

Intel® Storage Server SSR212MC2/ SSR212MC2R User Guide

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

Intel Order Number D90842-002

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Safety Information

Important Safety Instructions

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 Warnung und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel-Serverplatinen und Servergehäusen auf der *Resource CD* oder unter <http://support.intel.com/support/motherboards/server/sb/cs-010770.htm>.

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 *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 *Resource CD* y/o en <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，请阅读本文件中的所有注意事项及安全声明。并参阅 <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》）。

Warnings

Heed safety instructions: Before working with your storage server, whether you are using this guide or any other resource as a reference, 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.

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the power cord(s), telecommunications systems, networks, and modems attached to the storage server before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all hardware and upgrade procedures only at an ESD workstation. If one is not available, provide some ESD protection by wearing an anti-static wrist strap attached to chassis ground (any unpainted metal surface) on your system when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad, if available, but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle-nosed pliers. If your jumpers do not have such a tab, take care when using needle-nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the pins on the board.

Preface

About this Manual

Thank you for purchasing and using the Intel® Storage Server SSR212MC2/SSR212MC2R.

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this storage system. This document provides a brief overview of the features of the product, a list of accessories or other components you may need, instructions on how to add and replace components on the system, and troubleshooting information. For the latest version of this manual, see <http://support.intel.com/support/motherboards/server/ssr212mc2/>.

Product Contents, Order Options, and Accessories

This storage system is compatible with the following Intel® server board:

- Intel® Server Board S5000PSL

The storage system ships with the following items:

- Intel® Storage Server SSR212MC2/SSR212MC2R
- Attention document, in the product box
- *Quick Start User's Guide*, in the product box
- AC power cord(s) (North America only)
- 50 Phillips* head screws
- Resource CD
- Rail kit
- T10 TORX* screwdriver
- 12 hard drive labels

In addition, you may need or want to purchase one or more of the following accessory items for your storage system:

- Memory FBDIMMs
- Hard drives

For information about which accessories, memory, processors, and third-party hardware have been tested and can be used with your storage system, and for ordering information for Intel® products, see <http://support.intel.com/support/motherboards/server/ssr212mc2/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 storage system, use the following resources. These files are available at <http://support.intel.com/support/motherboards/server/ssr212mc2/>. Unless otherwise indicated in the following table, once on this Web page, type the document or software name in the search field at the left side of the screen and select the option to search “This Product.”

For this information or software	Use this Document or Software
For in-depth technical information about this product, including BIOS settings and chipset information	<i>Intel® Storage Server SSR212MC2/SSR212MC2R Technical Product Specification</i>
If you just received this product and need to install it	<i>Quick Start User's Guide</i> in the product box
Accessories or other Intel server products	Spares and Configuration Guide
Hardware (peripheral boards, adapter cards) and operating systems that have been tested with this product	Tested Hardware Operating Systems List
For software to manage your Intel® storage system	StorView* Enclosure Management Software

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1 Storage Server Features

The Intel® Storage Server SSR212MC2/SSR212MC2R is a 2U (rack space) disk drive enclosure, currently housing twelve low-profile (1-in high), 1.5/3.0 Gb/s, 3.5-in form factor SAS/SATA disk drives. Each individual disk drive is field replaceable.

[Figure 1](#) shows a front view of the Intel® Storage Server SSR212MC2/SSR212MC2R while [Figure 2](#) depicts a rear view with the lid removed, showing those areas accessible to service personnel only.

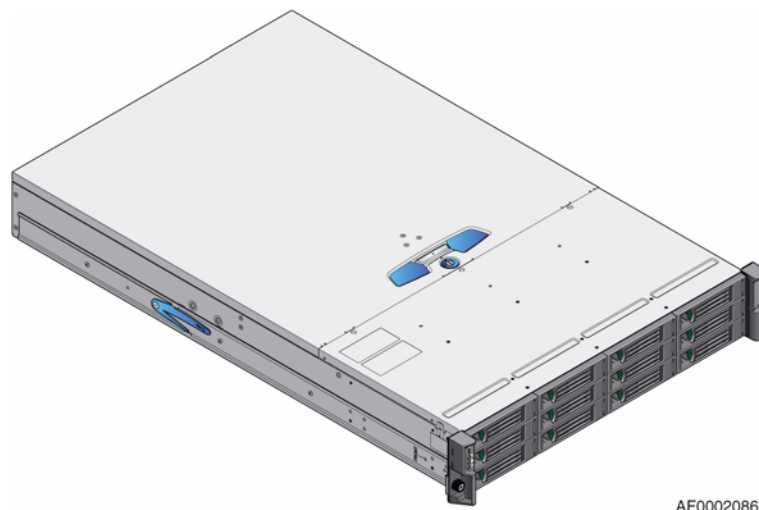


Figure 1. Intel® Storage Server SSR212MC2/SSR212MC2R - Front View

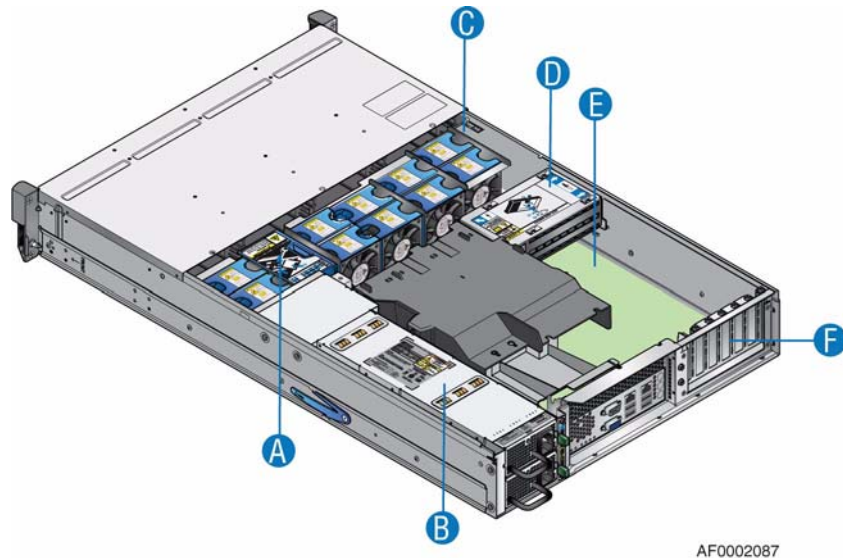


Figure 2. Intel® Storage Server SSR212MC2/SSR212MC2R - Rear View Showing Service Areas

A. SAS Expander Card
B. Power Supply Units
C. Cooling Fans (10)
D. Boot Drive
E. Server Board
F. PCI Slots

Enclosure Core Product

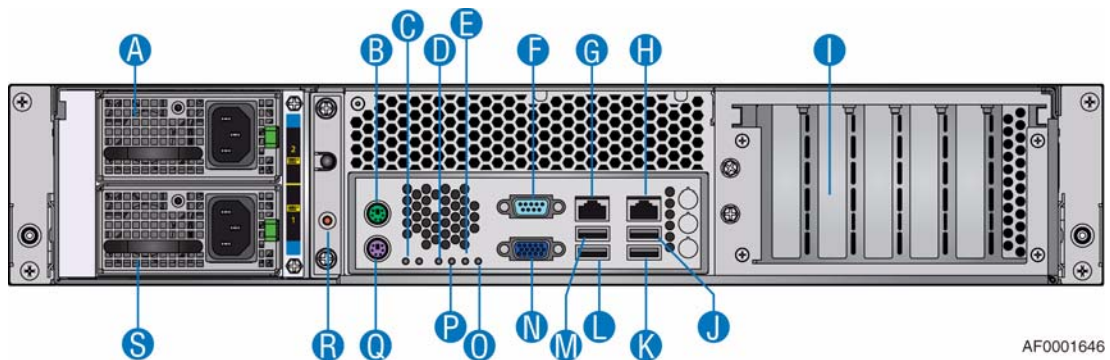
The Intel® Storage Server SSR212MC2/SSR212MC2R design concept is based on an enclosure sub-system together with a set of plug-in modules and (*as supplied*) consists of:

- An enclosure chassis with:
 - A backplane PCB
 - An enclosure management PCB
 - A SAS Expander PCB, to branch from 4 to 12 SAS ports, supporting SATA tunnelling protocol
 - A Front Operator's Panel
 - An integral rear panel, incorporating an Enclosure ID LED
 - A power supply mounting cage containing one or two AC, 850-W plug-in power supply units (PSUs)

Note: If only one PSU is installed, a blanking plate must be fitted over the empty upper bay.

- A server subsystem comprising:
 - An Intel® Server Board S5000PSL with integral I/O panel
 - An Intel® RAID Controller SRC SAS144E
 - An Intel® Intelligent AXXRIBBU1 Battery Backup Unit
 - A boot drive module
- A cooling module containing 10 high-speed, single-rotor axial fans, which are individually pluggable
- Up to 12 drive carrier modules

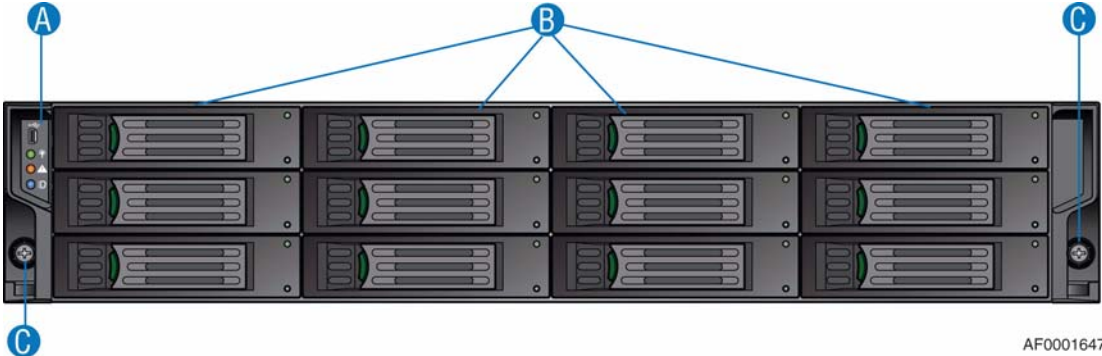
Note: Dummy drive carrier modules must be fitted in all unused drive bays.



AF0001646

A. Power Supply Unit 2	K. USB Port 1
B. PS2 Mouse Port	L. USB Port 3
C. System Status LED	M. USB Port 2
D. MSB (POST LED)	N. Video Port
E. Bit 1 (POST LED)	O. LSB (POST LED)
F. Serial Port	P. Bit 2 (POST LED)
G. NIC Port 1 (1 Gb)	Q. PS2 Keyboard
H. NIC Port 2 (1 Gb)	R. ID LED
I. PCI Cards	S. Power Supply Unit 1
J. USB Port 0	

Figure 3. Rear View



A. Front Panel
B. Drive Bays
C. Rack Retaining Screw

Figure 4. Front View

Enclosure Chassis

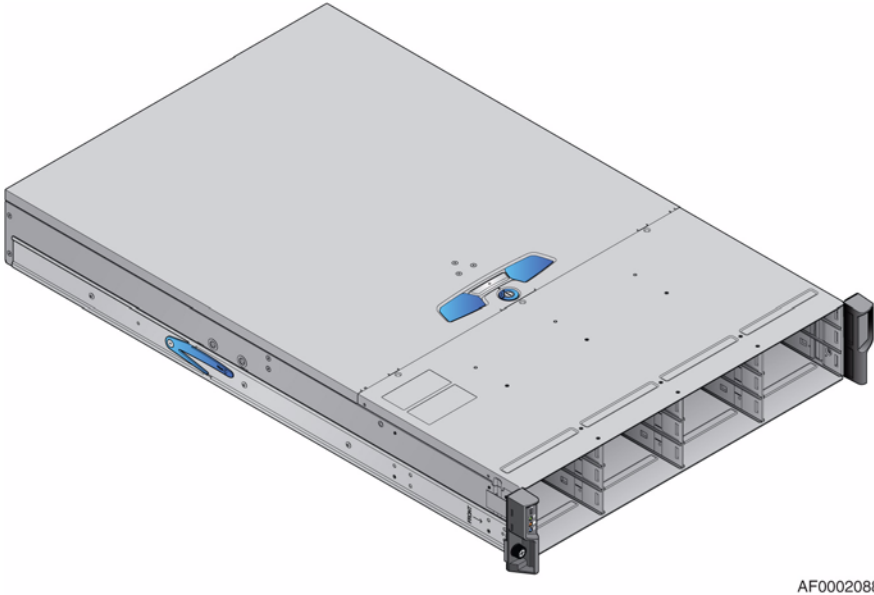


Figure 5. Enclosure Chassis

The enclosure chassis consists of a sheet metal enclosure assembly containing an integrated backplane printed circuit board (PCB), an enclosure management PCB, and a module runner system.

The chassis is fitted with 19-in rack-mounting features, which enables it to be fitted to standard 19-in racks. It takes up two EIA units of rack space (*i.e.*, 3.5 in high).

The backplane PCB provides 12 direct dock SAS/SATA connectors to the drives and acts as the connectivity hub of the enclosure, connecting to the enclosure management PCB.

The ten cooling fans are connected to the system via the enclosure management PCB.

There are 12 drive bays at the front of the enclosure. Each drive bay accommodates a plug-in drive carrier module that can house one low-profile (1-in) high 3.5-in form factor drive. In addition, two 2.5-inch boot drives can be installed in the boot drive module.

Note: A bay is defined as the space required to house a single 1.0-in high 3.5-in disk drive in its carrier module.

At the rear, the chassis assembly accommodates up to two PSUs and a server board subsystem.

A top cover on the enclosure provides access to the cooling fans and the server board subsystem.

Important: The enclosure cover should only be removed by qualified service personnel as it provides access to a service area. Upon replacement, the cover **MUST** be secured by tightening the lock mechanism to the “locked” position with a screwdriver.

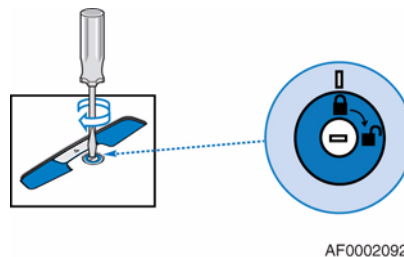


Figure 6. Locking the Enclosure Cover

Server Board Subsystem

The server board sub-system consists of:

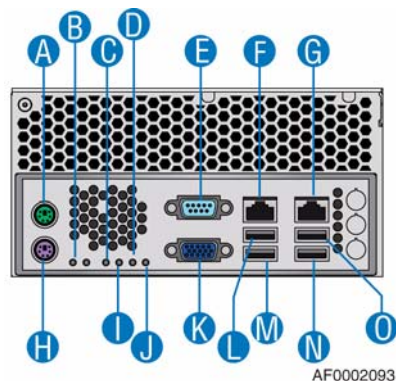
- An Intel® Server Board S5000PSL
- Slots for up to six low-profile 3/4-length PCI cards, installed in a vertical orientation. The following PCBs are installed as standard configuration:
 - (SSR212MC2R only) An Intel® RAID Controller SRCSAS144E, in the left-hand slot (when viewed from the rear)
 - (SSR212MC2R only) An Intel® Intelligent AXXRIBBU1 Battery Backup Unit, in the right-hand slot (when viewed from the rear)

Blank PCI plates are filled in the empty PCI slots.

- A boot drive module, which can contain up to two 2.5-in SAS/SATA boot drives

- (SSR212MC2R only) One 4-channel SAS cable from the rear-mounted SAS controller to the backplane.

Server Board I/O Panel



A. PS2 Mouse Port	I. Bit 2 (POST LED)
B. System Status LED	J. LSB (POST LED)
C. MSB (POST LED)	K. Video Port
D. Bit 1 (POST LED)	L. USB Port 2
E. Serial Port	M. USB Port 3
F. NIC Port 1 (1 Gb)	N. USB Port 1
G. NIC Port 2 (1 Gb)	O. USB Port 0
H. PS2 Keyboard	

Figure 7. Server Board I/O Panel Connectors

Connectors

The following connectors are present on the server board I/O panel:

- PS2 mouse port
- PS2 keyboard port
- Serial port
- Video port
- Two RJ-45 ports - NICs 1 and 2 (1Gb each)
- Four USB ports: 0, 1, 2, and 3

Server Board LEDs

See your Intel® Server Board S5000PSL *User Guide* for full details on I/O panel LED states.

Status LEDs

Diagnostic LEDs are present on the server board I/O panel to assist in identifying failed and failing components. See “[Server Board LEDs](#)” on page 128 for a summary of status LED states.

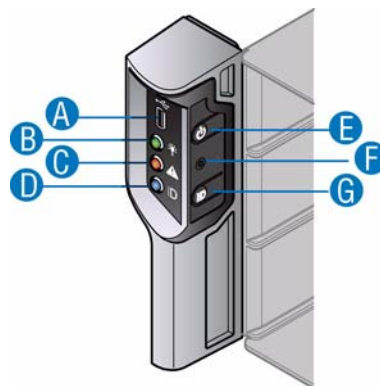
NIC LEDs

The NIC LEDs at the right and left of each NIC port provide information on NIC status. See “[I/O Panel NIC LEDs](#)” on page 128 for a summary of NIC LED states.

Front Operator’s Panel

A Front Operator’s Panel, consisting of a USB port, three LEDs and three push-button switches, is present on the front of the enclosure.

Important: *The Front Operator’s Panel is an integral part of the enclosure assembly and is not field replaceable.*



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A. USB Port	B. Power Active LED
C. Unit Fault LED	D. ID LED
E. On/Off Switch	F. Reset Button (recessed)
G. ID LED Activation Switch	

Figure 8. Front Operator’s Panel Components

Table 1. Functions of Front Operator's Panel LEDs and Switches

LED	Push-button Switch	USB Port
Power Active (Green)	Power On/Off	Intended for service use only.
Unit Fault (Amber)	Reset Button	
Enclosure ID (Blue)	Enclosure ID LED Activation	

For a full description of LED and switch functions, see “Front Operator's Panel LEDs and Switches” on page 22.

Rear Panel

Important: The Rear Panel is an integral part of the enclosure assembly and is not field replaceable.

A Rear Panel, consisting of a blue Enclosure ID LED (see Figure 3 on page 3), is present on the rear of the enclosure.

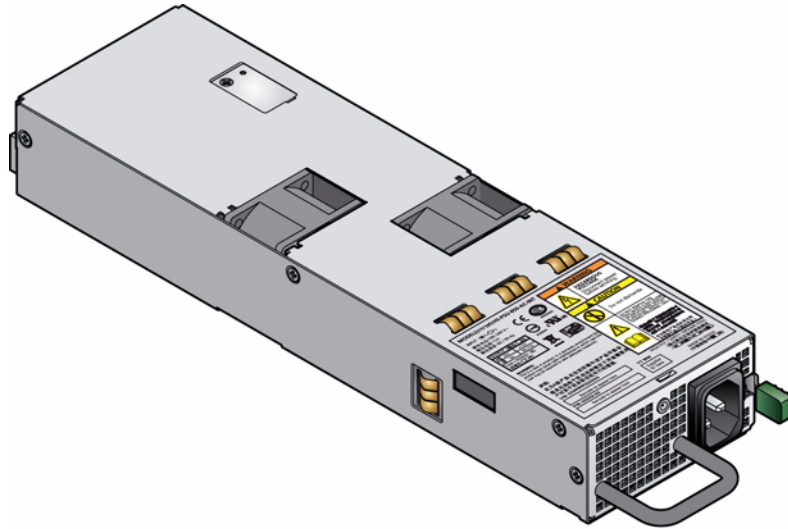
Table 2. Rear Panel ID LED Status

Enclosure ID LED	Blue (when activated)	Activated by push button on the Front Operator's Panel, or by system software. Used to identify a server from among several servers
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Power Supply Unit

AC-DC power is provided by a commercial dual-redundant power supply with specific load capability, mechanical packaging and output loom to suit this product.

A power supply mounting cage is fitted in the rear of the enclosure as part of the subsystem core product. The cage houses two individually hot pluggable 850-W AC Power Supply Units (PSUs), each with its own IEC inlet connector and failure indicator.



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Figure 9. Power Supply Unit

Power supply unit voltage operating ranges are nominally 100V - 240V AC, selected automatically.

Each PSU has an audible alarm to indicate when a fault state is present and a bi-color (green/red) LED to indicate PSU status.

Multiple Power Supply Units

The Intel® Storage Server SSR212MC2/SSR212MC2R can be operated with either one or two PSUs fitted in the power supply mounting cage. If two PSUs are fitted, they provide redundancy for the system so that if one PSU fails the other maintains the power supply while the faulty PSU is being replaced.

PSU replacement should only take a few minutes to perform but must be completed within 10 minutes from removal of the failed PSU.

Important: *If only one PSU is fitted, it must be installed in the bottom slot. A blanking plate must be fitted to cover the empty upper slot. Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the system.*

Power Supply Output Loom

The power supply output loom provides the following outputs:

- P1 server board main power connector (1 x 24 pin).
- P2 processor power connector (8 pin)
- P3 12-V power connector
- P4 peripheral power connector (2 x 4 pin).
- P5 PSU1 connector (5 pin)

Cooling Fans

Ten high-speed single-rotor axial fans are housed in a cooling cage, located centrally within the enclosure, between the drive bays and the server board, as shown in [Figure 2 on page 2](#). This ensures maximum airflow through the PSU(s) and minimizes noise.

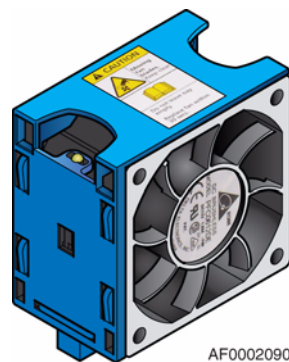


Figure 10. Cooling Fan

Airflow is front to rear with cooling air being drawn across the drives, through the fans and pressurizing the rear of the enclosure. The pressurized rear allows the PSU(s) to draw the air that it requires; perforations at the rear of the chassis allow cooling air to flow over the processor heatsinks, server board and PCI cards.

The cooling system must be operated with low-pressure rear exhaust installation (back pressure created by rack doors and obstacles not to exceed 5 pascals [0.5mm Water gauge]).

The cooling system provides sufficient capacity to ensure that drive maximum temperatures are not exceeded at 35°C ambient with one fan failed at sea level.

The cooling cage contains ten individual high-speed single-rotor axial fans, individually connected to and interfacing with the enclosure management PCB. This interface provides power and speed control to the fans and returns tacho output from each fan to the management system.

Drive Carrier Module

The drive carrier module consists of a hard disk mounted in a drive carrier. Each drive bay can house a single low-profile 1.0-inch high, 3.5-inch form factor SAS/SATA disk drive in its drive carrier. The drive carrier has mounting locations for SAS/SATA drives.

Each disk drive is enclosed in a sheet steel carrier which provides excellent thermal conduction, radio frequency and electro-magnetic induction protection, as well as affords the drive with maximum physical protection.

The front cap of the drive carrier supports an ergonomic handle, which provides the following functions:

- Camming of drive carrier into and out of drive bays.
- Positive 'spring loading' of the drive/backplane connector.

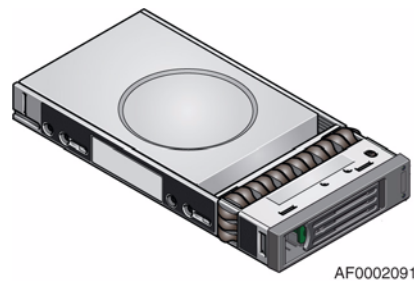
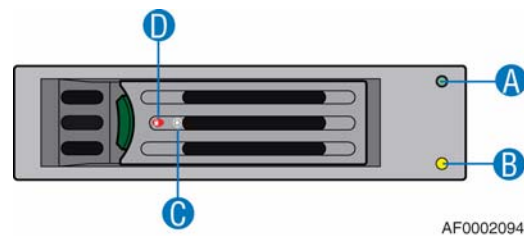


Figure 11. Drive Carrier Module

Drive Status Indicator

Disk drive status, under ESI processor control, is monitored by two LEDs (a green LED and an amber LED) mounted on the front cap of each drive carrier module. See “[Disk Drive LEDs](#)” on page 24 for a description of LED states.



A. Green LED
B. Amber LED
C. Torque Screw
D. Drive Lock Indicator Aperture

Figure 12. Drive Status LEDs and Components

Anti-tamper Locks

Anti-tamper locks are fitted in each drive carrier handle and are accessed with a TORX* screwdriver through the small cutout in the latch section of the handle. When activated, the locks disable the normal 'pinch' latch action of the drive carrier handle. A drive is locked when the red lock symbol appears in the indicator aperture.

Mixed Drive Types

SAS and SATA drives may be mixed within an enclosure, but drives of a similar type and rotation speed should be mounted within the same column of drives.

Dummy Drive Carrier Modules

Dummy drive carrier modules are provided for fitting in all unused drive bays. They are designed as integral drive module front caps with handles and must be fitted in all unused drive bays to maintain a balanced airflow.

Blanking Plates

To maintain proper airflow and correct system operation, blanking plates must be fitted in any vacant PSU bay or PCI card slot.

Warning: *Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling.*

Spare Parts and Accessories

The following replaceable parts are available for the Intel® Storage Server SSR212MC2/SSR212MC2R.

Table 3. Spare Parts and Accessories

Part Number	Description
FMCCCHASSIS	Chassis, including: backplane, enclosure management card, front panel board, and power supply cage
FMCCABLES	Cable kit, including: BBU cable, boot drive SAS cable, front panel flex cable, front panel SSI cable
FMCSAS4XCBL	4-lane SAS fan-out cable with four 7-pin SATA connectors (mini-SAS to 4x SATA)
FMCSASCBL	4-lane SAS cable (mini-SAS to mini-SAS)
FXSDRVCARR	12-pack hard disk drive carrier set, along with 1 TORX* driver and hard disk label set
FMBOOTENCL	2.5-inch boot drive enclosure

FMCRAILKIT	Rail kit
FMCFANS	Hot swap fans (5 pack)
FMCSASX	SAS expander card
FMCAIRBAFFLE	Processor and memory air ducts
BB5000PSLSAS	10-pack of Intel® Server Board S5000PSL with integrated 4-port SAS
SRCSAS144E	10-pack of Intel® RAID Controller SRCSAS144E
AXXRIBBU1	Intel® Intelligent AXXRIBBU1 Battery Backup Unit
AMC850WPS	850-W power supply
AMCSAS300	300-GB 10k RPM SAS hard disk drive
AMCSATA750	750-GB 7.2k RPM SATA II hard disk drive

Storage Server Features

2 Getting Started

In this chapter, you are shown how to plan and install your Intel® Storage Server SSR212MC2/SSR212MC2R into an industry standard 19-inch rack cabinet.

