<input type="checkbox"/>	On-Board NIC1 (10/100/1000 Mb)				
<input type="checkbox"/>	On-Board NIC2 (10/100/1000 Mb)				

Hard Drive Information:

SCSI # of drives installed: _____
 Make/Model/Firmware Revision _____

Warranty

Limited Warranty for Intel[®] Chassis Subassembly Products

Intel warrants that the Products (defined herein as the Intel[®] chassis subassembly and all of its various components and software delivered with or as part of the Products) to be delivered hereunder, if properly used and installed, will be free from defects in material and workmanship and will substantially conform to Intel's publicly available specifications for a period of three (3) years after the date the Product was purchased from an Intel authorized distributor. Software of any kind delivered with or as part of products is expressly provided "as is" unless specifically provided for otherwise in any software license accompanying the software.

If any Product furnished by Intel which is the subject of this Limited Warranty fails during the warranty period for reasons covered by this Limited Warranty, Intel, at its option, will:

- REPAIR the Product by means of hardware and/or software; OR
- REPLACE the Product with another Product; OR
- REFUND the then-current value of the Product if Intel is unable to repair or replace the Product.

If such Product is defective, transportation charges for the return of Product to buyer within the USA will be paid by Intel. For all other locations, the warranty excludes all costs of shipping, customs clearance, and other related charges. Intel will have a reasonable time to make repairs or to replace Product or to refund the then-current value of the Product.

In no event will Intel be liable for any other costs associated with the replacement or repair of Product, including labor, installation or other costs incurred by buyer and in particular, any costs relating to the removal or replacement of any product soldered or otherwise permanently affixed to any printed circuit board.

This Limited Warranty, and any implied warranties that may exist under state law, apply only to the original purchaser of the Product.

Extent of Limited Warranty

Intel does not warrant that Products to be delivered hereunder, whether delivered stand-alone or integrated with other Products, including without limitation semiconductor components, will be free from design defects or errors known as "errata." Current characterized errata are available upon request.

This Limited Warranty does not cover damages due to external causes, including accident, problems with electrical power, usage not in accordance with product instructions, misuse, neglect, alteration, repair, improper installation, or improper testing.

Warranty Limitations and Exclusions

These warranties replace all other warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Intel makes no expressed warranties beyond those stated here. Intel disclaims all other warranties, expressed or implied including, without limitation, implied warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not allow the exclusion of implied warranties, so this limitation may not apply.

All expressed and implied warranties are limited in duration to the limited warranty period. No warranties apply after that period. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

Limitations of Liability

Intel's responsibility under this, or any other warranty, implied or expressed, is limited to repair, replacement, or refund, as set forth above. These remedies are the sole and exclusive remedies for any breach of warranty. Intel is not responsible for direct, special, incidental, or consequential damages resulting from any breach of warranty under another legal theory including, but not limited to, lost profits, downtime, goodwill, damage to or replacement of equipment and property, and any costs of recovering, reprogramming, or reproducing any program or data stored in or used with a system containing this product. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This limited warranty gives you specific legal rights, and you may also have other rights that vary from jurisdiction to jurisdiction.

Any and all disputes arising under or related to this Limited Warranty shall be adjudicated in the following forums and governed by the following laws: for the United States of America, Canada, North America, and South America, the forum shall be Santa Clara, California, USA, and the applicable law shall be that of the State of California, USA; for the Asia Pacific region, the forum shall be Singapore and the applicable law shall be that of Singapore; for Europe and the rest of the world, the forum shall be London and the applicable law shall be that of the United Kingdom.

In the event of any conflict between the English language version and any other translated version(s) of this Limited Warranty, the English language version shall control.

How to Obtain Warranty Service

To obtain warranty service for this Product, you may contact Intel or your authorized distributor.

North America and Latin America—To obtain warranty repair for the product, please go to the following Web site to obtain instructions:

<http://support.intel.com/support/motherboards/draform.htm>

In Europe and in Asia—Contact your original authorized distributor for warranty service.

Any replacement Product is warranted under this written warranty and is subject to the same limitations and exclusions for the remainder of the original warranty period.

Telephone Support

If you cannot find the information you need on Intel's World Wide Web site (<http://www.intel.com/>), call your local distributor or an Intel Customer Support representative.

Country	Customer Support Telephone Number	Hours (Monday-Friday)	Billing
United States and Canada	1-800-404-2284	7:00–17:00 PST	Credit card calls \$25.00/incident
UK France Germany Italy Spain Finland Denmark Norway Sweden Holland	0870 6072439 01 41 918529 069 9509 6099 02 696 33276 91 377 8166 9 693 79297 38 487077 23 1620 50 08 445 1251 020 487 4562	UK time 8:00–17:00 (M, Th, F) 8:00–16:00 (Tu–W)	Credit Card Calls \$25.00/incident Levied in local currency at the applicable credit card exchange rate plus applicable VAT
Asia-Pacific Australia Hong Kong Korea Philippines PRC Singapore Taiwan Malaysia New Zealand Indonesia Thailand Vietnam India Pakistan	+1-800-649-931 +852-2-844-4456 +822-767-2595 1800-1-651-0117 (800)8201100 (65)2131311 2 27189915 1800-801390 0800-444365 803-65-7249 800-6310003 IDD call +63(2)6368416 (0006517) 830-3634 Manual toll free. From India, you need an IDD-equipped phone. IDD call +63(2)6368415	Singapore local time Oct–April: 6:00–16:00 April–Oct: 5:00–16:00	

Returning a Defective Product

Before returning any product, call your authorized dealer/distribution authority.