Caution: *When connecting up the Intel® Storage Server SSR212MC2/SSR212MC2R, use only the power cords supplied or power cords which match the specification quoted in “Power Cord” on page 134.*

Planning Your Installation

Important: *Installation procedures should be performed by service personnel only.*

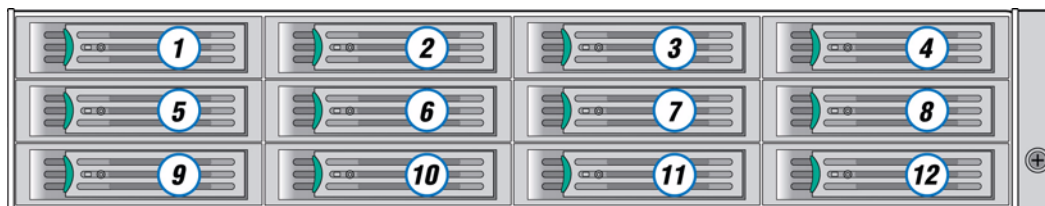
Before beginning installation of your Intel® Storage Server SSR212MC2/SSR212MC2R, familiarize yourself with the configuration requirements listed in the following table.

Table 4. Configuration Requirements

Module	Location
Drive Bays	ALL drive bays must be fitted with either a drive carrier module or a dummy drive carrier module. No bays should be left empty. A minimum of 1 drive must be installed.
Power Supply	One or two PSUs can be fitted. If only one PSU is used, a blanking plate must be fitted to cover the empty (top) slot. If two PSUs are installed, full power redundancy is provided while a faulty PSU is replaced.
Cooling Fans	Ten fans, housed in a cooling cage, are located centrally within the enclosure between the drive bays and the server board.
PCI Cards	Up to six PCI cards can be installed in a vertical orientation. Currently, only the two outer card slots are used in the standard configuration, fitted with an Intel® RAID Controller SRC SAS144E and an Intel® Intelligent AXXRIBBU1 Battery Backup Unit. When not in use, the four empty PCI slots must be fitted with blanking plates.

Drive Bay Numbering Convention

The drive bay numbering convention is as follows.



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Figure 13. Drive Bay Numbering

A bay is defined as the space required to house a single 1.0-in high 3.5-in disk drive in its drive carrier, e.g., a 1 x 4 bay bank would take the space of one drive width by four drive bays across (in the rack mount configuration).

The Intel® Storage Server SSR212MC2/SSR212MC2R subsystem is housed in a 4 x 3 enclosure, i.e., four drive bays wide by three bays high. The top bays are numbered 1 to 4 from left to right, as viewed from the front. Drive carrier module locations are identified from a matrix of the top and side numbers. Additional drives must be populated in order from left to right, top to bottom, beginning with Drive Bay 1 and ending with Drive Bay 12.

Warning: Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the unit. Dummy drive carrier modules are available for fitting in unused drive bays.

Enclosure Installation Prerequisites

Note: The Intel® Storage Server SSR212MC2/SSR212MC2R is delivered fully populated with 12 drive carrier modules pre-installed.

Warning: The Intel® Storage Server SSR212MC2/SSR212MC2R with all its component parts installed is too heavy for a single person to easily install into a rack cabinet.

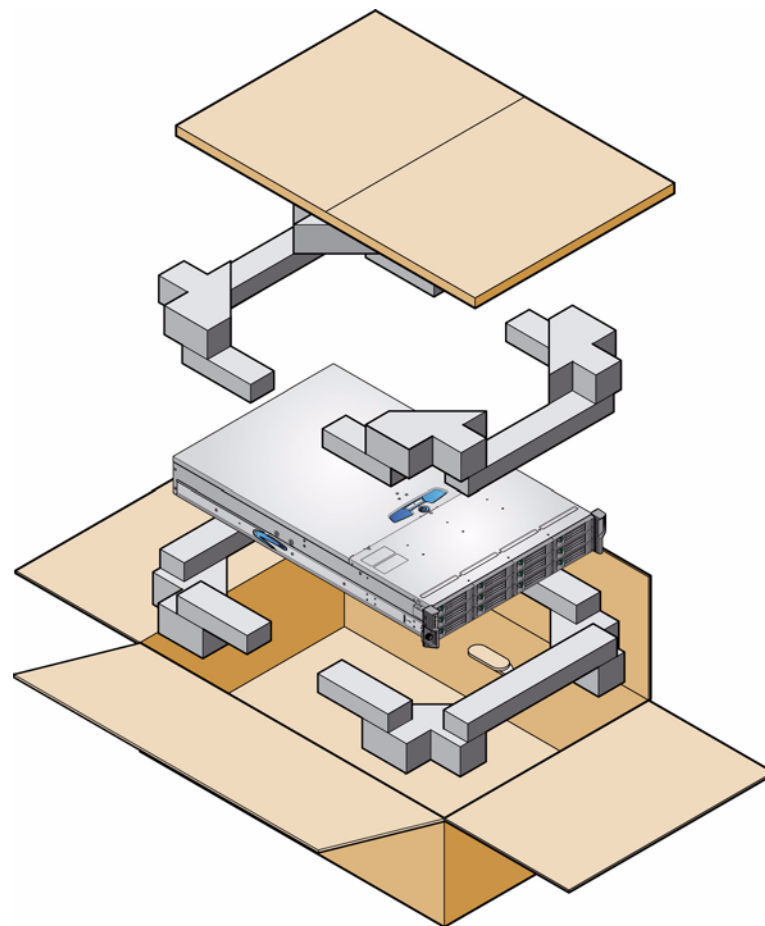
Caution: Ensure that you have fitted and checked a suitable anti-static wrist or ankle strap and observe all conventional ESD precautions when handling modules and components. Avoid contact with backplane, server board and PCI card components and module connectors, etc.

Preparation of Site and Host Server

Before beginning, make sure that the site where you intend to set up and use your Intel® Storage Server SSR212MC2/SSR212MC2R has standard AC power available from an independent source or a rack power distribution unit with a UPS (universal power supply).

Unpacking the Enclosure System

The package contents and unpacking procedure are outlined in the following figure.



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Figure 14. Unpacking the Intel® Storage Server SSR212MC2/SSR212MC2R

Planning and Configuring Your Installation

Refer to “[Planning Your Installation](#)” on page 15 for information on overall system configuration requirements.

When planning your system configuration, remember that all drive bays must be filled with either a drive carrier module or a dummy drive carrier module; no drive bays can be left empty.

Refer to the *Quick Start User's Guide* that shipped with your system for instructions on installing the processors, drives, and memory.

For third-party software solutions, refer to the documentation provided by your vendor for installing operating systems or additional hardware.

Rack Installation Prerequisites

The Intel® Storage Server SSR212MC2/SSR212MC2R is designed for installation into an industry standard 19-inch cabinet capable of holding the unit.

- Minimum depth: 707 mm (27.83 inches) from rack posts to maximum extremity of enclosure (excludes rear cabling).
- Weight: up to 30 kg, dependent upon configuration, per enclosure.
- A minimum gap of 25-mm (1-inch) clearance is required between the rack cover and front of drawer. A 50-mm (2-inch) rear clearance between rear of drawer and rear of rack is recommended to maintain correct airflow around the enclosure.
- The rack should present a maximum back pressure of 5 pascals (0.5mm water gauge).

Warning: *Operation of the enclosure system with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the unit. Dummy drive carrier modules and/or blanking plates are available for this purpose.*

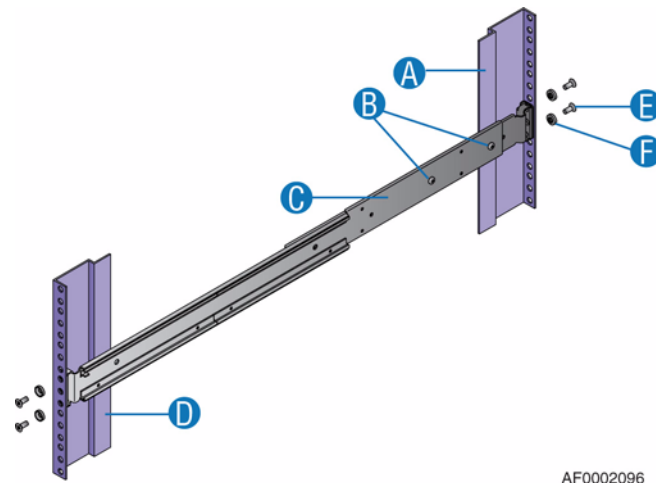
Installing the Enclosure in a Rack

A set of rack-mounting rails is provided with the system for installing the Intel® Storage Server SSR212MC2/SSR212MC2R in a 19-inch rack cabinet. These rails have been designed and tested to handle the maximum weight of the enclosure and to ensure that multiple enclosures may be installed without loss of space within the rack. Use of other mounting hardware may cause some loss of rack space.

Contact your supplier to ensure suitable mount rails are available for the rack you are using.

Rail Kit Assembly

Refer to the *Rail Kit Install Guide: Intel® Storage Server SSR212MC2/SSR212MC2R* for instructions on assembling the rail kit.



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A. Rear Rack Post
B. Clamping Screws
C. Rack Bracket ASM
D. Front Rack Post
E. Slide Screw (4)
F. Slide Washer (4)

Figure 15. Rack Mount Rail Kit

Enclosure Installation

1. Check for damage.
2. Lift enclosure and align with front rails.
3. Carefully insert enclosure slides into rack rails and push fully home.
4. Tighten rear screws.
5. Withdraw enclosure until it reaches hard stops (approximately 400 mm).
6. Tighten front screws.
7. Return enclosure to fully home position and attach to rack using captive fasteners on front flanges.

Important: Rack rails have features to restrict complete enclosure withdrawal while still allowing access to the cooling fans. If it becomes necessary to completely remove the system, pull the enclosure out until it stops then rotate the latches, shown in [Figure 15](#) (right hand up, left hand down), to completely remove the enclosure from the rack.

Module Installation

The Intel® Storage Server SSR212MC2/SSR212MC2R is delivered with backplane PCB, server board, enclosure management PCB, SAS expander PCB, Front Operator's Panel, and all plug-in modules pre-installed. The Intel® Storage Server SSR212MC2R also ships with an Intel® RAID Controller SRCAS144E and an Intel® Intelligent AXXRIBBU1 Battery Backup Unit pre-installed.

For information on removal/replacement of plug-in modules, see [“Hardware Installations and Upgrades”](#) on page 25.

Dummy Drive Carrier Modules

Dummy drive carrier modules must be fitted in all unused drive bays to maintain a balanced airflow throughout the system.

Blanking Plates

Blanking plates must be fitted in any vacant PSU bay or PCI card slot at the rear of the enclosure to maintain proper airflow and system operation.

Important: *Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling.*

Power Cord Connection

Important: *To ensure redundancy in a dual PSU setup, each power cord must be connected to separate and independent power supplies.*

Caution: *The power connection must always be disconnected prior to removal of a PSU from the enclosure.*

See [“Connecting the Power Cord\(s\)”](#) on page 33 for instructions on connecting your storage system to a power source.

Grounding Checks

The Intel® Storage Server SSR212MC2/SSR212MC2R must only be connected to a power source that has a safety electrical earth connection.

Warning: *If more than one enclosure is fitted in a rack, the earth connection to the rack is even more important, because the rack will have a high “EARTH LEAKAGE CURRENT” (“TOUCH CURRENT”).*

Before powering on, the earth connection to the rack must be checked by an electrical engineer who is qualified in local and National electrical standards.

3 Operation

Before You Begin

Before powering up the Intel® Storage Server SSR212MC2/SSR212MC2R ensure that all modules are firmly seated in their correct bays.

Power On

Caution: Do not operate the Intel® Storage Server SSR212MC2/SSR212MC2R until the ambient temperature is within the specified operating range. If the drives have been recently installed, ensure they have had time to acclimate before operating them.

Note: See “[Front Operator’s Panel LEDs and Switches](#)” on page 22 for details on Front Operator’s Panel LEDs and related fault conditions.

Apply AC mains power to power on the enclosure.

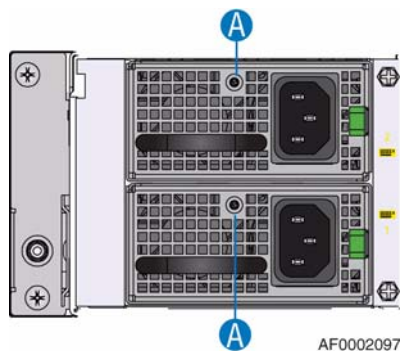
The Power Active LED on the Front Operator’s Panel will light up green once power is activated. The disk drive motors will also start running.

Important: If mains power is lost for any reason, upon restoration of power, the enclosure will re-start automatically.

Power Supply Unit LED

Each PSU has a bi-color red/green LED.

- When the PSU is connected to a mains supply, the LED will flash green.
- When the PSU is switched on, the LED will illuminate a constant green.
- If a fault occurs, the LED will illuminate a constant red.
- If an over current, under voltage or over voltage protection condition occurs, the LED will flash red.

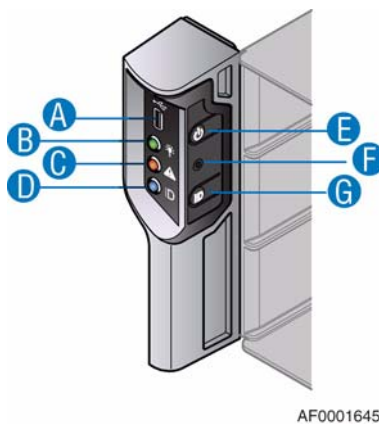


A. PSU LED

Figure 16. Power Supply Unit LEDs

Front Operator's Panel LEDs and Switches

The Front Operator's Panel LED fault and status conditions are defined in [Table 5](#). Functions of the push-button switches are defined in [Table 6](#).



A. USB Port
B. Power Active LED
C. Unit Fault LED
D. ID LED
E. On/Off Switch
F. Reset Button (recessed)
G. ID LED Activation Switch

Figure 17. Front Operator's Panel

Table 5. Front Operator's Panel LED States

LED	Status
Power Active	Constant Green: good or positive indication.
Unit Fault	Constant Amber: fault present
Enclosure ID	Blue: <i>only when activated</i>

Table 6. Front Operator's Panel Switch Functions

Push-button Switch	Definition
On/Off	Function of this button is dependent on the enclosure status. Enclosure connected to power source but not operating: Press button to activate and commence boot process. Enclosure operating: Depress button for <4 seconds to shut down the enclosure.
System Reset	Resets the enclosure hardware and firmware. This button is recessed and is activated with a ball-point pen or similar implement.
Enclosure ID	Each press of this button causes the state of the blue ID LED on the Front Operator's Panel and rear panel to change.

Starting the Drives

Unless otherwise selected during installation, all drives in the enclosure should automatically start their motors during power on. If this does not occur then one of the following conditions may exist:

- There may be a power problem (an alarm and power fault indication would normally be present).
- In the presence of only one PSU, the drive motors will spin up in a delayed sequence.

Disk Drive LEDs

Each drive carrier module has two LEDs, an upper (green) LED and a lower (amber) LED.

- During normal operation, the green LED will be ON and will flicker to indicate drive activity. It will also be on when no drive is present. It is off when the drive is not spun up.
- During normal operation, the amber LED will be:
 - OFF if no drive is present
 - OFF as the drive operates
 - ON if a drive fault exists.

Engaging the Drive Module Anti-tamper Locks

An anti-tamper lock is fitted in each drive carrier handle and can be accessed through the small cutout in the latch section of the handle with a TORX* screwdriver. A lock symbol displays in the small aperture beside the torque screw when the drive is locked.

Activating an Anti-tamper Lock

See “[Activating an Anti-tamper Lock](#)” on page 40 for instructions on activating an anti-tamper lock.

De-activating an Anti-tamper Lock

Note: *A drive carrier cannot be installed if its anti-tamper lock is activated outside the enclosure.*

See “[De-activating an Anti-tamper Lock](#)” on page 41 for instructions on de-activating an anti-tamper lock.

Power Down

Note: *Refer to your storage software documentation for any power down procedures before powering down the system.*

To power down the enclosure, either:

- Switch off the PSU(s) installed in the enclosure by pressing the power push-button on the Front Operator’s Panel for approximately 3 seconds,

or

- Remove AC mains at the power source.

4 Hardware Installations and Upgrades

This chapter provides instructions for removing, installing, and replacing storage system components in your Intel® Storage Server SSR212MC2/SSR212MC2R.

Caution: *When connecting the Intel® Storage Server SSR212MC2/SSR212MC2R to a power source, use either the power cords that shipped with the system, or match the power cord specifications listed under “Power Cord” on page 134.*

Caution: *It is recommended that you fit and check a suitable anti-static wrist and conductive foam pad and observe all conventional ESD precautions when handling storage system modules and components. Avoid contact with the backplane components and module connectors.*

Before You Begin

Before working with your storage system, review the important ESD precaution and safety information listed in “Safety Information” on page 189.

Tools and Supplies Needed

- #10 TORX* screwdriver
- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- Needle-nosed pliers
- Anti-static wrist strap and conductive foam pad (recommended)

System References

All references to left, right, front, top, and bottom assume the reader is facing the front of the storage system as it would be positioned for normal operation.

Planning Your Installation

Power down your host computer and all attached peripheral devices before beginning installation.

If the storage system is used with modules or blanking plates missing for more than a few minutes, the system can overheat, causing power failure and data loss. Such use may also invalidate the warranty.

All modules and/or blanking plates must be in place for the air to flow correctly around the storage system and to complete the internal circuitry.

Before beginning your storage system installation, review the configuration requirements listed in [Table 4 on page 15](#).

Removing or Installing the Enclosure Cover

Warning: *The enclosure cover must only be removed by a qualified service person as it provides access to a service area. Potential hazards include:*

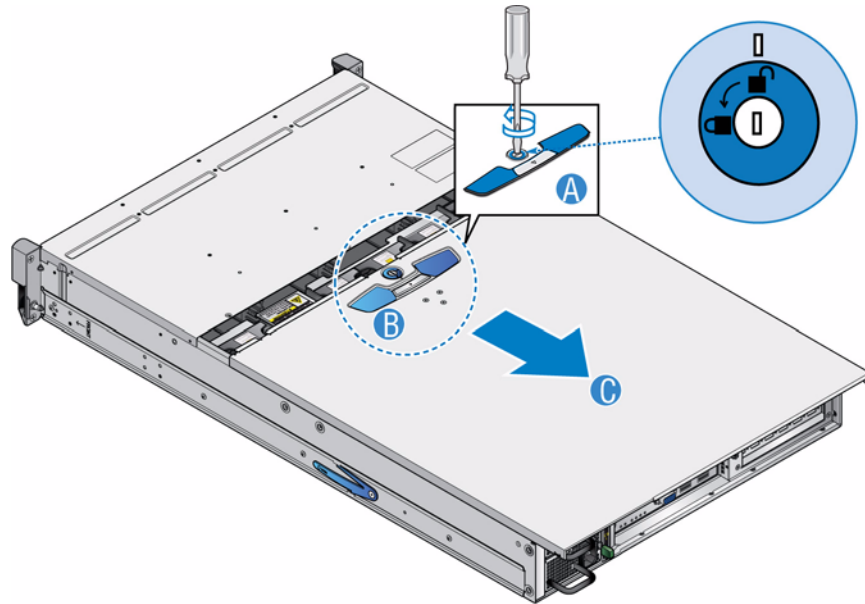
- *Energy hazard*
- *Rotating fans*
- *Hot surfaces*
- *Access to power supply unit openings*

Upon replacement, the cover MUST be secured by tightening the retaining screw with a screwdriver.

Removing the Enclosure Cover

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).

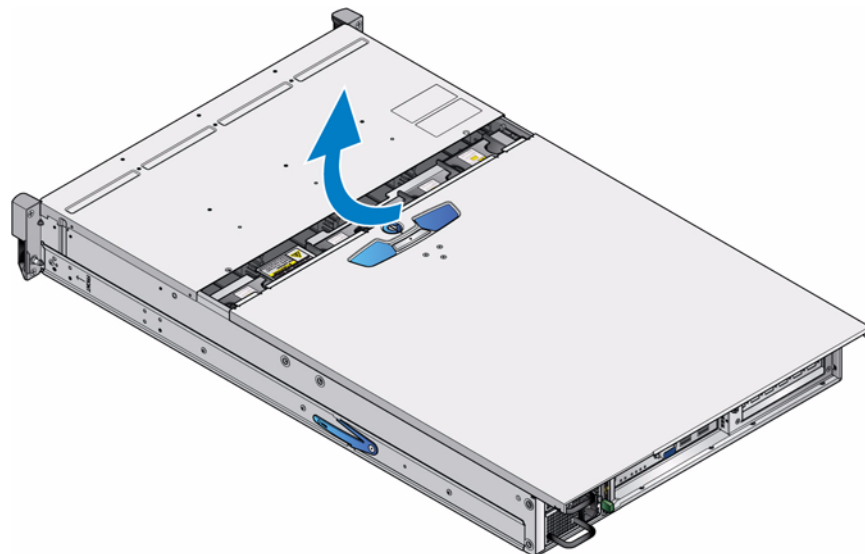
2. Release the enclosure cover by using a flat-head screwdriver to turn the lock mechanism to the unlocked position (see letter “A” in the following figure). Press in on the palm latch (see letter “B”) and slide the enclosure cover back (see letter “C”) until it stops.



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Figure 18. Unlatching Enclosure Cover

3. Lift the cover to completely remove it from the chassis.



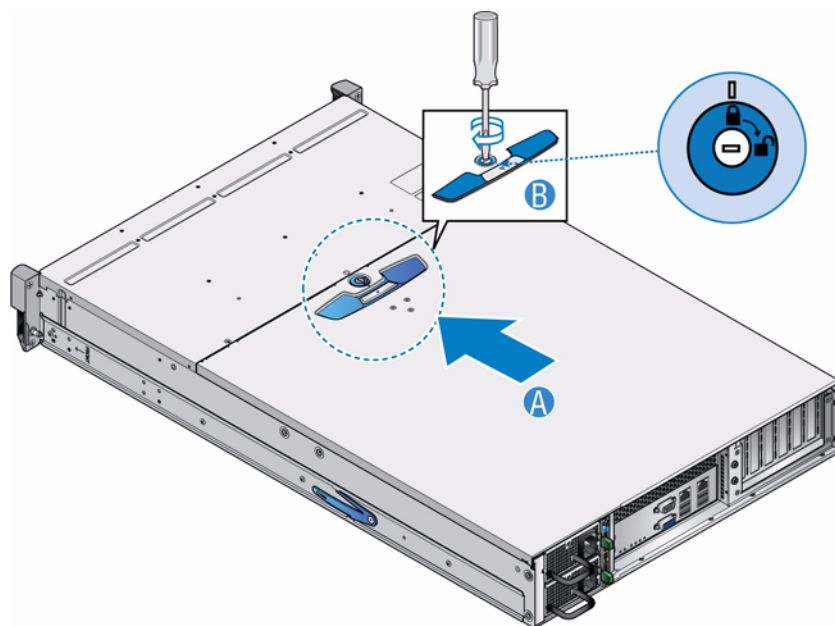
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Figure 19. Removing Enclosure Cover

Installing the Enclosure Cover

Important: The enclosure cover *MUST* be secured to the chassis by tightening the retaining screw with a screwdriver.

1. Observe all safety and ESD precautions listed in “Safety Information” on page 189.
2. Align the enclosure cover over the sides of the chassis. Slide the enclosure cover toward the front of the chassis (see letter “A” in the following figure). With a screwdriver, secure the enclosure cover to the chassis by tightening the lock a quarter turn until the close lock symbol aligns with the notch on the cover (see letter “B”).



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Figure 20. Installing Enclosure Cover

Replacing a Module

Caution: NEVER leave an EMPTY bay or slot in the rear of the enclosure after removing a module. Either install a replacement module or fit with a blanking plate.

Removing or Installing a Power Supply Unit

Warning: Do not remove covers from a PSU. Danger of electric shock exists inside. Return the PSU to your supplier for repair.

A PSU can be replaced if it fails. If your storage system uses a redundant power supply system, you do not need to power down the system to replace the failed PSU as long as the remaining PSU is plugged into an AC power source and is functioning.

Important: *If only one PSU is used in the storage system, a blanking plate must be fitted in the unused upper slot. Operation of the storage system with ANY modules missing will disrupt airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the system.*

Removing a Power Supply Unit

Warning: *Removal a PSU must only be performed by a qualified service person. Potential hazards include:*

- Energy hazard*
- Hot surfaces*
- Access to PSU openings*

Note: *The storage system does not need to be powered down if replacing a failed PSU in a hot swap (redundant) power supply system. The storage system must be powered down if replacing a failed PSU in a single non-redundant power supply system.*

Caution: *Before performing any maintenance on the system, back up the data. Follow the instructions in the operating system manual or third-party software documentation for shutting down the system.*

Warning: *Do not remove a faulty redundant power supply module unless you have a replacement module of the correct type ready for insertion.*

Warning: *A failed redundant power supply module should be replaced in less than 30 seconds to ensure proper airflow.*

Important: *Prior to removing a PSU from the enclosure and to ensure the system has warning of an imminent power shutdown, disconnect power to the PSU by either switching off the mains switch (where present) or physically removing the power cord.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. For non-redundant power supply systems only, power down the storage system. See your operating system manual for instructions on powering down the system.
3. For redundant PSU systems, make sure you correctly identify the faulty PSU to be replaced.
4. Switch off and disconnect the power supply bail. Disconnect the power supply cord to the faulty PSU.

5. Press the locking tab to the left.

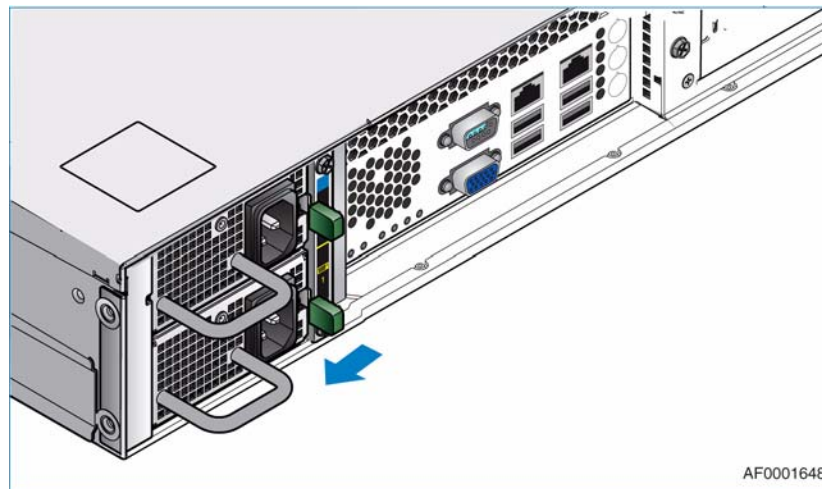


Figure 21. Unlatching a Power Supply Unit

6. Grip the handle and withdraw the PSU from the mounting cage.

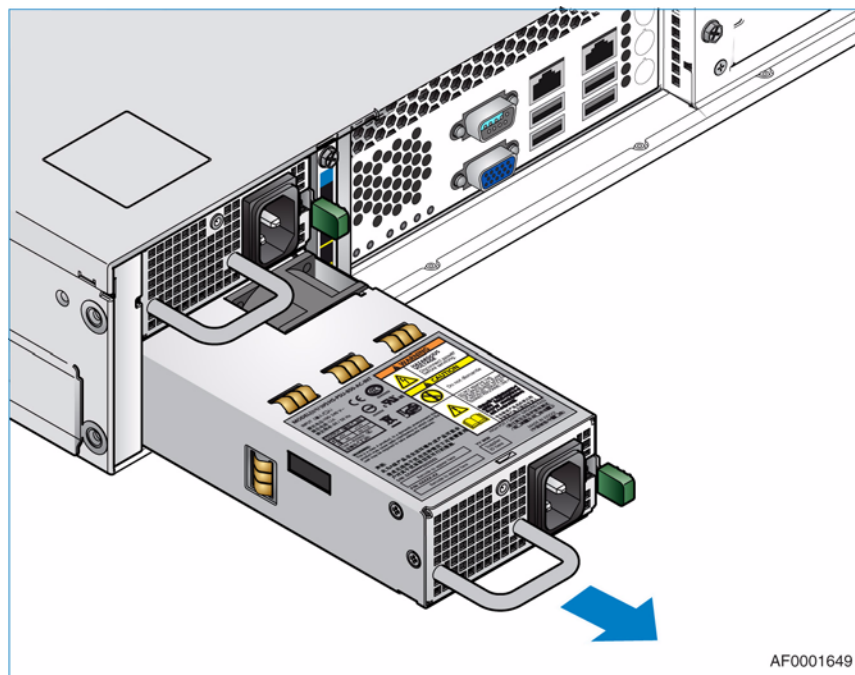


Figure 22. Removing a Power Supply Unit

Installing a Power Supply Unit

Caution: Before performing any maintenance on the system, back up the data. Follow the instructions in the operating system manual for shutting down the system.

Warning: This procedure should only be performed by qualified service personnel.

Important: If only one PSU is fitted, a blanking plate must be fitted to cover the upper PSU slot. Operation of the enclosure with ANY modules missing will disrupt the airflow and the drives will not receive sufficient cooling. It is ESSENTIAL that all apertures are filled before operating the unit.

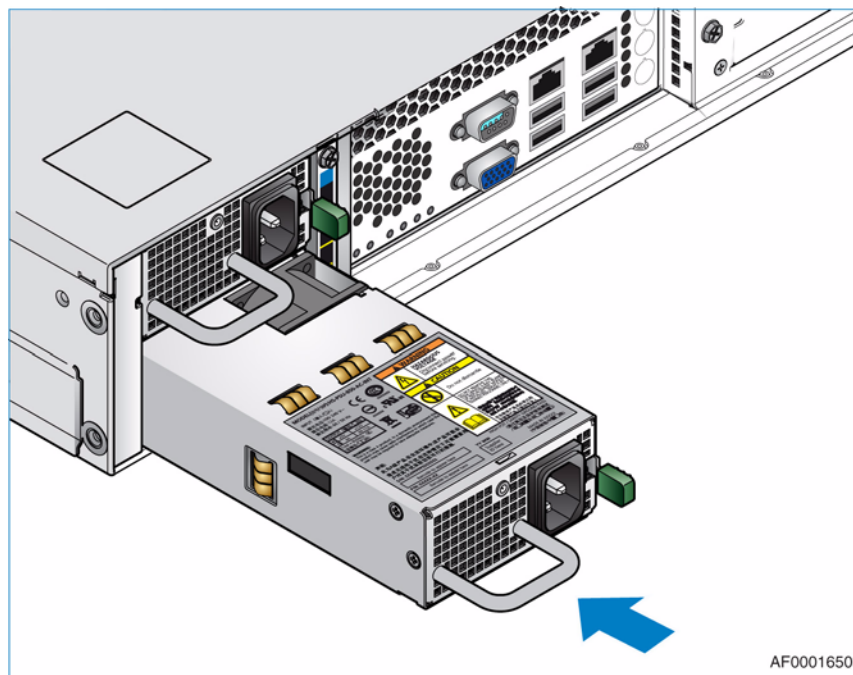
Warning: Do not remove the covers from a PSU. Danger of electric shock exists inside. Return the PSU to your supplier for repair.

Caution: Handle the PSU carefully and avoid damaging the connector pins. Do not install the PSU if any pins appear to be bent.

Important: If only one PSU is to be installed in the storage system, it must be installed in the bottom slot (Slot 1). A blanking plate must be fitted to cover the empty upper slot (Slot 2).

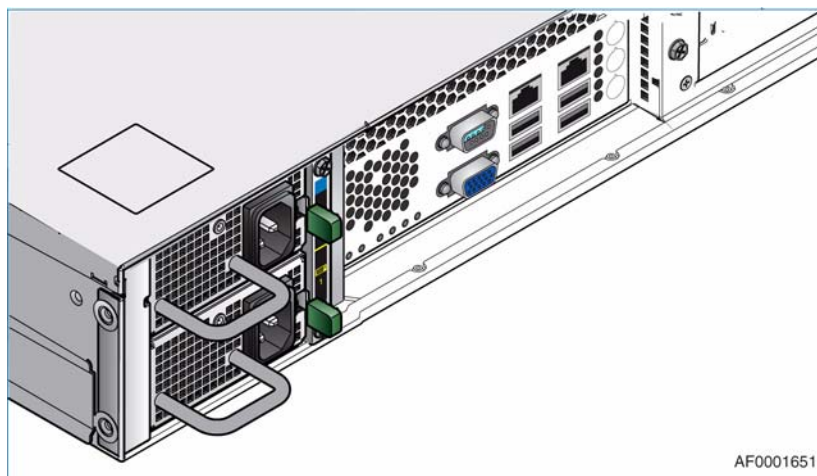
To install a replacement PSU or to add a redundant PSU, do the following:

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Check for damage to the new PSU, especially to the rear connector on the module.
3. Slide the PSU into the mounting cage. A click should be heard as the securing spring engages.



AF0001650

Figure 23. Installing a Power Supply Unit



AF0001651

Figure 24. Power Supply Unit in Place

4. Connect the AC power cable to the new PSU. Secure the power cord plug with the power supply bail.
5. On non-redundant power supply systems, power up the storage system.

Connecting the Power Cord(s)

Important: To ensure redundancy in a redundant power supply system, the power cords must be connected to separate and independent power sources.

Caution: Power connection must always be disconnected prior to removal of a PSU from the system.

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Attach a power cord to each installed PSU. The Power On LED (see “A” in the following figure) for each PSU will blink green when AC mains power is present. The Power On LED will illuminate a constant green when power to the PSU is turned on.

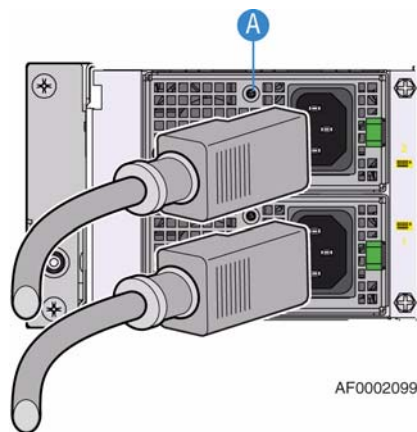


Figure 25. Connecting Power Cords

Grounding Checks

This product must only be connected to a power source with a safety electrical earth connection.

Warning: If more than one product is fitted in a rack, the earth connection to the rack is even more important because the rack will have a high “EARTH LEAKAGE CURRENT” (“TOUCH CURRENT”).

Prior to switching on, ensure that the earth connection to the rack has been checked by an electrical engineer qualified in local and national electrical standards.

Replacing a Cooling Fan

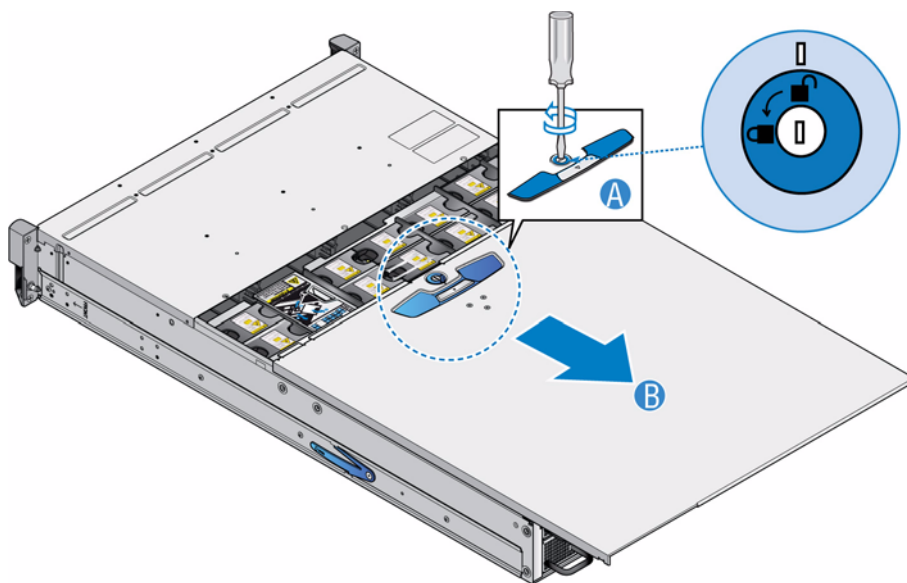
The Intel® Storage Server SSR212MC2/SSR212MC2R has ten fans in its cooling cage to ensure proper cooling of the system. Each cooling fan can be individually replaced.

Warning: *The enclosure cover should only be removed by qualified service personnel as it provides access to a service area. Potential hazards include:*

- Energy hazard
- Rotating fans
- Hot surfaces
- Access to PSU openings

Warning: *Upon completion of fan replacement, the enclosure cover MUST be properly closed and latched by turning the lock mechanism to the “locked” position.*

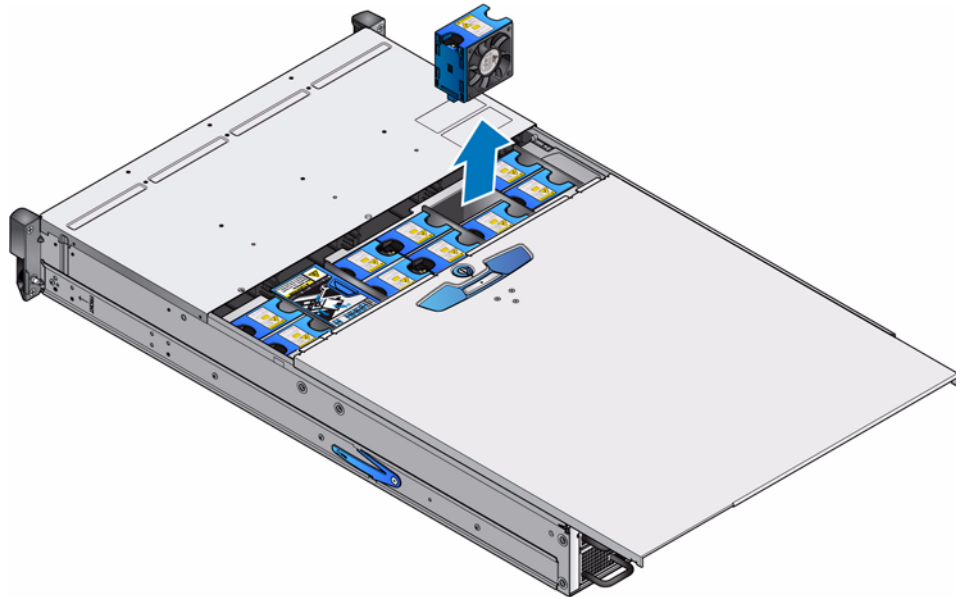
1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Release the enclosure cover by using a flat-head screwdriver to turn the lock mechanism to the “unlocked” position (see letter “A” in the following figure). Slide the cover back until it stops (see letter “B”).



AF0002100

Figure 26. Releasing the Enclosure Cover

3. Grip the faulty fan with finger and thumb and pull it upwards to unplug it from the enclosure management PCB. Remove fan from the enclosure.

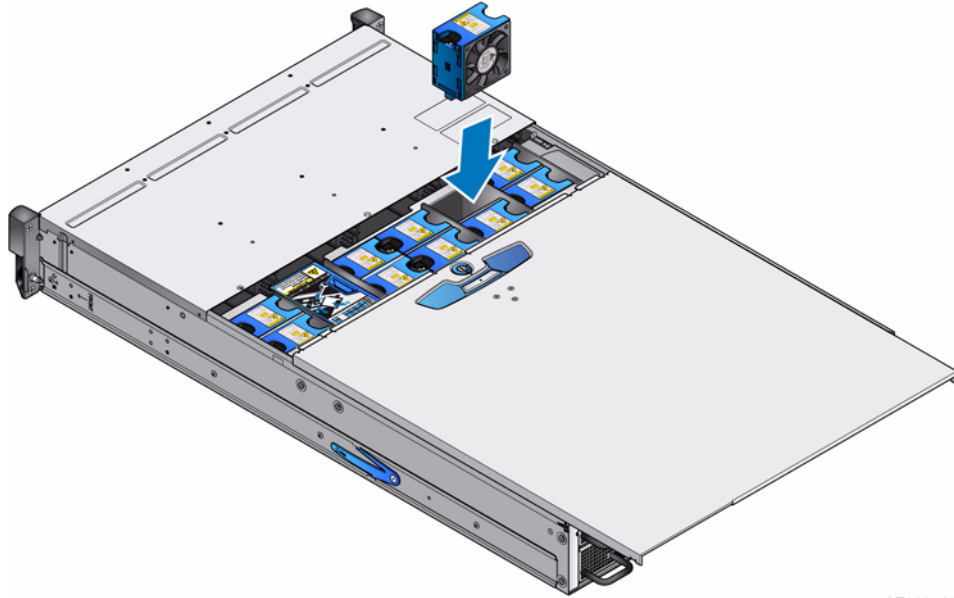


AF0001652

Figure 27. Removing a Cooling Fan

4. Check the new fan for damage. Do not install it if there are any visible signs of damage.

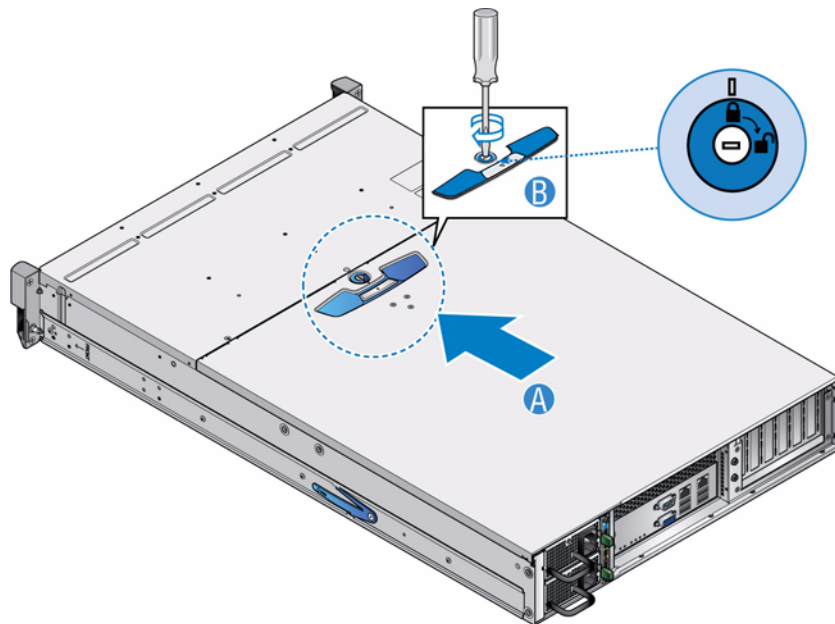
5. Grip the fan and push it all the way into the empty fan slot until it fits firmly and is level with the other fans. When properly installed, the fan will plug into the enclosure management PCB. Ensure that the fan LED extinguishes within 10 seconds of installation.



AF0001653

Figure 28. Installing a Cooling Fan

6. Close the enclosure cover and latch securely by turning the lock mechanism to the “locked” position.



AF0002098

Figure 29. Re-installing Enclosure Cover

Removing and Installing a Drive Carrier Module

Warning: Observe all conventional ESD precautions when handling modules and components. Avoid contact with backplane components and module connectors, etc.

Removing a Drive Carrier Module

Warning: *Drive spin down* - Damage can occur to a drive if it is removed while still spinning. If possible, use the operating system to spin down a drive prior to its removal. If not possible, perform **all** steps of the following procedure to ensure that the drive has stopped spinning prior to removal.

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. If the anti-tamper lock has been activated, see “[De-activating an Anti-tamper Lock](#)” on page 41 for instructions on de-activating the lock.
3. Release the carrier handle by pressing the latch in the handle towards the handle hinge.

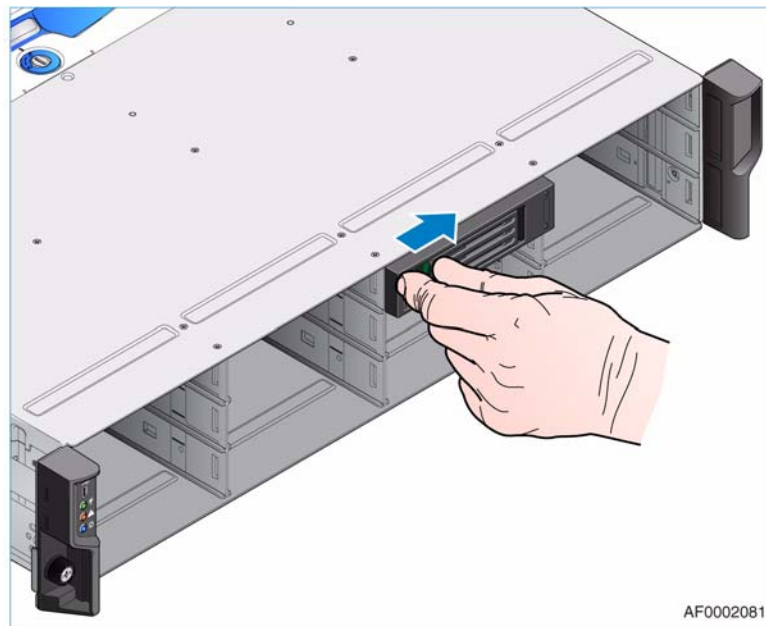


Figure 30. Unlatching a Drive Carrier Module

4. Gently withdraw the drive carrier module approximately 1 inch (25 mm) and wait 30 seconds before proceeding.

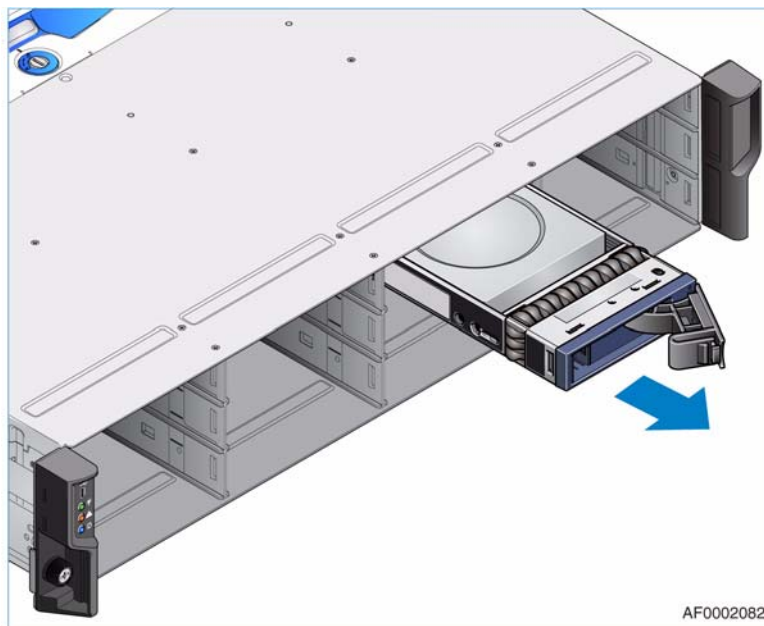


Figure 31. Removing a Drive Carrier Module

5. After 30 seconds, withdraw the drive carrier module completely from the drive bay.

Caution: *Dummy Drive Carrier modules MUST be fitted in ALL unused drive bays. There will be inadequate drive cooling if any are left open.*

Installing a Drive Carrier Module

Important: *A drive carrier module cannot be installed if its anti-tamper lock has been activated outside the enclosure. See “[De-activating an Anti-tamper Lock](#)” on page 41 for instructions on de-activating the lock.*

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Release the drive carrier handle by depressing the latch in the handle.

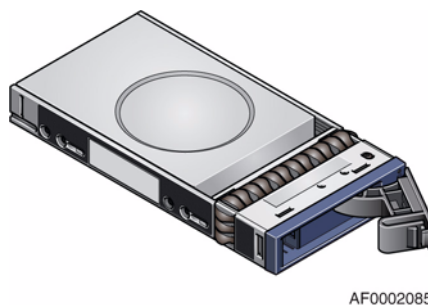


Figure 32. Unlatching a Drive Carrier Handle

3. Insert the drive carrier module into the drive bay.

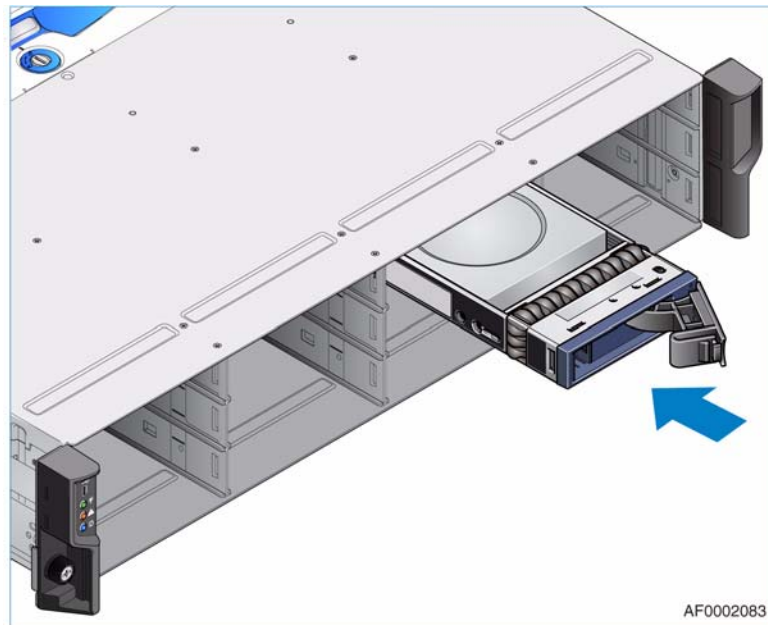


Figure 33. Installing a Drive Carrier Module

Important: Ensure that the carrier is orientated so that the drive is uppermost and the handle opens from the left, as shown in [Figure 33](#).

4. Gently slide the drive carrier module all the way into the enclosure.
5. Cam the drive carrier home until the camming foot on the base of the drive carrier engages with the enclosure. Continue to push firmly until the handle fully closes. A click should be heard as the latch engages and holds the handle closed.

Caution: Ensure that all drive carriers are fully engaged in the enclosure by pushing each one firmly into its slot, as shown in [Figure 34](#).

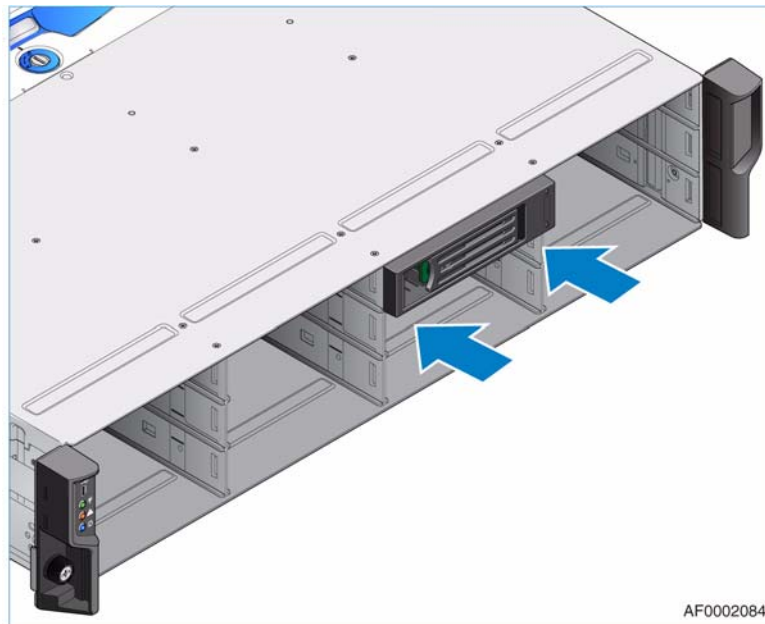


Figure 34. Engaging a Drive Carrier Module in the Enclosure

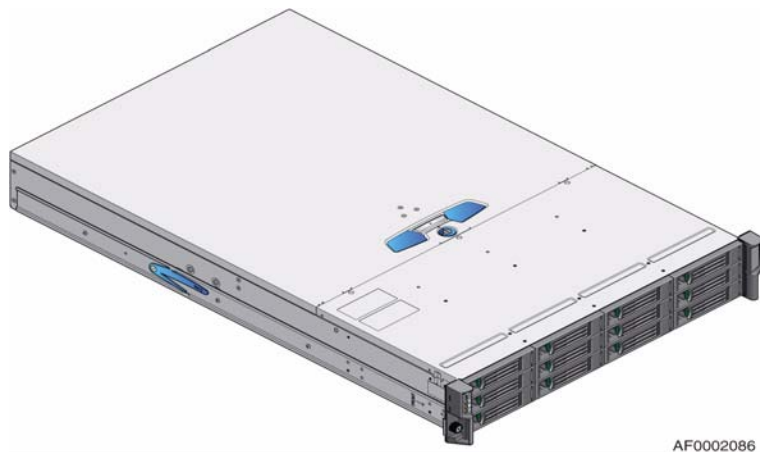


Figure 35. All Drive Carrier Modules Installed in Enclosure

Activating an Anti-tamper Lock

1. Carefully insert the TORX* screwdriver provided into the cutout in the handle (see letter “A” in the following figure).
2. Rotate the screwdriver in a clockwise direction until the lock symbol is visible in the aperture beside the key (see letter “B”).

Note: Do not turn the lock more than half a turn otherwise the drive carrier may be damaged.

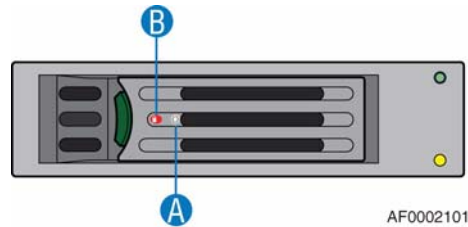


Figure 36. Activating an Anti-tamper Lock

3. Remove the screwdriver.

De-activating an Anti-tamper Lock

1. Carefully insert the TORX* screwdriver provided into the cutout in the handle (see letter “A” in the following figure).
2. Rotate the screwdriver in an anti-clockwise direction until the lock symbol is no longer visible in the aperture beside the key (see letter “B”).

Note: Do not turn the lock more than half a turn otherwise the drive carrier may be damaged.

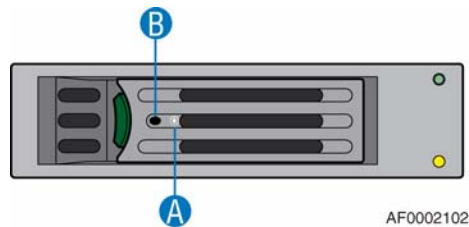


Figure 37. De-activating an Anti-tamper Lock

3. Remove the screwdriver.

Removing and Installing a Hard Drive into a Drive Carrier

Removing a Hard Drive from a Drive Carrier

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. See “[Removing a Drive Carrier Module](#)” on page 37 for instructions on removing a drive carrier from a drive bay.
3. Remove the four screws securing the hard drive to the drive carrier (see letter “A” in the following figure). Lift the hard drive out of the drive carrier.

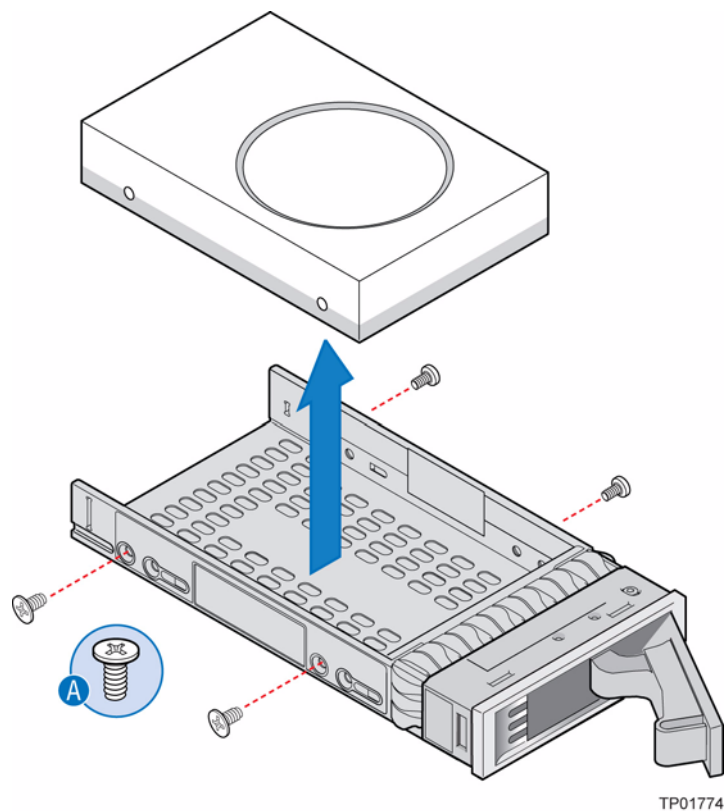
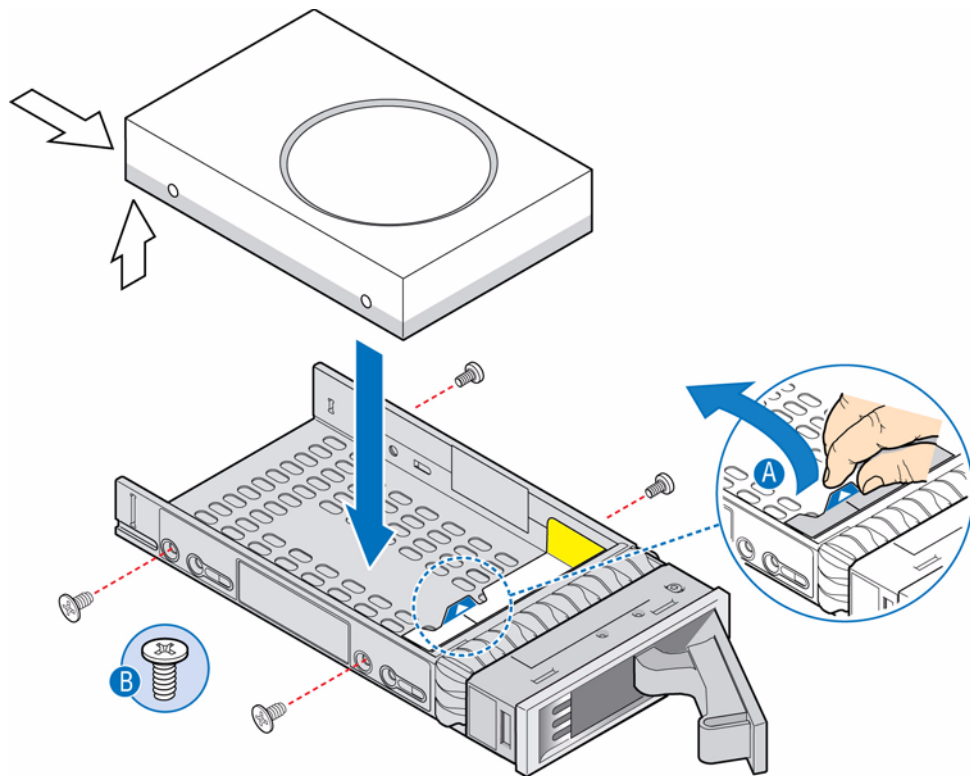


Figure 38. Removing Hard Drive from Drive Carrier

4. If replacing the hard drive, see “[Installing a Hard Drive into a Drive Carrier](#)” on page 43 for instructions on installing a hard drive into a drive carrier. If not replacing the hard drive, ensure that a blank drive carrier is fitted in the drive bay.
5. For instructions on re-installing the drive carrier into the drive bay, see “[Installing a Drive Carrier Module](#)” on page 38.

Installing a Hard Drive into a Drive Carrier

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. See “[Removing a Drive Carrier Module](#)” on page 37 for instructions on removing a drive carrier from a drive bay.
3. If replacing a hard drive, see “[Removing a Hard Drive from a Drive Carrier](#)” on page 42 for instructions on removing a hard drive from a drive carrier.
4. If not previously removed, remove the label from the inside of the drive carrier by pulling up on the blue tab (see letter “A” in the following figure). Insert the hard drive into the drive carrier, ensuring that the top of the hard drive faces up and the connector end of the hard drive faces the rear of the drive carrier. Secure the hard drive to the drive carrier with four screws (see letter “B”). Set any jumpers for the hard drive.



TP01829

Figure 39. Installing Hard Drive into Drive Carrier

5. For instructions on re-installing the drive carrier into the drive bay, see “[Installing a Hard Drive into a Drive Carrier](#)” on page 43.

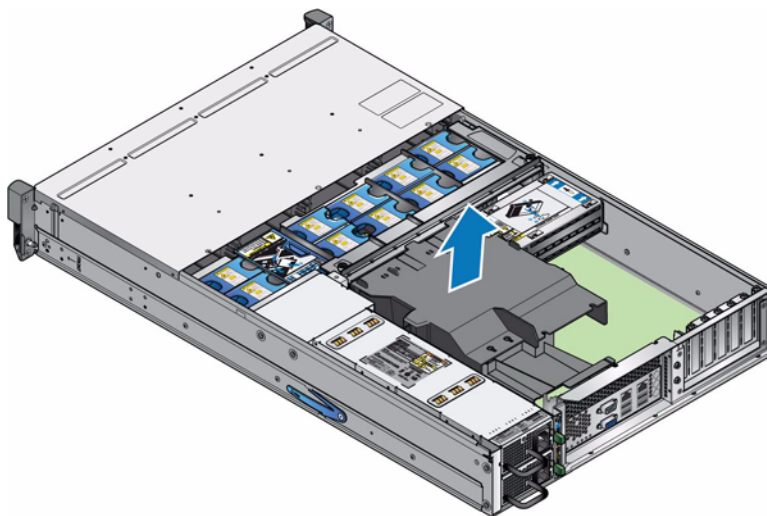
Removing and Installing the Processor Air Duct

Always operate your storage system with the processor air duct in place. The air duct is required to maintain proper cooling of the processors.

Removing the Processor Air Duct

Caution: Before performing any maintenance on the system, back up the data. Follow the instructions in the operating system manual for shutting down the system.

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see “[Removing the Enclosure Cover](#)” on page 26.
5. Lift the processor air duct from its location over the processor sockets.



AF0002103

Figure 40. Removing the Processor Air Duct

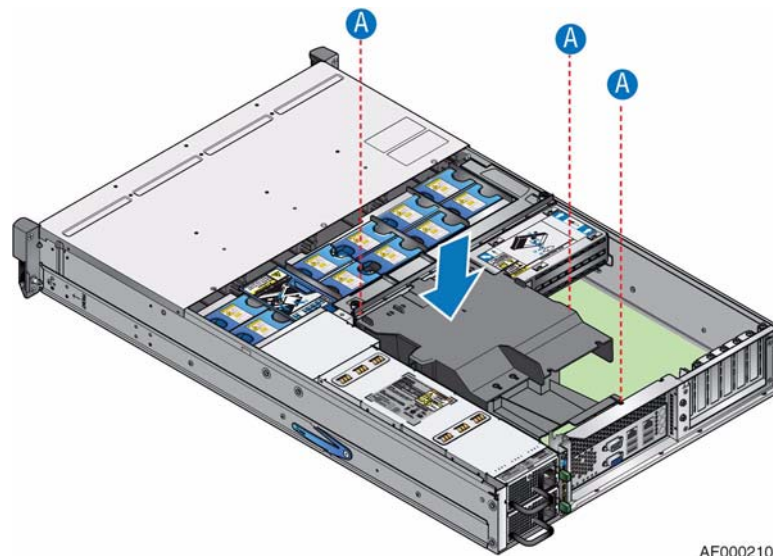
6. If removing a processor air duct as part of another procedure, continue with that procedure.

Installing the Processor Air Duct

Caution: Before performing any maintenance on the system, back up the data. Follow the instructions in the operating system manual for shutting down the system.

Warning: Do not operate the Intel® Storage Server SSR212MC2/SSR212MC2R without the presence of a processor air duct.

1. Observe all safety and ESD precautions listed in “Safety Information” on page 189.
2. If enclosure cover is not already removed, remove it. For instructions, see “Removing the Enclosure Cover” on page 26.
3. Install the processor air duct by aligning pins with slots (see letter “A” in the following figure).



AF0002104

Figure 41. Installing the Processor Air Duct

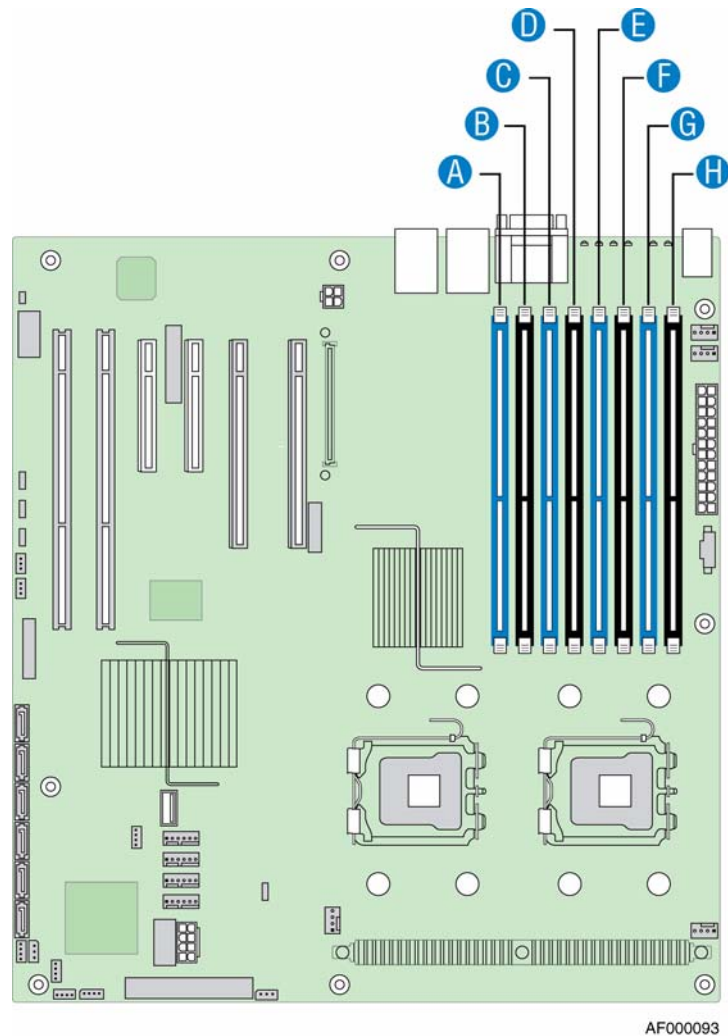
Installing and Removing Memory

The silkscreen on the board for the FBDIMMs displays DIMM_A1, DIMM_A2, DIMM_B1, DIMM_B2, DIMM_C1, DIMM_C2, DIMM_D1, and DIMM_D2, starting from the inside of the server board. DIMM_A1 is the socket closest to the MCH. Refer to the *Tested Hardware and Operating Systems List* on <http://support.intel.com/support/motherboards/server/ssr212mc2/> for a list of supported memory FBDIMMs.

Installing FBDIMMs

1. Observe all safety and ESD precautions listed in “Safety Information” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.

3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover”](#) on page 26.
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct”](#) on page 44.
6. Locate the DIMM sockets.



Callout	DIMM Socket	Callout	DIMM Socket
A.	DIMM_A1	E.	DIMM_C1
B.	DIMM_A2	F.	DIMM_C2
C.	DIMM_B1	G.	DIMM_D1
D.	DIMM_B2	H.	DIMM_D2

Figure 42. Locating FBDIMM Sockets

7. Make sure the clips at each end of the DIMM socket is pushed outward to the open position (see letter “A” in [Figure 43](#)).
8. Holding the FBDIMM by its edges, remove it from its anti-static package.
9. Position the FBDIMM above the socket. Align the notch on the bottom edge of the FBDIMM with the key in the DIMM socket. The arrow for letter “B” in [Figure 43](#) is pointing to the key in the socket.
10. Insert the bottom edge of the FBDIMM into the socket.
11. When the FBDIMM is inserted, push down on the top edge of the FBDIMM until the retaining clips snap into place (see letter “C” in [Figure 43](#)).
12. Make sure the clips latch firmly in place (see letter “D” in [Figure 43](#)).

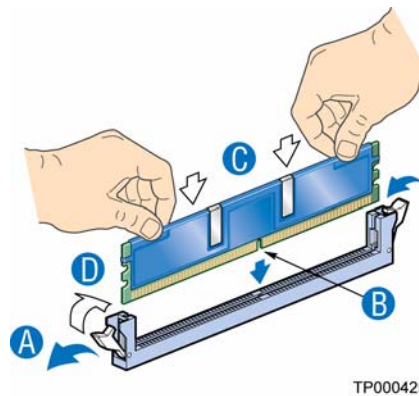


Figure 43. Installing FBDIMMs

13. Repeat the previous six steps for any additional FBDIMM installs.
14. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
15. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
16. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Removing FBDIMMs

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

6. Locate the DIMM sockets.

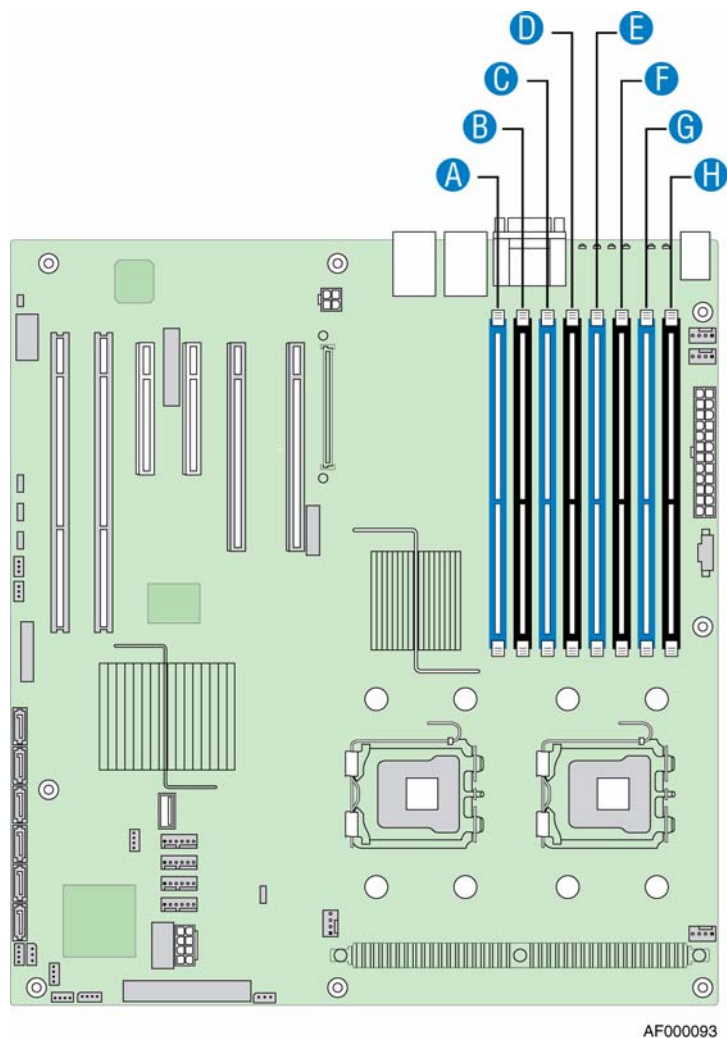


Figure 44. Locating FBDIMM Sockets

7. Push the clips at each end of the DIMM socket(s) outward to the open position. The FBDIMM lifts from the socket.
8. Holding the FBDIMM by its edges, lift it from the socket. Store the FBDIMM in an anti-static package.
9. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
10. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
11. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing a Processor

Caution: You may damage the server board if you install a processor that is inappropriate for your system. See <http://support.intel.com/support/motherboards/server> for a list of compatible processor(s) for the Intel® Storage Server SSR212MC2/SSR212MC2R.

Caution: Reduce the risk of 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.

Installing the Processor

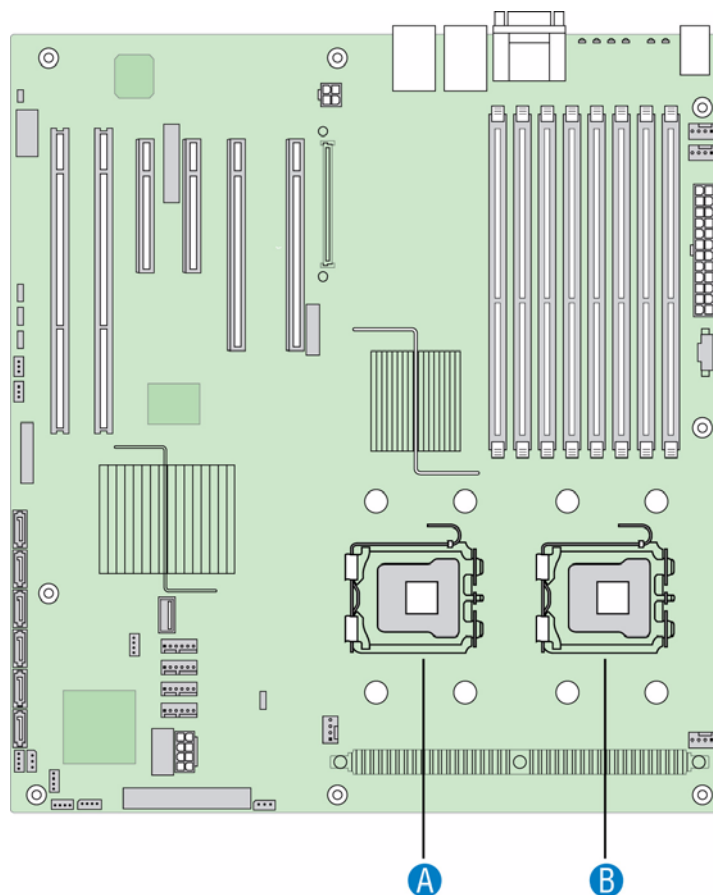
Caution: Before performing any maintenance on the system, back up the data. Follow the instructions in the operating system manual for shutting down the system.

Note: Do not touch the contacts on either the processor or the processor socket.

Do not force the processor socket into place. When correctly aligned, the socket will easily drop into place.

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see “[Removing the Enclosure Cover](#)” on page 26.
5. Remove the processor air duct. For instructions, see “[Removing the Processor Air Duct](#)” on page 44.

6. Locate the processor sockets.



AF000419

Callout	Processor Socket	Callout	Processor Socket
A.	CPU_2	B.	CPU_1 (Use this socket when installing a single processor.)

Figure 45. Locating Processor Sockets

7. Push down on the lever attached to the processor socket. While holding the lever down, pull it towards the center of the board to disengage the lever from the hook. Fully open the lever.

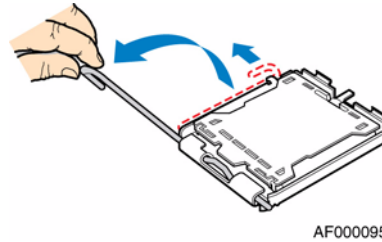


Figure 46. Opening Processor Socket Lever

8. Push down on the rear tab of the load plate to swing the front of the load plate up slightly. Fully open the load plate.

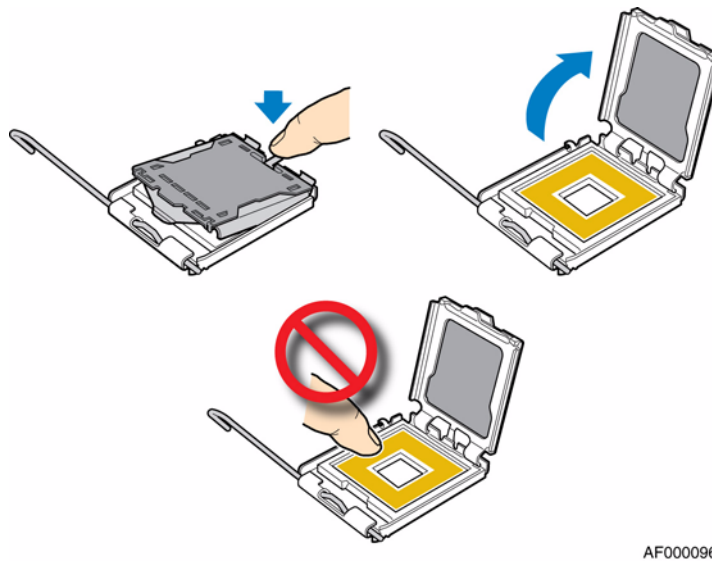


Figure 47. Opening Load Plate

9. If the protective cover is attached to the load plate, remove it and store it for future use.

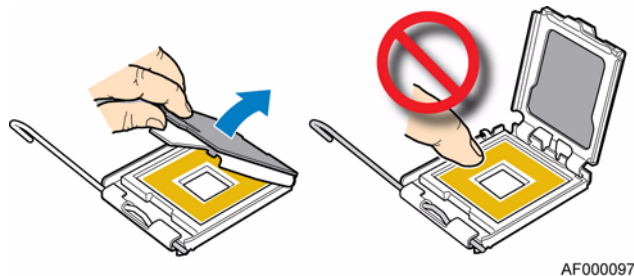


Figure 48. Removing Protective Cover from Load Plate

10. Remove the new processor from its protective shipping packaging.
11. Set the processor in the socket with the processor cut-outs matching the processor socket notches.

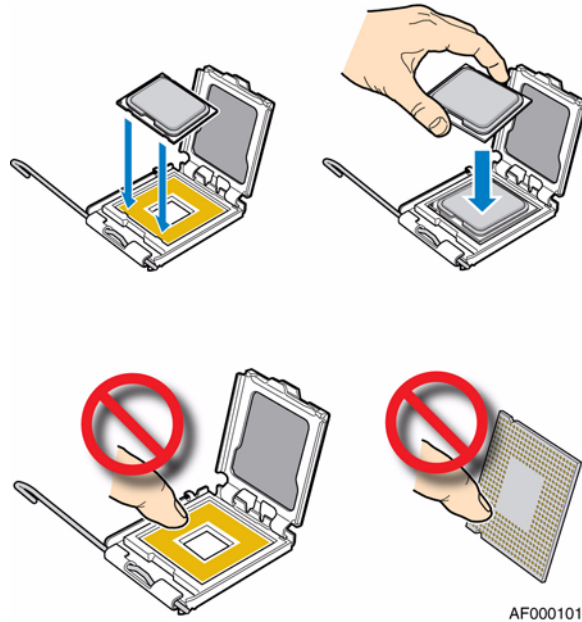


Figure 49. Setting Processor in Place

12. Close the load plate.
13. Close the socket lever. Push downward on the socket lever while pushing it toward the center of the processor socket to engage it under the hook.
14. Prepare the passive heatsink for installation. The heatsink has thermal interface material (TIM) located on the bottom of it. Use caution when handling the heatsink so as not to damage the TIM.

15. Set the heatsink over the processor, lining up the four captive screws with the four posts surrounding the processor. Loosely screw in the captive screws on the heatsink corners in the order shown in the following figure. Do not fully tighten one screw before loosely attaching the others. In the same order, gradually and equally tighten each captive screw until all are firmly tightened. Do not fully tighten one screw at a time.

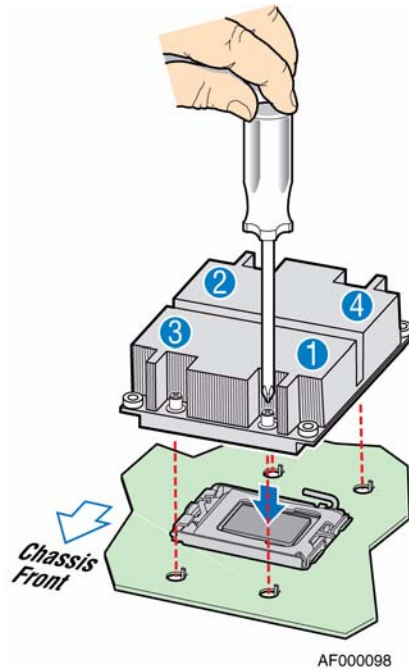


Figure 50. Installing Passive Heatsink

16. (If two processors are present) Turn processor air duct over to reveal underside. Remove second processor air dam by sliding slotted holes off of duct pins (see letter “A” in the following figure) then lift air dam off of processor air duct (see letter “B”).

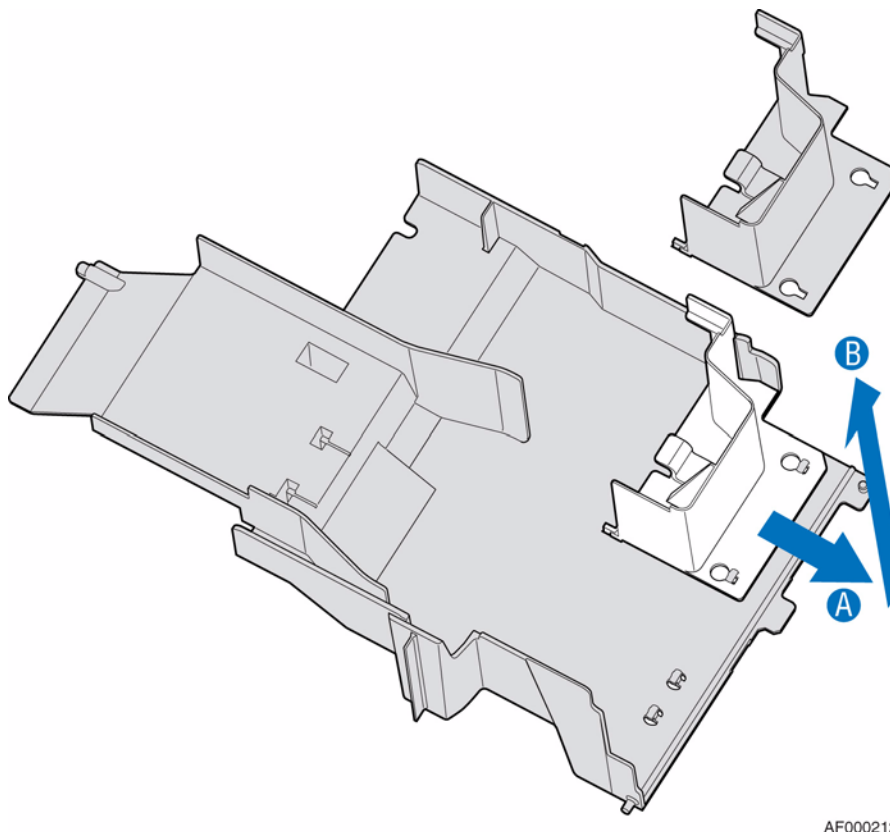


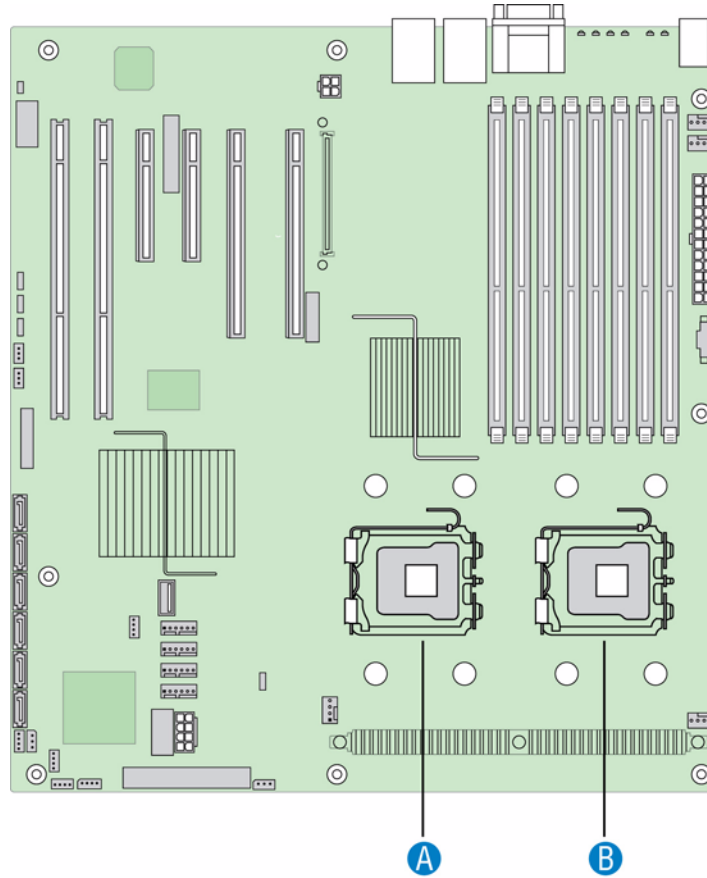
Figure 51. Removing Second Processor Air Dam

17. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct”](#) on page 45.
18. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover”](#) on page 28.
19. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Removing a Processor

1. Observe all safety and ESD precautions listed in [“Safety Information”](#) on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover”](#) on page 26.

5. Remove the processor air duct. For instructions, see “[Removing the Processor Air Duct](#)” on page 44.
6. Identify the processor you wish to remove.



AF000419

Callout	Processor Socket	Callout	Processor Socket
A.	CPU_2	B.	CPU_1

Figure 52. Locating Processor Sockets

7. Loosen the four captive screws on the corners of the heatsink.
8. Twist the heatsink slightly to break the seal between the heatsink and the processor.

9. Lift the heatsink from the processor. If it does not pull up easily, twist the heatsink again. Do not force the heatsink from the processor. Doing so could damage the processor.

Caution:

- Do not attempt to operate your system without a heatsink installed over each installed processor. Doing so will cause your system to overheat and may cause permanent damage.
 - The heatsink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when handling the heatsink so as not to damage the TIM.
10. Push down on the lever attached to the processor socket. While holding the lever down, pull it towards the center of the board to disengage the lever from the hook. Fully open the lever.

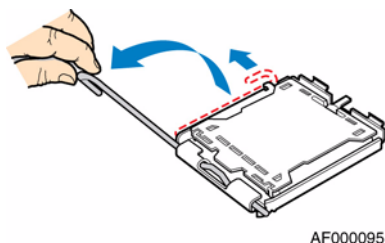


Figure 53. Opening Processor Socket Lever

11. Push down on the rear tab of the load plate to swing the front of the load plate up slightly. Fully open the load plate.

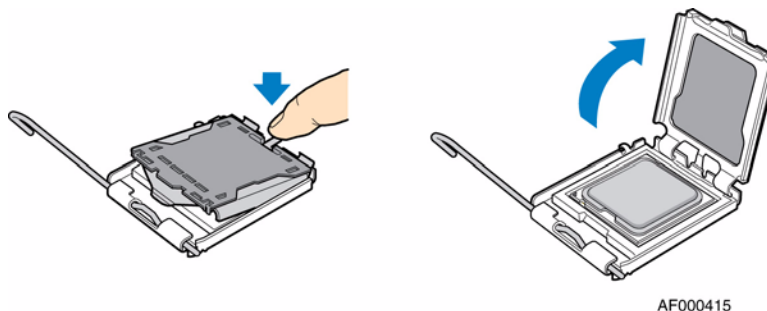


Figure 54. Opening Load Plate

12. Lift the processor from the socket.

Caution: Do not touch the contacts on either the processor or the processor socket.

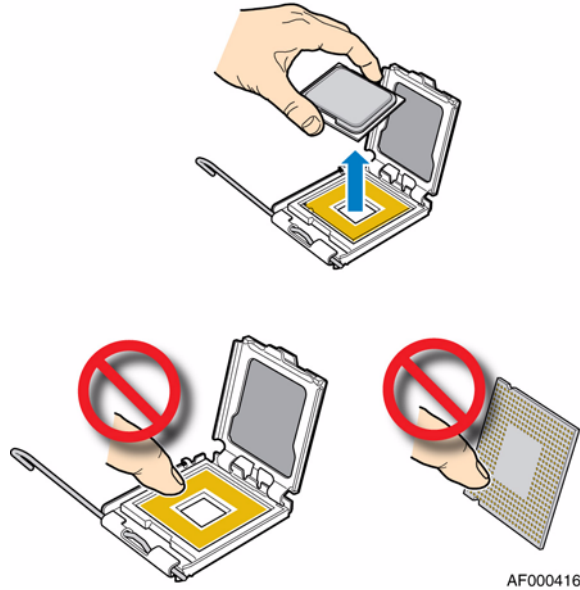


Figure 55. Removing Processor from Socket

13. Store the processor in appropriate packaging materials.
14. Install the protective cover over the load plate if a replacement processor will not be installed. Install the second processor air dam if permanently removing the second processor.

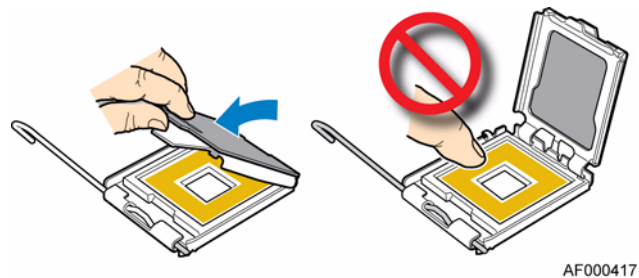


Figure 56. Installing Protective Cover onto Load Plate

15. Close the load plate.
16. Close the socket lever. Push downward on the socket lever while pushing it toward the center of the processor socket to engage it under the hook
17. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
18. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).

19. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing the CMOS Battery

The lithium CMOS battery on the server board powers the RTC in the absence of power. When the battery starts to weaken, it loses voltage, and the system settings stored in CMOS RAM (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved replacement batteries.

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.*

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

Varning: *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 suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).
6. Locate the CMOS battery.

7. Use a finger to pull the lever away from the top of the battery until it clears the battery. Use caution so you do not bend the lever. Lift the battery from the socket.

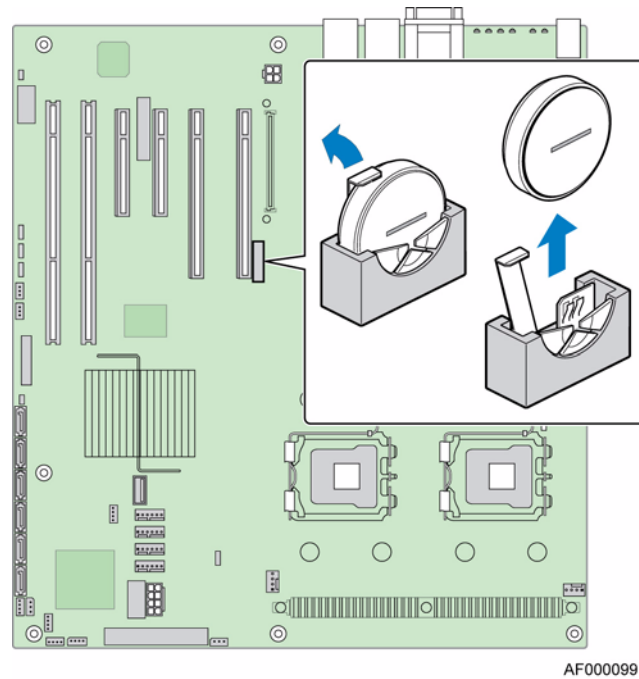


Figure 57. Locating and Removing the CMOS Battery

8. Dispose of the battery according to local ordinance.
9. Remove the new battery from its package.
10. Being careful to observe the correct polarity, insert the replacement battery into the battery socket. The “+” side of the battery must face the lever side of the battery socket, toward the add-in card slots.
11. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct”](#) on page 45.
12. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover”](#) on page 28.
13. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.
14. Run the BIOS Setup utility to restore the configuration settings to the real-time clock.

Boot Drive Options

The Intel® Storage Server SSR212MC2/SSR212MC2R has several boot drive options for loading operating systems or storage software from third-party vendors. Operating systems can be loaded onto either boot drives or a Disk on Module (DOM) device plugged into the storage server. The boot drive module can be populated with either SATA or SAS drives. See the *Tested Hardware and Operating Systems List* at <http://support.intel.com/support/motherboards/server> for supported drives and operating systems. Refer to the documentation provided by your third-party vendor(s) for instructions on installing storage software to an IDE, SATA or USB DOM.

SATA and IDE DOMs require power to be provided by the storage system using the P4 power cable that is normally plugged into the boot drive module backplane. The P4 power cable needs to be removed from the boot drive module backplane and attached to the power adapter cable that came with your SATA or IDE DOM.

The USB DOM obtains its power directly from the server board. When using a USB DOM, you must disconnect the mini USB cable that is connected to the USB header on the server board. This disables the mini USB port on the front of the chassis.

Intel® Storage Server SSR212MC2 Boot Drive Options

In the Intel® Storage Server SSR212MC2, the twelve SATA/SAS drives are connected via the mini-SAS to 4x SATA cable that resides between the server board and the backplane. Drives can be either SATA or SAS. The server board includes a dual-mode 4-port SAS controller which supports both SAS and SATA hard disk drives. This controller is capable of data transfer rates up to 3.0 Gbps per port. The storage system enables the SAS controller and configures the two black SATA ports on the server board to function as SATA ports. In this configuration, the four blue ports can be used as either SAS or SATA ports.

See the *Intel® Server Board S5000PSL User Guide* for information on setting up the server board to support either SATA or SAS options. In the Intel® Storage Server SSR212MC2, the two internal boot drives are connected to the two black SATA ports and can be used with SATA drives. You can optionally remove one of the SAS port connections and connect it to the boot drive module. This would eliminate one of the four SAS lanes going to the backplane.

See your operating system or third-party storage software documentation for instructions on loading drivers and configuring the storage server.

Table 7. Intel® Storage Server SSR212MC2 Boot Drive Cable Connections

Boot Drive Options	Mini-USB Cable	P4 Power Cable	Boot Drives	12 SAS/SATA Drives
SATA drives only on boot drive module	Connected to mini-USB connector on server board	Connected to boot drive module backplane	SATA 0 connected to bottom SATA drive. SATA 1 connected to top SATA drive	SAS 0-3 connected to backplane via mini-SAS to 4x SATA
IDE DOM	Connected to mini-USB connector on server board	Connected to IDE DOM via power adapter cable provided with DOM.	Not used	SAS 0-3 connected to backplane via mini-SAS to 4x SATA
SATA DOM	Connected to mini-USB connector on server board	Connected to SATA DOM via power adapter cable provided with DOM.	Not used	SAS 0-3 connected to backplane via mini-SAS to 4x SATA
USB Header DOM	Mini USB cable removed	Removed from boot drive backplane.	Not used	SAS 0-3 connected to backplane via mini-SAS to 4x SATA
Internal USB Port	Connected to USB port on server board	Not used	Not used	SAS 0-3 connected to backplane via mini-SAS to 4x SATA

Table 8. Intel® Storage Server SSR212MC2 Boot Drive SAS/SATA Cable Connections

Server Board Connector	SATA Boot Drive (as shipped)	SAS Boot Drive	DOM Boot Drive
SATA 0	Boot drive (bottom)	N/A	SATA DOM (if installed)
SATA 1	Boot drive (top)	N/A	N/A
SATA 2 / SAS 0	Expander (0)	Boot drive (bottom)	Expander (0)
SATA 3 / SAS 1	Expander (1)	Boot drive (top)	Expander (1)
SATA 4 / SAS 2	Expander (2)	Expander (2)	Expander (2)
SATA 5 / SAS 3	Expander (3)	Expander (3)	Expander (3)

Intel® Storage Server SSR212MC2R Boot Drive Options

The Intel® Storage Server SSR212MC2R includes an Intel® RAID Controller SRCAS144E to support hardware RAID. The twelve SAS/SATA drives plugged into the backplane are connected to the Intel® RAID Controller SRCAS144E via the mini-SAS to mini-SAS cable. The twelve drives can be populated with either SAS or SATA drives. See the *Tested Hardware and Operating Systems List* at <http://support.intel.com/support/motherboards/server> for a list of supported drives and/or operating systems. The boot drives can be used as either SATA or SAS drives and are connected to the SAS 0 and SAS 1 ports on the server board.

The software RAID on the server board can be used to setup the drives installed in the boot drive module. Refer to the *Intel® Server Board S5000PSL User Guide* for information on setting up the server board to support either SATA or SAS options. See “[Setting up RAID on the Intel® Storage Server SSR212MC2R](#)” on page 139 for information on setting up RAID 0 or RAID 1 options using these boot drives.

The twelve drives connected to the storage system backplane are controlled by the Intel® RAID Controller SRCAS144E. See the *Intel® RAID Controller SRCAS144E Software User Guide* and *Hardware Guide* for information on configuring RAID options. See “[Setting up RAID on the Intel® Storage Server SSR212MC2R](#)” on page 139 for instructions on setting up virtual disks on the Intel® Storage Server SSR212MC2R. If desired, operating systems can be loaded onto drives connected to the Intel® RAID Controller SRCAS144E, stored on boot drives or loaded on a USB, SATA or IDE DOM.

See your operating system or third-party storage software documentation for instructions on loading drivers and configuring the storage server.

Table 9. Intel® Storage Server SSR212MC2R Boot Drive Cable Connections

Boot Drive Options	Mini-USB Cable	P4 Power Cable	Boot Drives	12 SAS/SATA Drives
SAS/SATA drives on boot drive module	Connected to mini-USB connector on server board	Connected to boot drive module backplane	SAS 0 connected to bottom SATA drive. SAS 1 connected to top SATA drive	Intel® RAID Controller SRCAS144E connected to backplane via mini-SAS to mini-SATA cable
IDE DOM	Connected to mini-USB connector on server board	Connected to IDE DOM via power adapter cable provided with DOM.	Not used	Intel® RAID Controller SRCAS144E connected to backplane via mini-SAS to mini-SATA cable
SATA DOM	Connected to mini-USB connector on server board	Connected to SATA DOM via power adapter cable provided with DOM.	Not used	Intel® RAID Controller SRCAS144E connected to backplane via mini-SAS to mini-SATA cable
USB Header DOM	Mini USB cable removed	Removed from boot drive backplane.	Not used	Intel® RAID Controller SRCAS144E connected to backplane via mini-SAS to mini-SATA cable
Internal USB Port	Connected to USB port on server board	Not used	Not used	Intel® RAID Controller SRCAS144E connected to backplane via mini-SAS to mini-SATA cable

Table 10. Intel® Storage Server SSR212MC2R Boot Drive SAS/SATA Cable Connections

Server Board Connector	SAS Boot Drive (as shipped)	SATA Boot Drive	DOM Boot Drive
SATA 0	N/A	N/A	SATA DOM (if installed)
SATA 1	N/A	N/A	N/A
SATA 2 / SAS 0	Boot drive (bottom)	Boot drive (bottom)	Not used
SATA 3 / SAS 1	Boot drive (top)	Boot drive (top)	Not used
SATA 4 / SAS 2	Not used	Not used	Not used
SATA 5 / SAS 3	Not used	Not used	Not used

Replacing or Installing a SATA DOM

The Intel® Storage Server SSR212MC2/SSR212MC2R can be used with a Disk On Module (DOM) installed directly to the server board's SATA 0 Port. A SATA DOM is a storage device based on flash memory technology, which emulates an ordinary magnetic hard drive.

Note: *The DOM contains the storage server software and should never be removed from the SATA connector while the system is operating or data corruption could occur.*

Caution: *Before performing any maintenance on the system, back up the data. Follow the instructions provided by your third-party storage software vendor before replacing the DOM.*

Warning: *Like any DOM device, the SATA DOM should not be removed from the SATA connector with power applied or damage may occur to the DOM.*

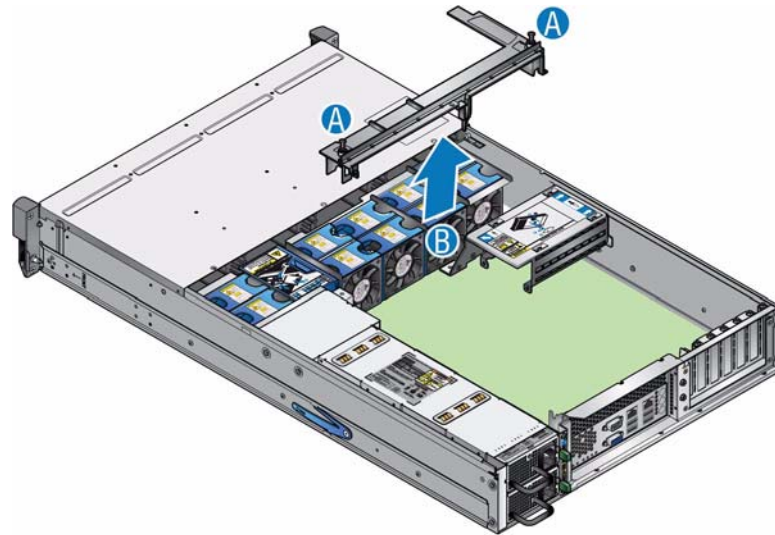
Replacing a SATA DOM

Caution: *Before performing any maintenance on the system, back up the data.*

Note: *Refer to your vendor's documentation for procedures on replacing storage system software.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

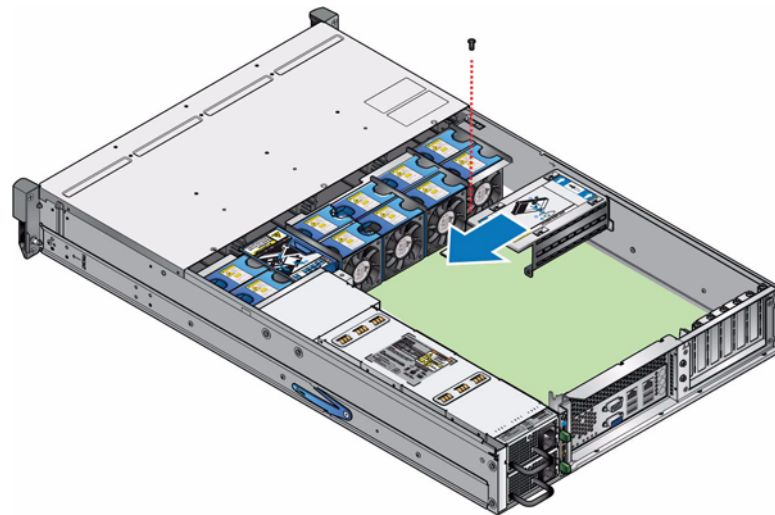
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Lift brace assembly out of enclosure (see letter “B”).



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Figure 58. Removing Brace Assembly

7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 59. Removing Boot Drive Module

8. Locate the SATA Port 0 on the server board (see letter “A” in the following figure).

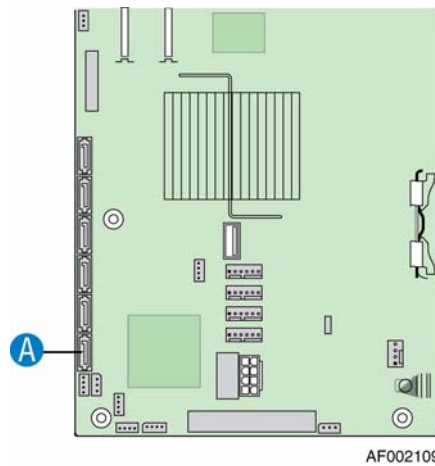
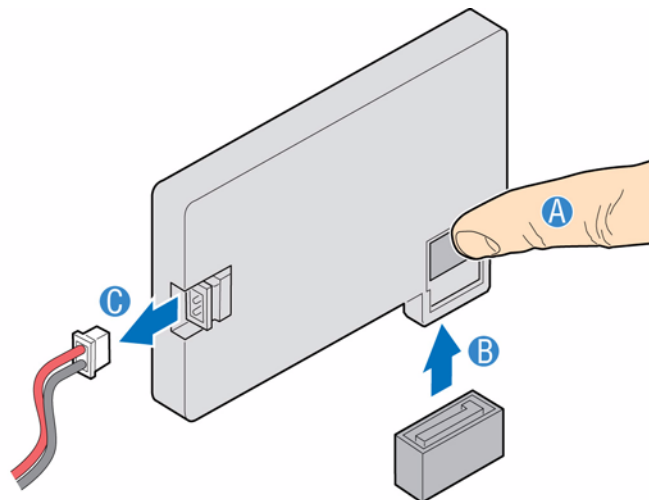


Figure 60. Locating SATA Port 0 on Server Board

9. Press in on the latch on the side of the DOM (see letter “A” in the following figure) to release DOM from connector. Lift DOM off the connector (see letter “B”). Remove the power cable from the DOM (see letter “C”).



AF0002144

Figure 61. Removing SATA DOM

10. Install the new DOM in the SATA PORT 0 connector on the server board (see letter “A” in the following figure). Connect the power cable to the DOM (see letter “B”).

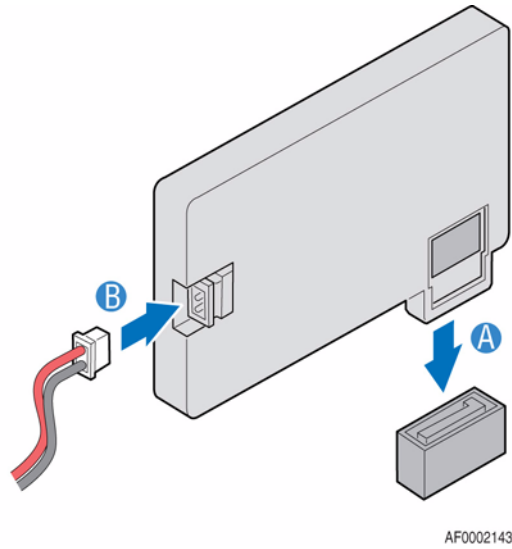


Figure 62. Installing SATA DOM

11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.

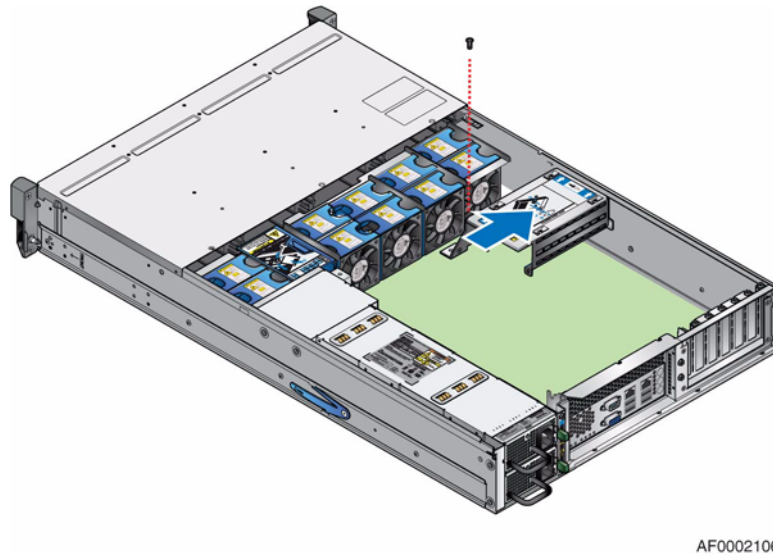
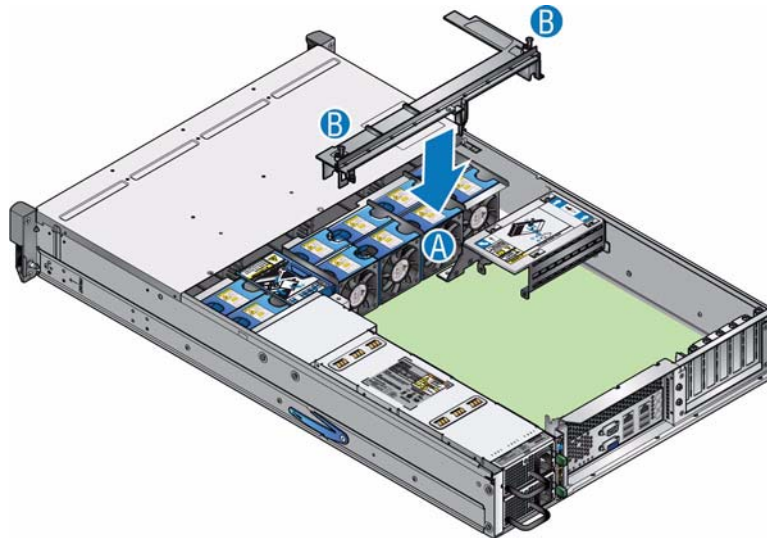


Figure 63. Re-installing Boot Drive Module

12. Re-install the brace assembly in enclosure (see letter “A” in the following figure). Secure brace assembly to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 64. Re-installing Brace Assembly

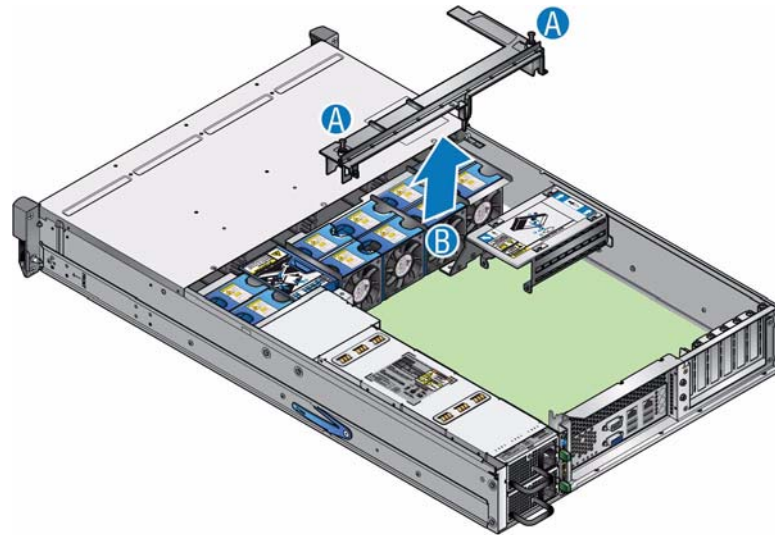
13. Re-install the processor air duct. For instructions, see “[Installing the Processor Air Duct](#)” on page 45.
14. Re-install the enclosure cover. For instructions, see “[Installing the Enclosure Cover](#)” on page 28.
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing a SATA DOM

See the documentation supplied by your vendor for more information on how to upgrade the Intel® Storage Server SSR212MC2/SSR212MC2R to use third-party software.

1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see “[Removing the Enclosure Cover](#)” on page 26.
5. Remove the processor air duct. For instructions, see “[Removing the Processor Air Duct](#)” on page 44.

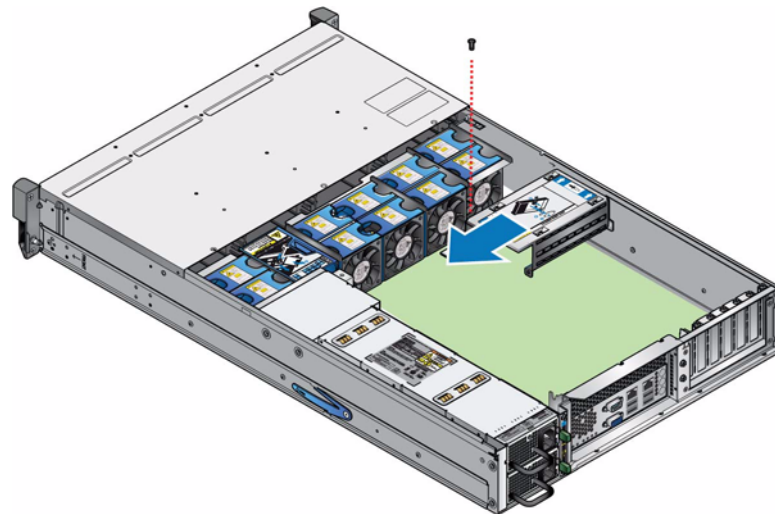
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Lift brace assembly out of enclosure (see letter “B”).



AF0002107

Figure 65. Removing Brace Assembly

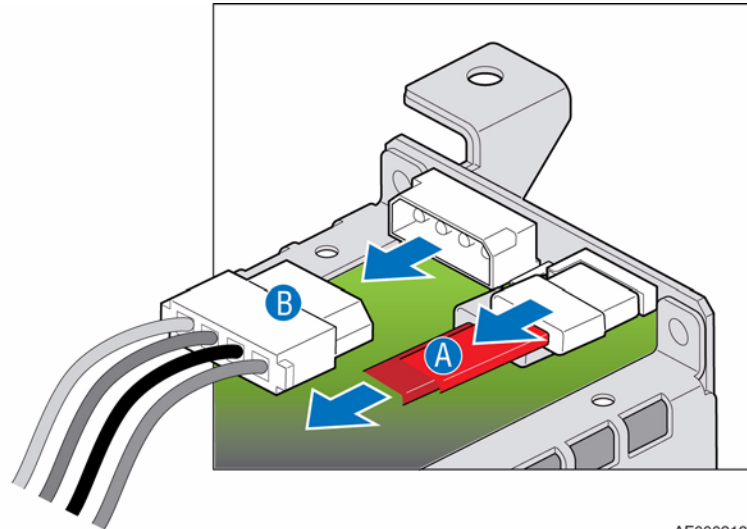
7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 66. Removing Boot Drive Module

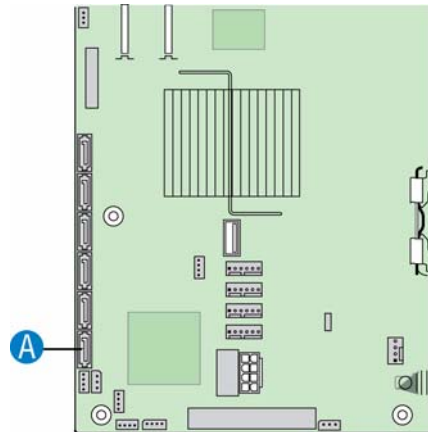
8. Turn the boot module over. If connected, disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.



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Figure 67. Disconnecting Power and Disk Drive Cables from Boot Drive Module

9. Connect the P4 power cable to the power adapter cable that came with the new SATA DOM.
10. Locate the SATA Port 0 on the server board (see letter “A” in the following figure).



AF002109

Figure 68. Locating SATA Port 0 on Server Board

11. Install the new DOM in the SATA Port 0 on the server board (see letter “A” in the following figure). Connect the power cable to the DOM (see letter “B”).

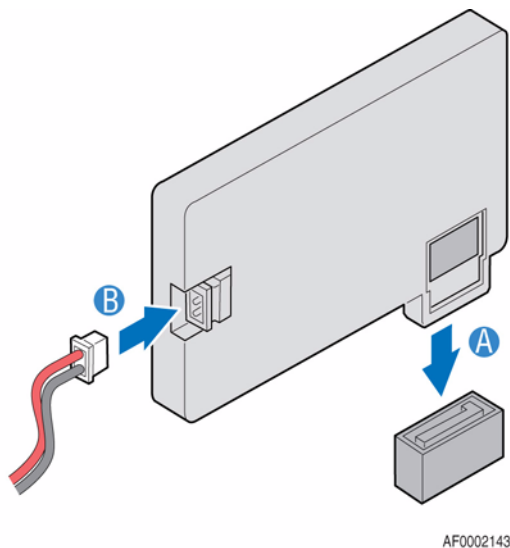


Figure 69. Installing SATA DOM

12. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.

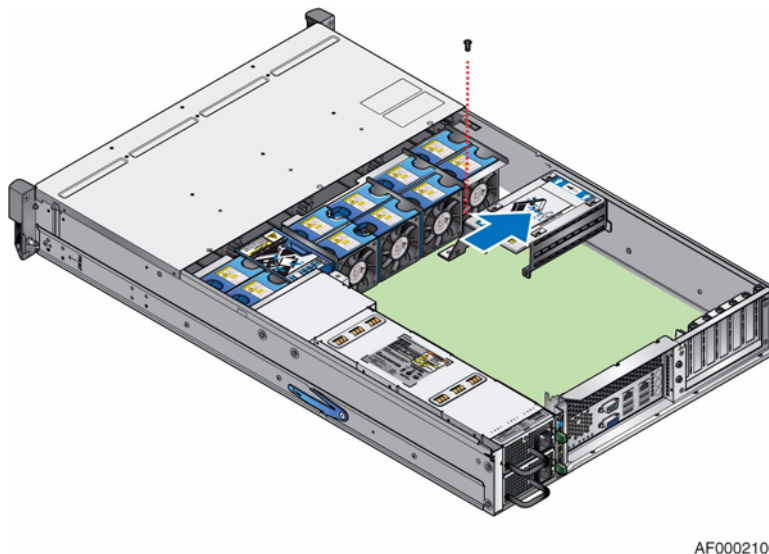
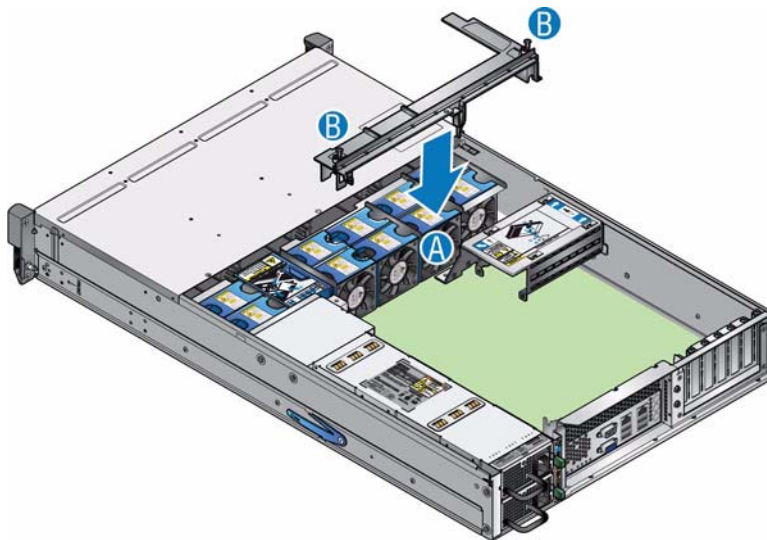


Figure 70. Re-installing Boot Drive Module

13. Re-install the brace assembly in the enclosure (see letter “A” in the following figure). Secure brace assembly to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 71. Re-installing Brace Assembly

14. Re-install the processor air duct. For instructions, see “Installing the Processor Air Duct” on page 45.
15. Re-install the enclosure cover. For instructions, see “Installing the Enclosure Cover” on page 28.
16. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing or Installing a USB Header DOM

The Intel® Storage Server SSR212MC2/SSR212MC2R can be used with Disk On Module (DOM) installed directly to the server board’s USB header. A USB DOM is a storage device based on flash memory technology, which emulates an ordinary magnetic hard drive.

Note: *The DOM contains the storage server software and should never be removed from the USB header while the system is operating or data corruption could occur.*

Caution: *Before performing any maintenance on the system, back up the data. Follow the instructions provided by your third-party storage software vendor before replacing the DOM.*

Warning: *Like any DOM device, the USB Header DOM should not be removed from the USB header with power applied or damage may occur to the DOM.*

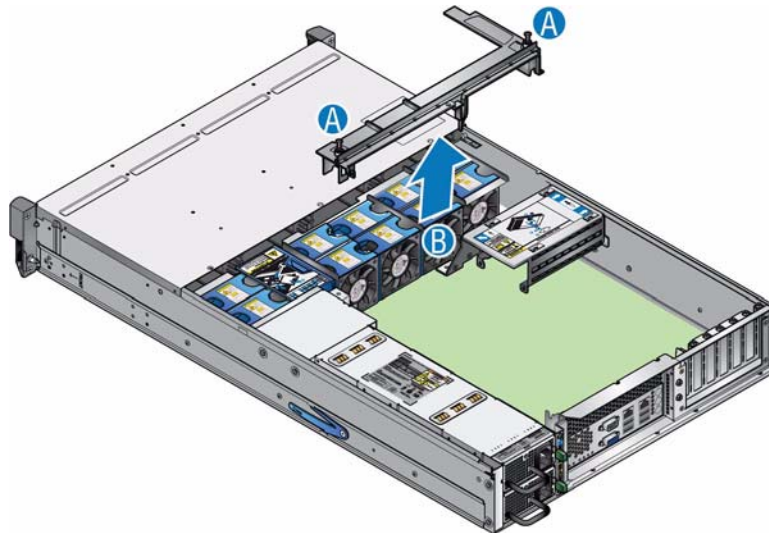
Replacing the USB Header DOM

Caution: *Before performing any maintenance on the system, back up the data.*

Note: *Refer to your vendor's documentation for procedures on replacing storage system software.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

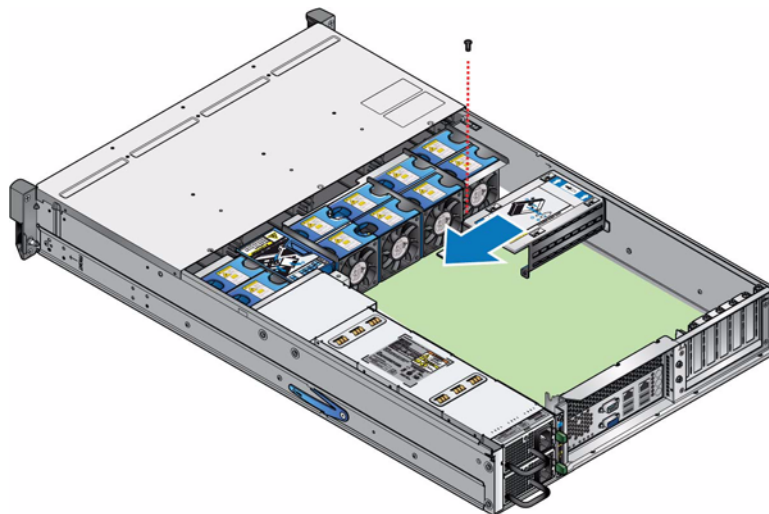
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 72. Removing Brace Assembly

7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 73. Removing Boot Drive Module

8. Locate the USB header on the server board (see letter “A” in the following figure).

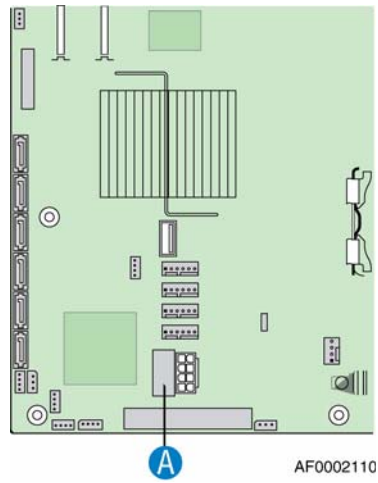


Figure 74. Locating USB Header on the Server Board

9. Press in on both sides of the USB Header DOM (see letter “A” in the following figure) and pull up to remove from the USB header (see letter “B”).

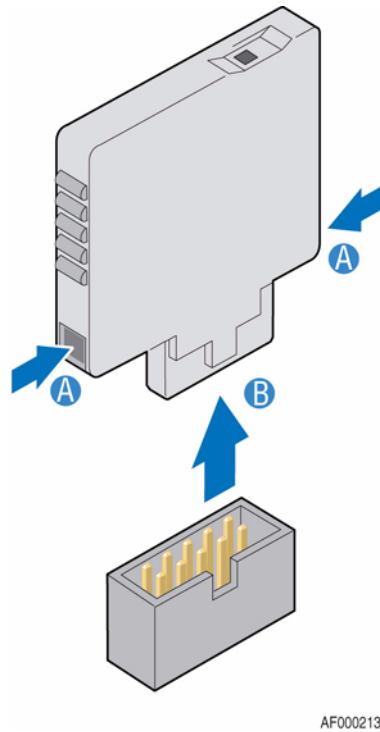
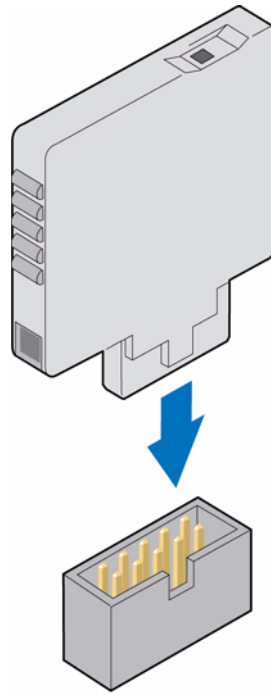


Figure 75. Removing USB Header DOM

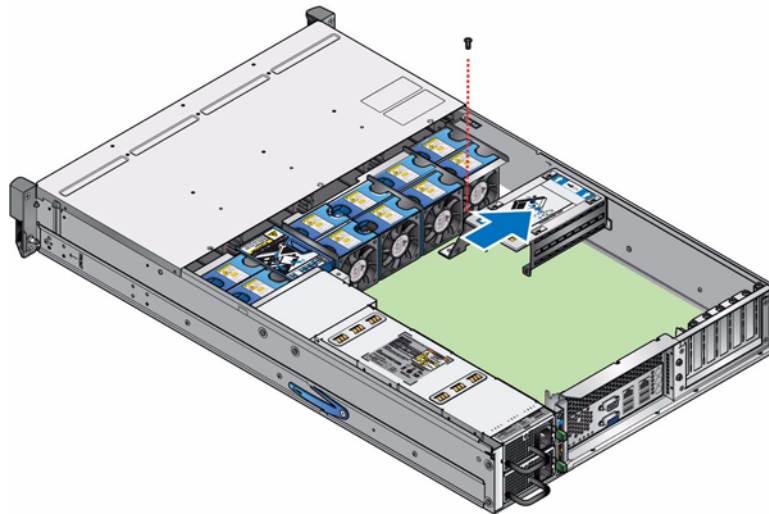
10. Connect the new USB Header DOM to the USB header on the server board.



AF00021XY

Figure 76. Installing New USB Header DOM

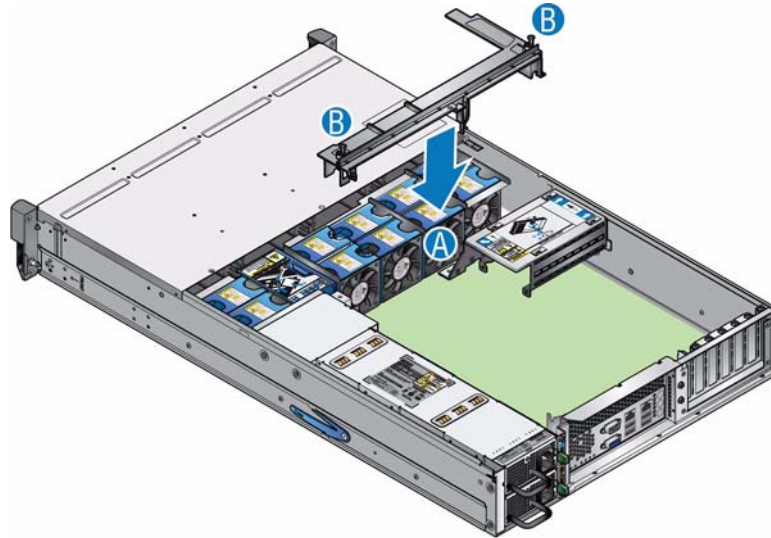
11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 77. Re-installing Boot Drive Module

12. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 78. Re-installing Brace Assembly

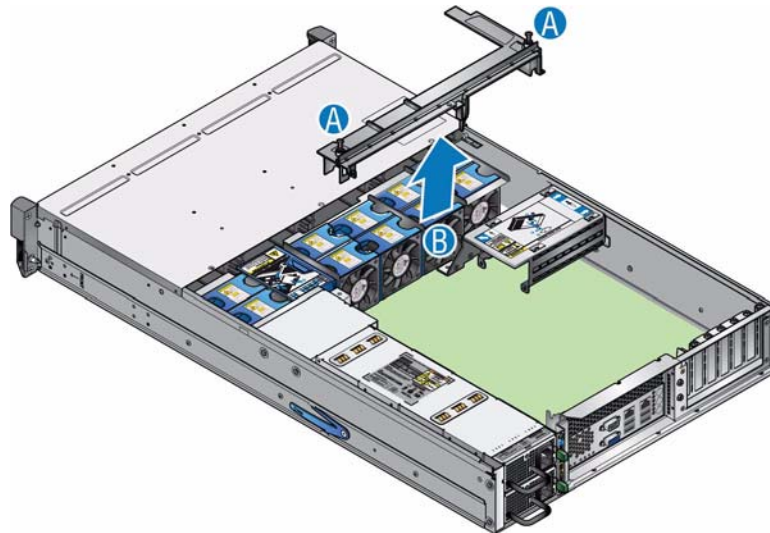
13. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing a USB Header DOM

See the documentation supplied by your vendor for more information on how to upgrade the Intel® Storage Server SSR212MC2/SSR212MC2R to use third-party software.

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

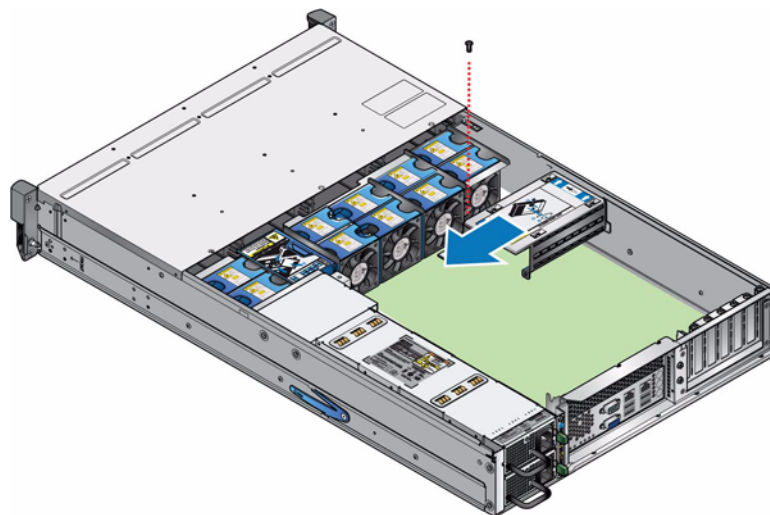
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 79. Removing Brace Assembly

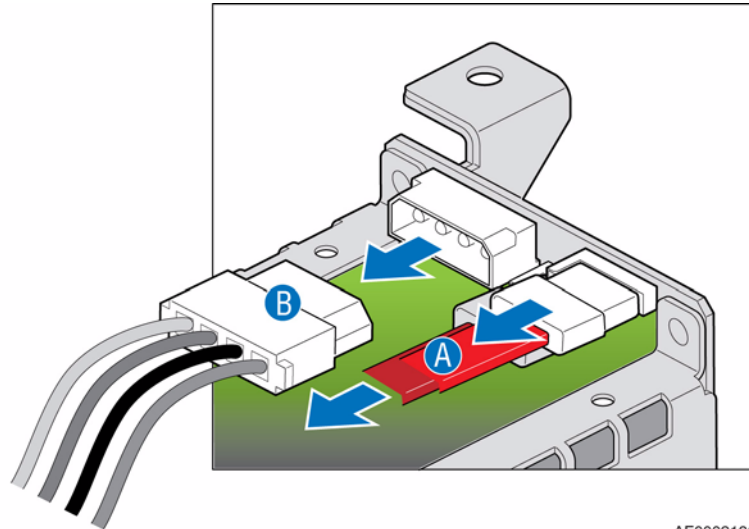
7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 80. Removing Boot Drive Module

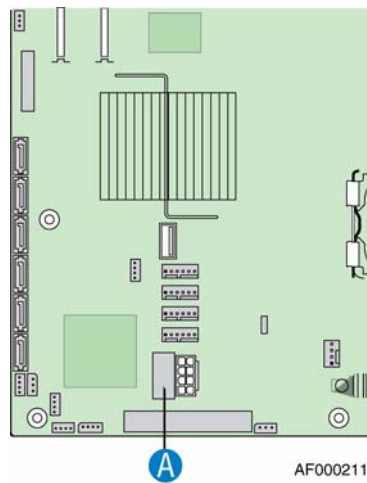
- Turn the boot drive module over. If connected, disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.



AF0002136

Figure 81. Disconnecting Power and Disk Drive Cables from Boot Drive Module

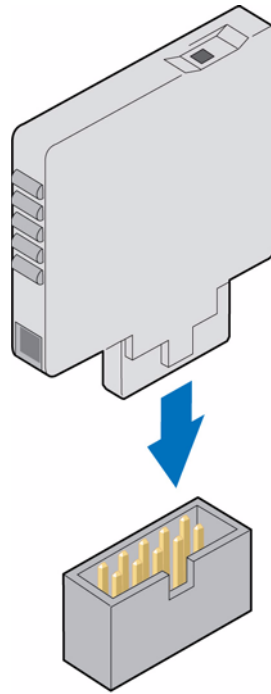
- Locate the USB header on the server board (see letter “A” in the following figure). Remove the mini USB cable.



AF0002110

Figure 82. Locating USB Header on the Server Board

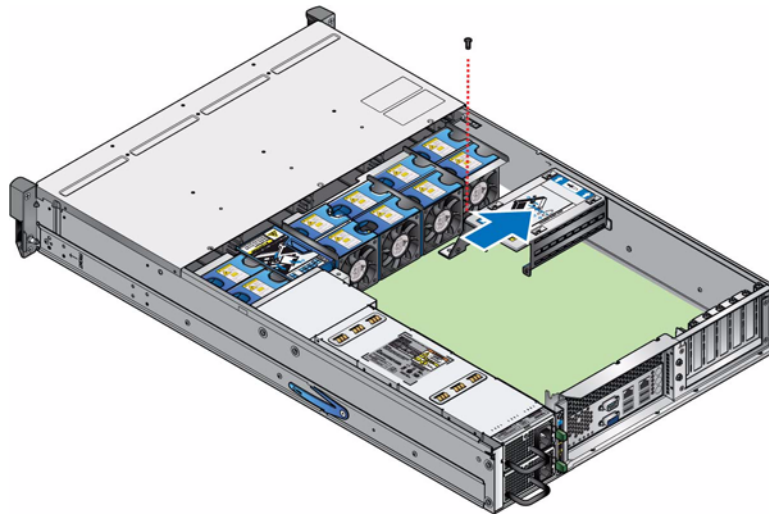
10. Connect the new USB Header DOM to the USB header.



AF00021XY

Figure 83. Installing USB Header DOM

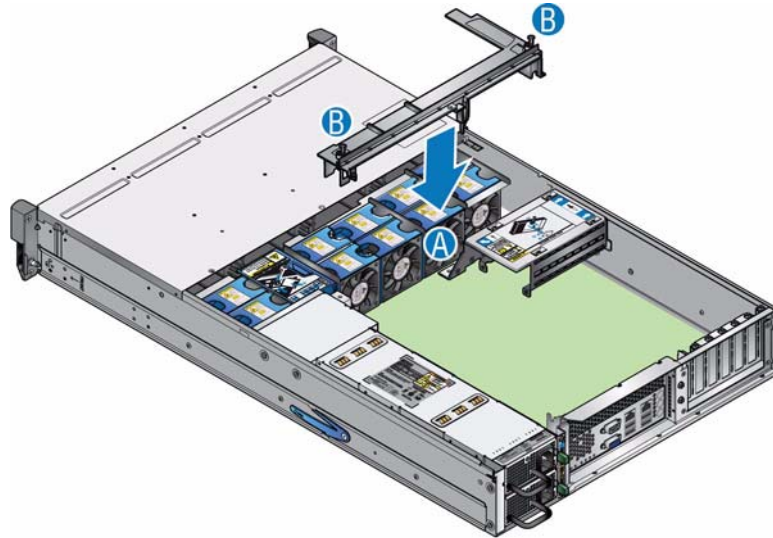
11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 84. Re-installing Boot Drive Module

12. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 85. Re-installing Brace Assembly

13. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct”](#) on page 45.
14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover”](#) on page 28.
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing or Installing a USB Flash Drive

The Intel® Storage Server SSR212MC2/SSR212MC2R can be used with a USB Flash Drive installed directly to the server board's USB port. A USB Flash Drive is a storage device based on flash memory technology, which emulates an ordinary magnetic hard drive.

Note: *The USB Flash Drive contains the storage server software and should never be removed from the USB port while the system is operating or data corruption could occur.*

Caution: *Before performing any maintenance on the system, back up the data. Follow the instructions provided by your third-party storage software vendor before replacing the USB Flash Drive.*

Warning: *The USB Flash Drive should not be removed from the USB port with power applied or damage may occur to the device.*

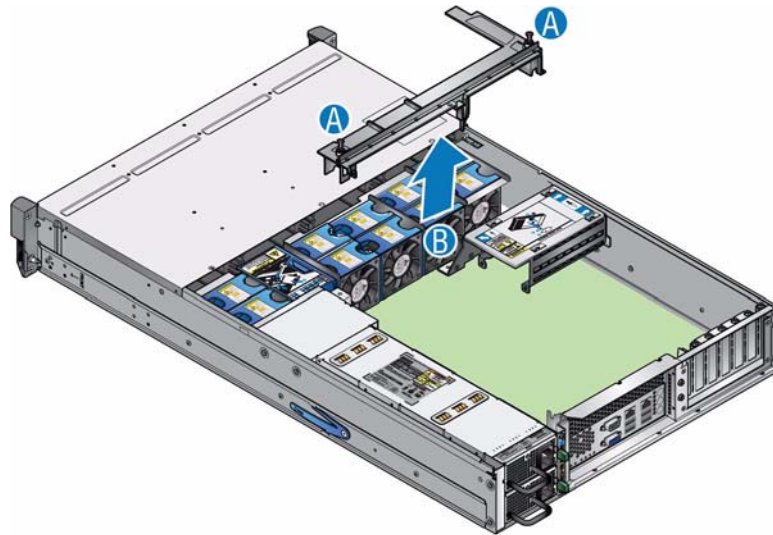
Replacing the USB Flash Drive

Caution: *Before performing any maintenance on the system, back up the data.*

Note: *Refer to your vendor's documentation for procedures on replacing storage system software.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

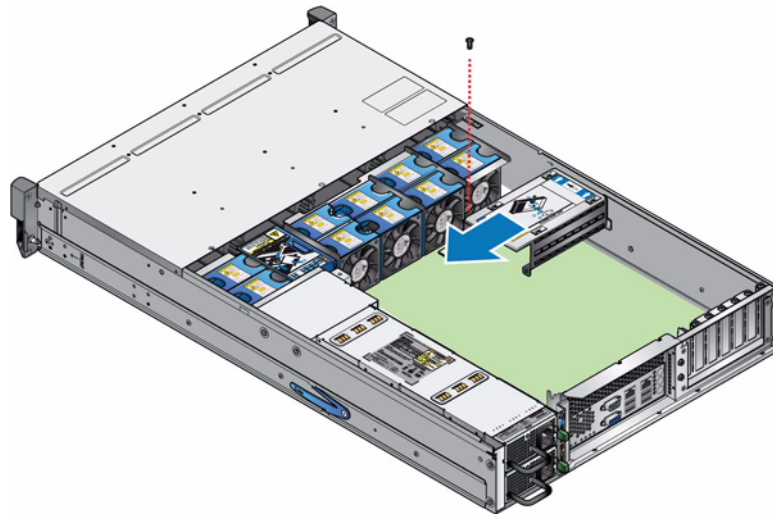
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 86. Removing Brace Assembly

7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 87. Removing Boot Drive Module

8. Locate the USB port on the server board (see letter “A” in the following figure).

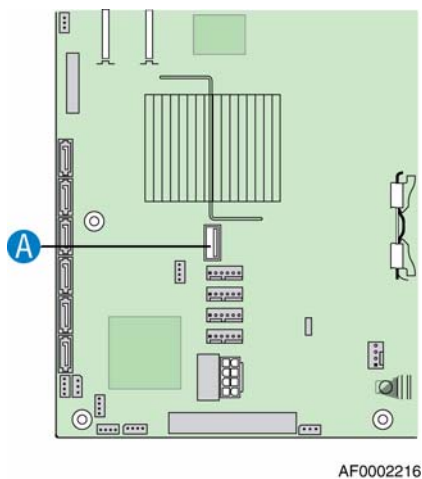


Figure 88. Locating USB Port on the Server Board

9. Pull up on the USB Flash Drive to remove it from the USB port.
10. Connect the new USB Flash Drive to the USB port on the server board.
11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.

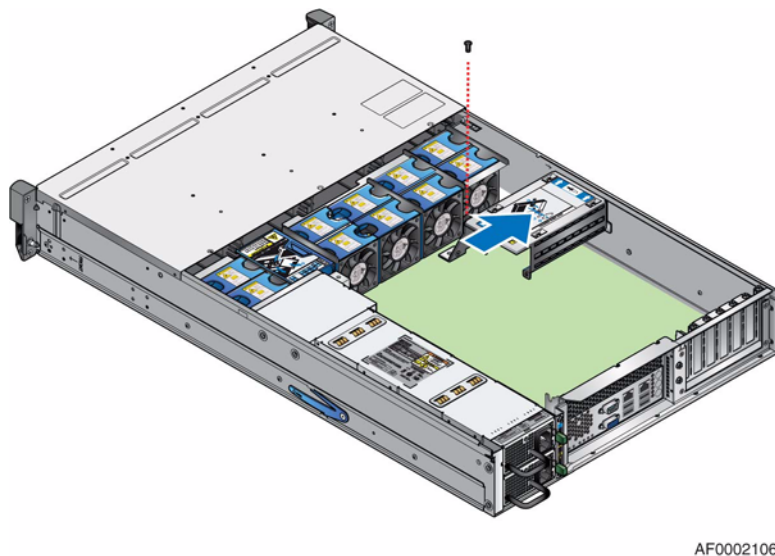
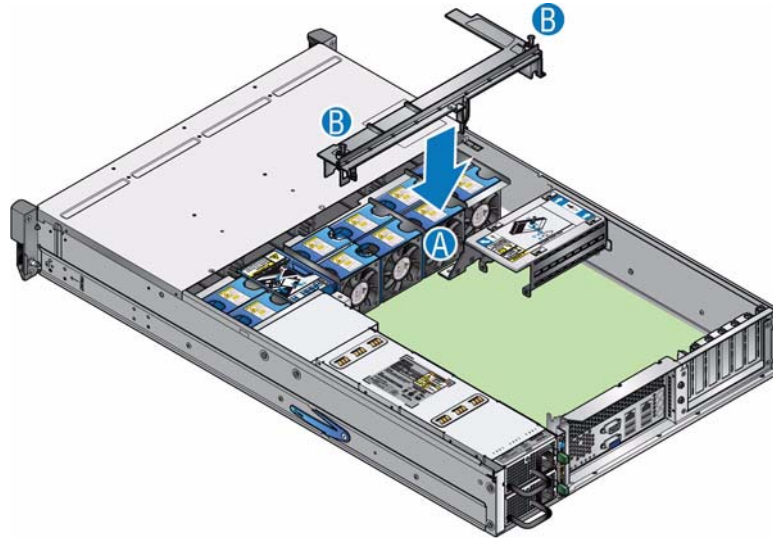


Figure 89. Re-installing Boot Drive Module

12. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 90. Re-installing Brace Assembly

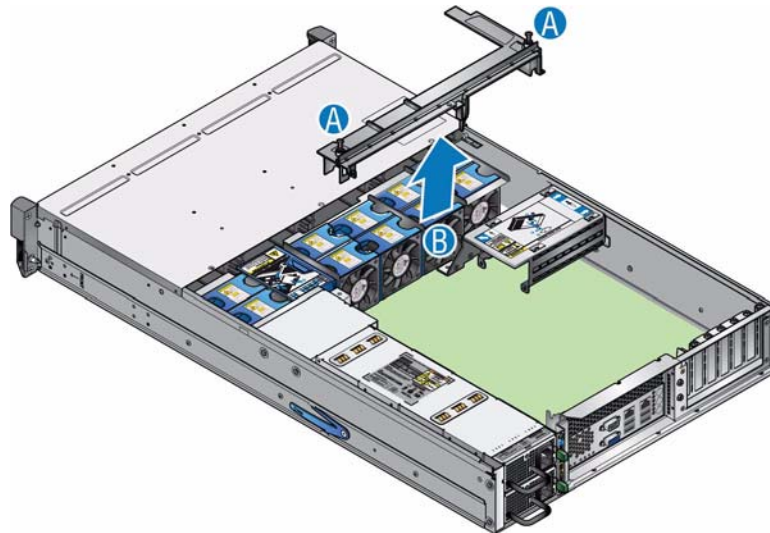
13. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing a USB Flash Drive

See the documentation supplied by your vendor for more information on how to upgrade the Intel® Storage Server SSR212MC2/SSR212MC2R to use third-party software.

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

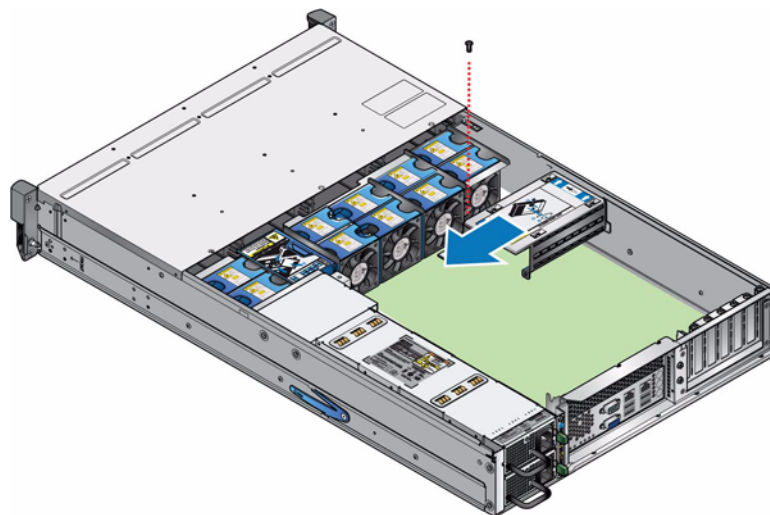
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 91. Removing Brace Assembly

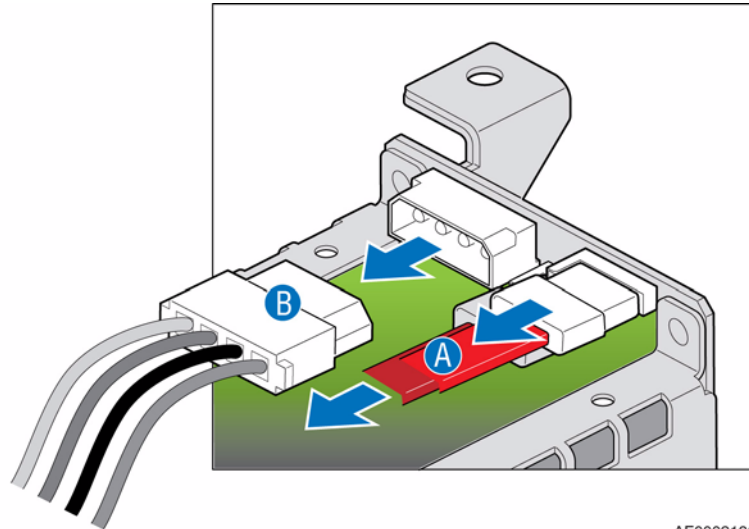
7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 92. Removing Boot Drive Module

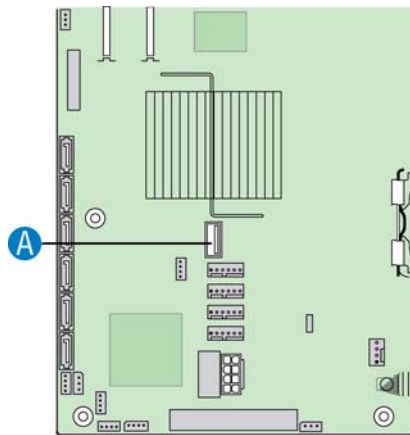
- Turn the boot drive module over. If connected, disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.



AF0002136

Figure 93. Disconnecting Power and Disk Drive Cables from Boot Drive Module

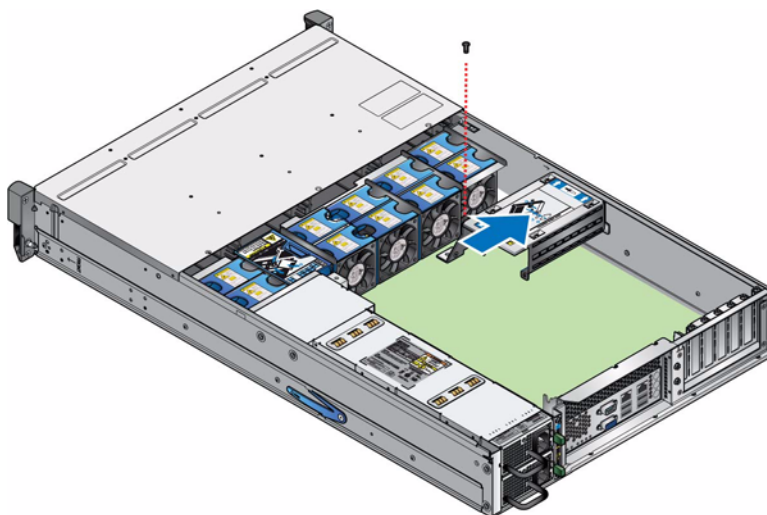
- Locate the USB port on the server board (see letter “A” in the following figure).



AF0002216

Figure 94. Locating USB Port on the Server Board

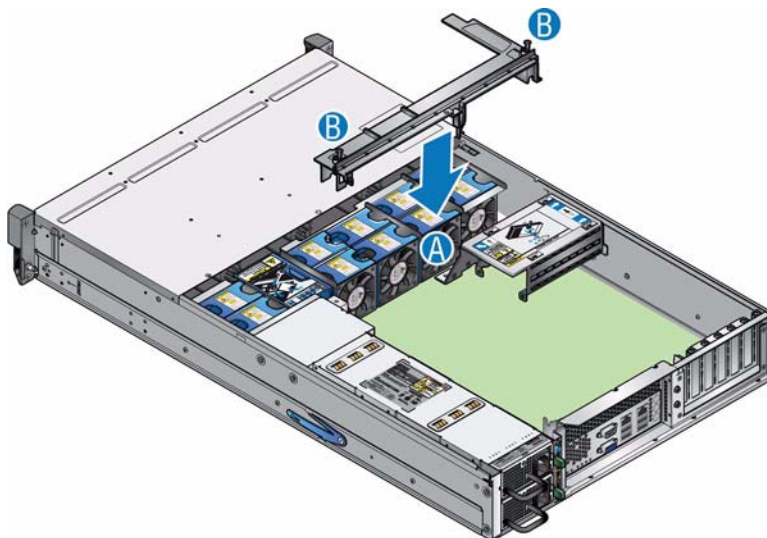
10. Connect the new USB Flash Drive to the USB port.
11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 95. Re-installing Boot Drive Module

12. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 96. Re-installing Brace Assembly

13. Re-install the processor air duct. For instructions, see “Installing the Processor Air Duct” on page 45.

14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing or Installing an IDE DOM

The Intel® Storage Server SSR212MC2/SSR212MC2R can be used with a Disk On Module (DOM) installed directly to the server board’s IDE connector. An IDE DOM is a storage device based on flash memory technology, which emulates an ordinary magnetic hard drive.

Note: *The DOM contains the storage server software and should never be removed from the IDE connector while the system is operating or data corruption could occur.*

Caution: *Before performing any maintenance on the system, back up the data. Follow the instructions provided by your third-party storage software vendor before replacing the DOM.*

Warning: *Like any IDE device, the IDE DOM should not be removed from the IDE connector with power applied or damage may occur to the DOM.*

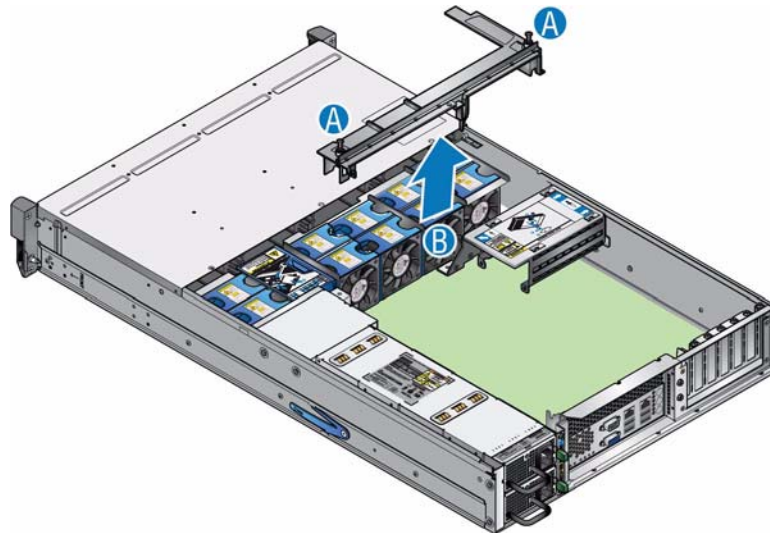
Replacing the IDE DOM

Caution: *Before performing any maintenance on the system, back up the data.*

Note: *Refer to your vendor’s documentation for procedures on replacing storage system software.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

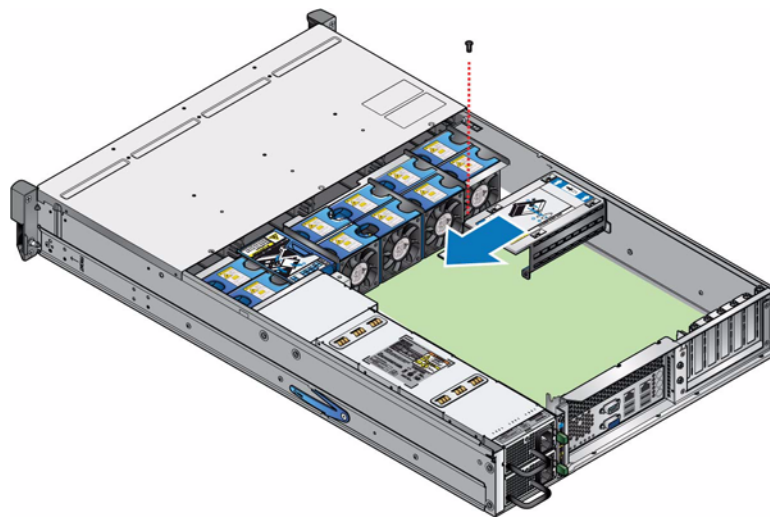
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 97. Removing Brace Assembly

7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 98. Removing Boot Drive Module

8. Locate the IDE connector on the server board (see letter “A” in the following figure).

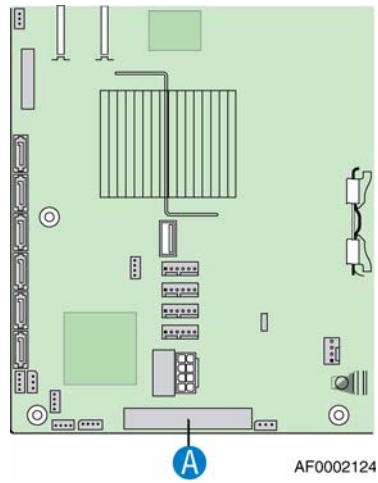


Figure 99. Locating IDE Connector on the Server Board

9. Press on both sides and pull up to remove the failed IDE DOM (see letter “A” in the following figure). Ensure the latches are closed enough for easy removal of the IDE DOM otherwise the housing on the IDE connector may be damaged. Disconnect the power cable from the IDE DOM (see letter “B”).

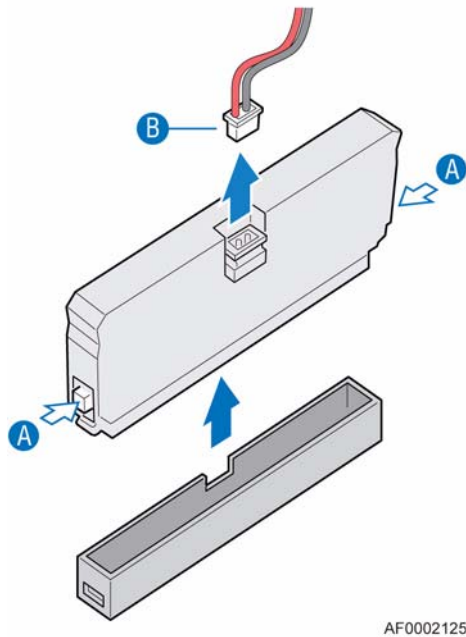


Figure 100. Removing IDE DOM

10. Ensure the raised notch on the new IDE DOM is aligned with the notch opening on the primary IDE connector on the server board (see letter “A” in the following figure). Install the new IDE DOM (see letter “B”). Connect the power cable to the IDE DOM (see letter “C”).

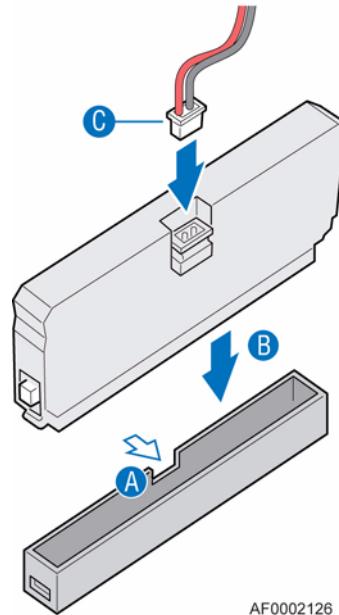


Figure 101. Installing IDE DOM

11. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.

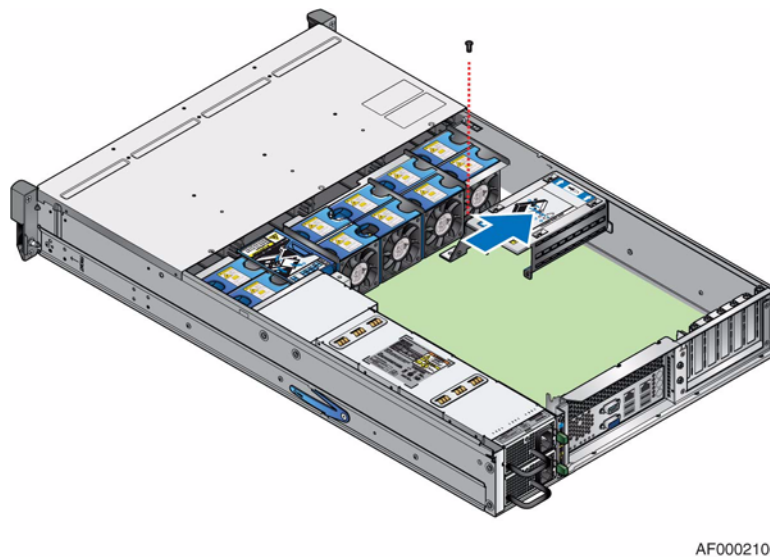
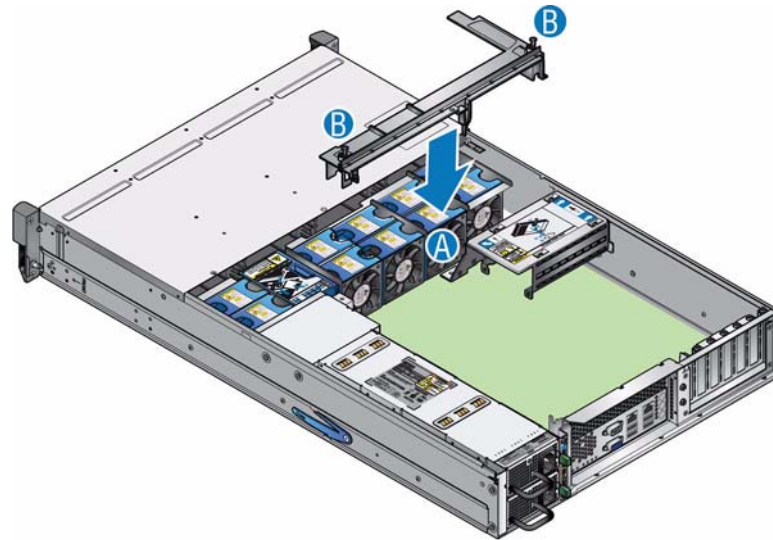


Figure 102. Re-installing Boot Drive Module

12. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 103. Re-installing Brace Assembly

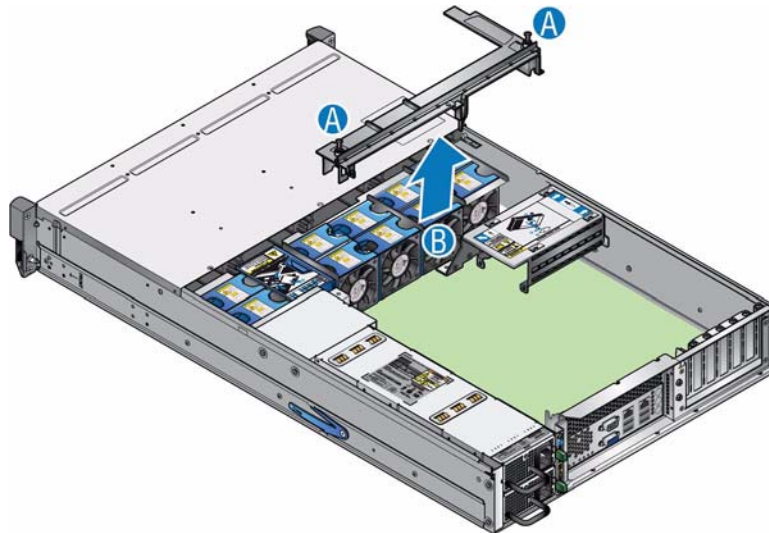
13. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing an IDE DOM

See the documentation supplied by your vendor for more information on how to upgrade the Intel® Storage Server SSR212MC2/SSR212MC2R to use third-party software.

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).

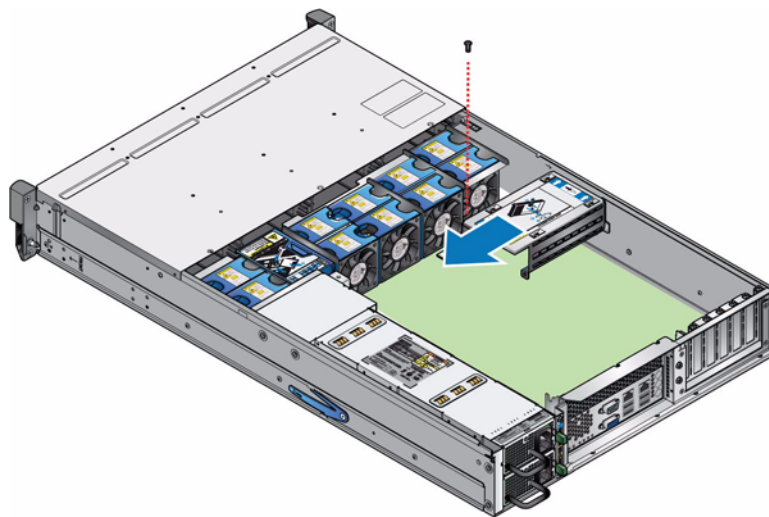
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Remove the brace assembly (see letter “B”).



AF0002107

Figure 104. Removing Brace Assembly

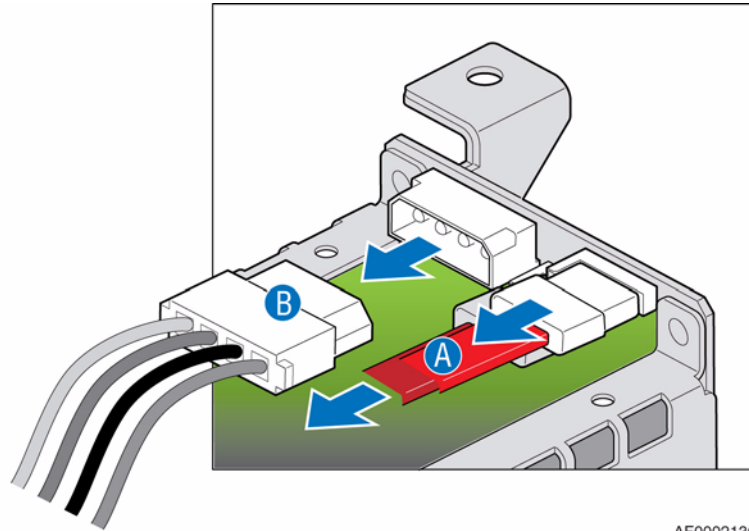
7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 105. Removing Boot Drive Module

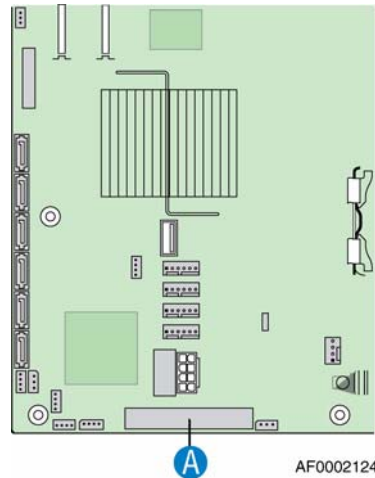
- Turn the boot drive module over. If connected, disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.



AF0002136

Figure 106. Disconnecting Power and Disk Drive Cables from Boot Drive Module Backplane

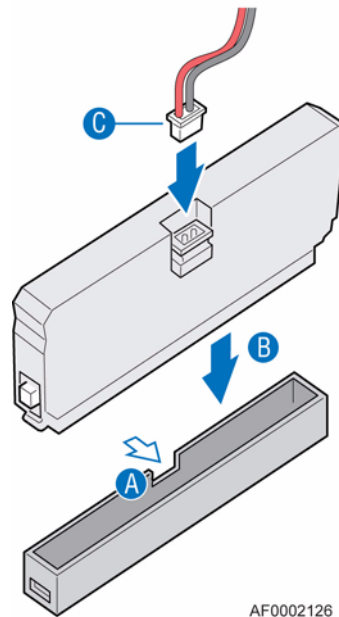
- Connect the P4 power cable to the power adapter cable that shipped with the new IDE DOM.
- Locate the IDE connector on the server board (see letter “A” in the following figure).



AF0002124

Figure 107. Locating IDE Connector on the Server Board

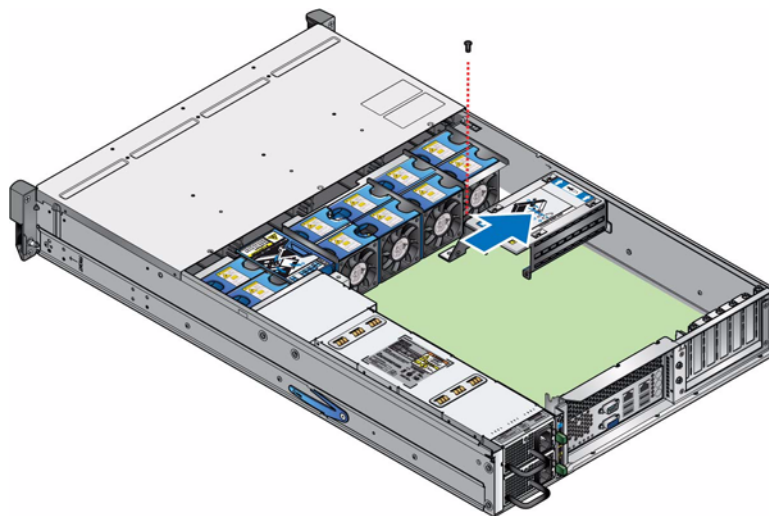
11. Ensure the raised notch on the new IDE DOM is aligned with the notch opening on the primary IDE connector on the server board (see letter “A” in the following figure). Install the new IDE DOM (see letter “B”). Connect the power cable to the IDE DOM (see letter “C”).



AF0002126

Figure 108. Installing IDE DOM

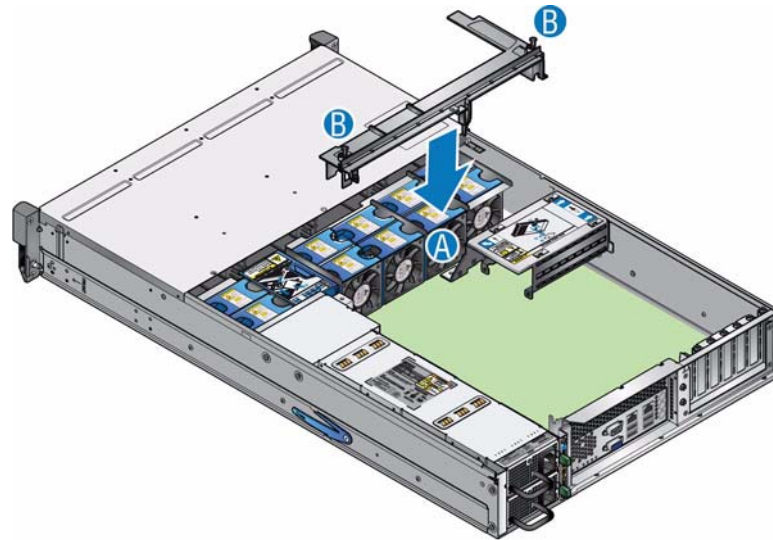
12. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 109. Re-installing Boot Drive Module

13. Re-install the brace assembly (see letter “A” in the following figure). Secure to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 110. Re-installing Brace Assembly

14. Re-install the processor air duct. For instructions, see “Installing the Processor Air Duct” on page 45.
15. Re-install the enclosure cover. For instructions, see “Installing the Enclosure Cover” on page 28.
16. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

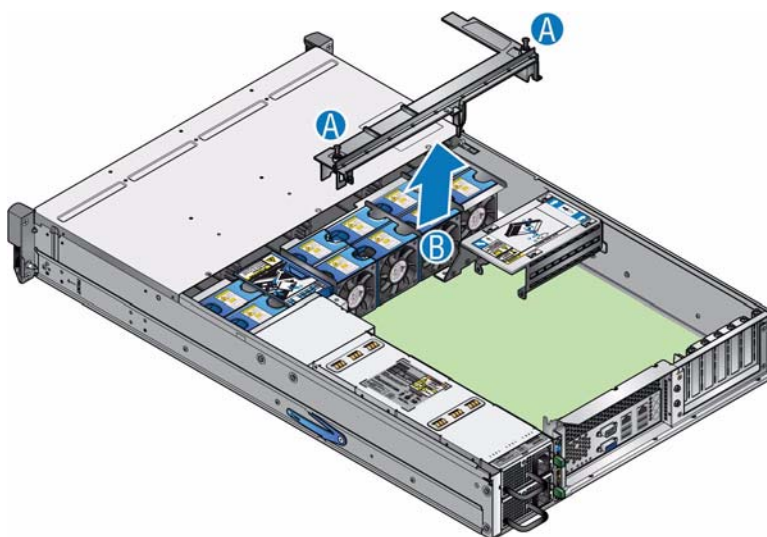
Replacing a Server Board

Caution: Back up the data on the storage system before performing any maintenance procedures.

Caution: Before installing a new server board, ensure that the server board has the correct versions of the BIOS, FRU/SDR, and mBMC installed. Refer to the Intel support site at <http://www.intel.com/support/motherboards/server/ssr212mc2> for the appropriate firmware version to use.

1. Observe all safety and ESD precautions listed in “Safety Information” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see “Removing the Enclosure Cover” on page 26.
5. Remove the processor air duct. For instructions, see “Removing the Processor Air Duct” on page 44.

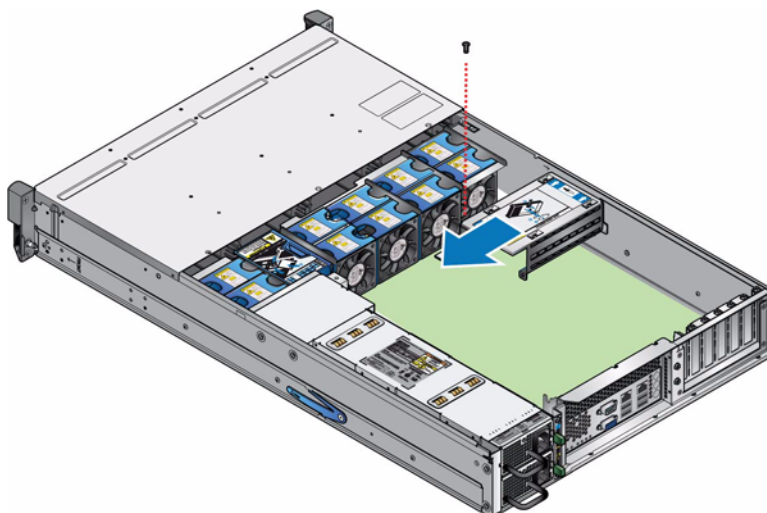
6. Remove the heatsink(s) and processor(s). For instructions, see [“Removing a Processor”](#) on page 54.
7. Remove the memory FBDIMMs. For instructions, see [“Removing FBDIMMs”](#) on page 47.
8. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Lift brace assembly out of enclosure (see letter “B”).



AF0002107

Figure 111. Removing Brace Assembly

9. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 112. Removing Boot Drive Module

10. Turn the boot drive module over. If connected, disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.

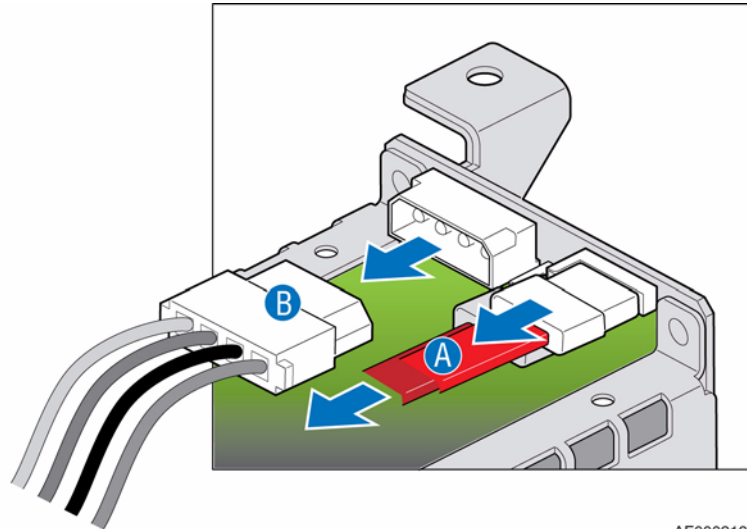


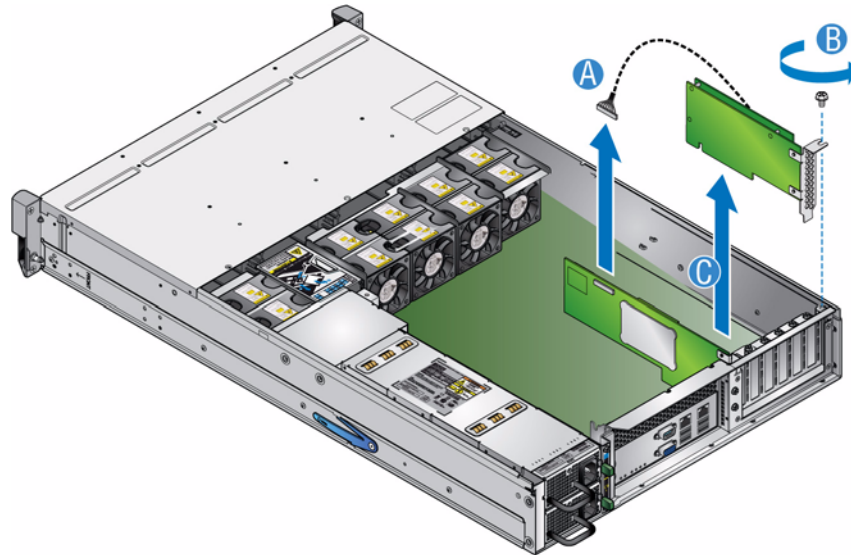
Figure 113. Disconnecting Power and Disk Drive Cables from Boot Drive Module Backplane

11. If using an optional SATA or IDE DOM, remove the P4 power cable connected to the DOM's power adapter cable.

Note: The P4 power cable is disconnected from the boot drive module and connected to a SATA or IDE DOM if you are using a SATA or IDE DOM device. Power for a USB DOM device is provided by the USB connector.

12. Remove the USB, SATA, or IDE DOM if one is present. For instructions, see the appropriate DOM removal section in this chapter.

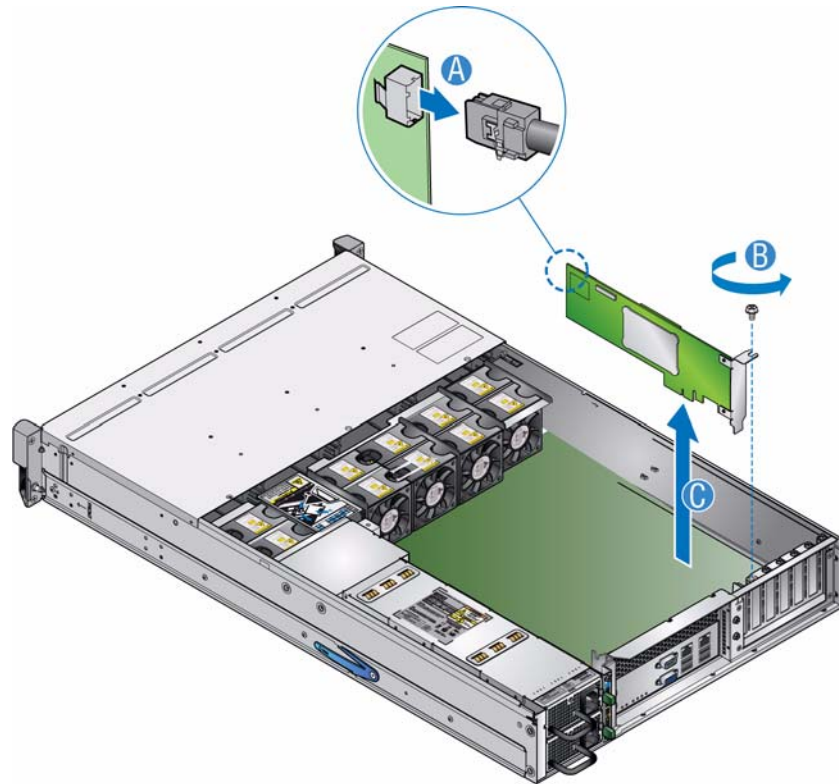
13. (Intel® Storage Server SSR212MC2R only) On the Intel® Intelligent AXXRIBBU1 Battery Backup Unit, disconnect the BBU cable to the Intel® RAID Controller SRC SAS144E (see letter “A” in the following figure). Release the screw on the retaining bracket at the back of the enclosure (see letter “B”). Ease the Intel® Intelligent AXXRIBBU1 Battery Backup Unit out of its PCI slot (see letter “C”).



AF0002148

Figure 114. Removing the Intel® Intelligent AXXRIBBU1 Battery Backup Unit

14. (Intel® Storage Server SSR212MC2R only) Remove the Intel® RAID Controller SRCAS144E. Disconnect the SAS cable (see letter “A” in the following figure). Release the screw on the retaining bracket at the back of the enclosure (see letter “B”). Lift the Intel® RAID Controller SRCAS144E upwards and out of the enclosure (see letter “C”).



AF0002137

Figure 115. Removing the Intel® RAID Controller SRCAS144E

15. Disconnect the following cables:
 - P12V4 cable (see letter “A”)
 - Main power cable (see letter “B”).
 - Auxiliary power signal cable (see letter “C”)
 - IPBM cable (see letter “D”)
 - (Disregard if using a USB DOM) USB header (see letter “E”)
 - All SAS and/or SATA cables (see letters “F”, “G”, “H”, “I”, “J” and “K”)
 - Reset and power cables from the front panel connector (see letters “L” and “M”)
 - Serial B/emergency management port cable (see letter “N”)
16. Unscrew standoff (see letter “O”).

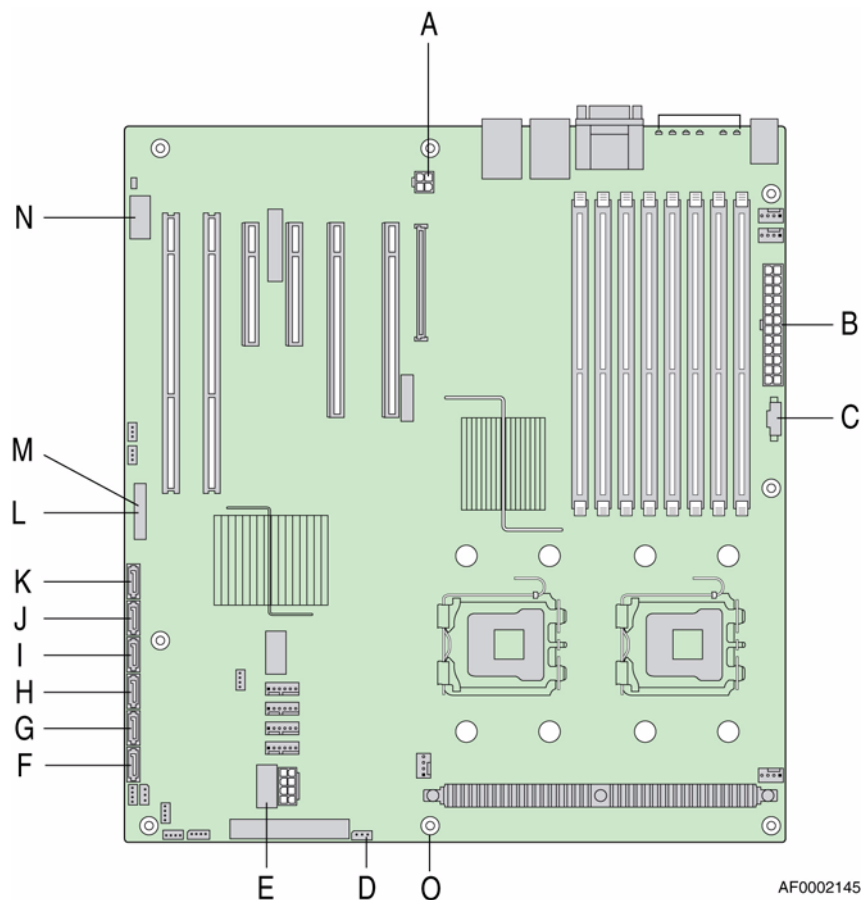


Figure 116. Disconnecting Cables and Standoff from Server Board

17. Remove the seven screws securing the server board to the chassis. Remove server board from chassis and store in an anti-static bag.
18. Install the new server board by aligning the screw holes in the server board with the standoffs in the chassis.

19. Install the processor(s) and heatsink(s). For instructions, see [“Installing the Processor” on page 49](#).
20. Install the memory FBDIMMs. For instructions, see [“Installing FBDIMMs” on page 45](#).
21. Reconnect the following cables:
 - P12V4 cable (see letter “A”)
 - Main power cable (see letter “B”).
 - Auxiliary power signal cable (see letter “C”)
 - IPBM cable (see letter “D”)
 - (Disregard if using a USB DOM) USB header (see letter “E”)
 - All SAS and/or SATA cables, as required (see letters “F”, “G”, “H”, “I”, “J” and “K”)
 - Reset cable to the front panel connector, uses pins 15 and 17 (see letter “L”)
 - Power cable to the front panel connector, uses pins 11 and 13 (see letter “M”)
 - Serial B/emergency management port cable (see letter “N”)
22. Re-attach standoff (see letter “O”).

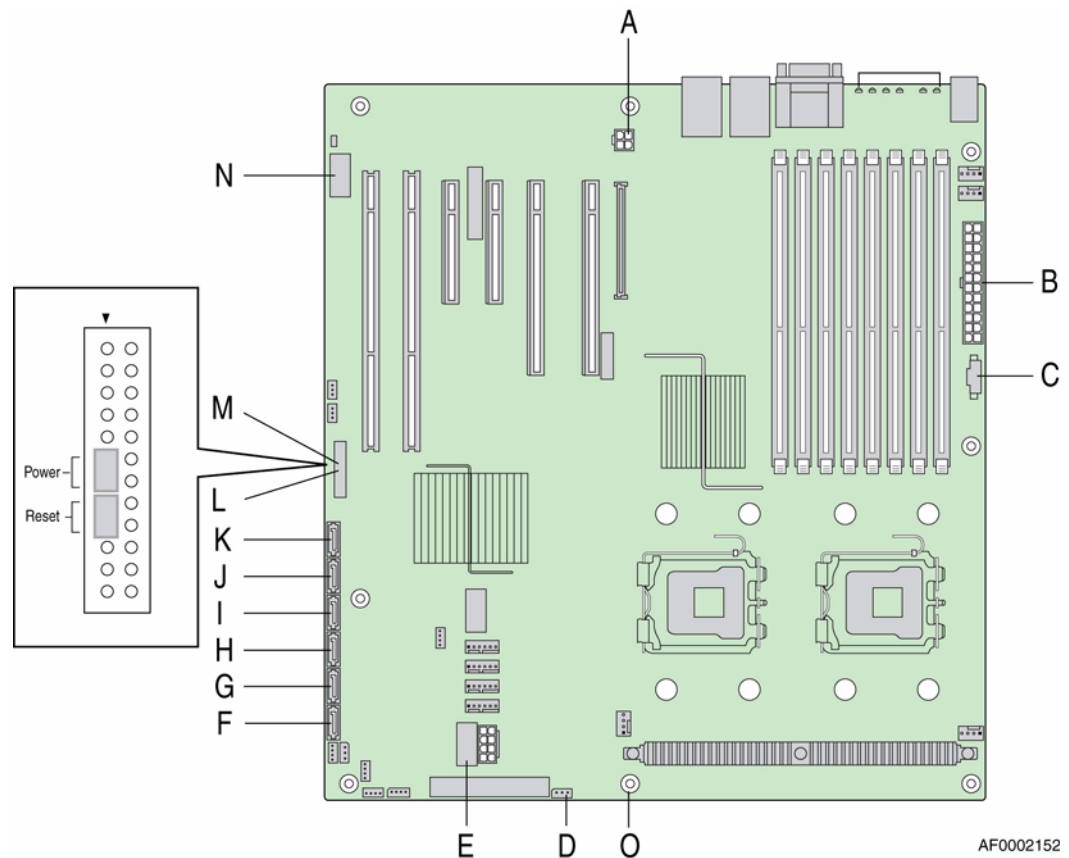
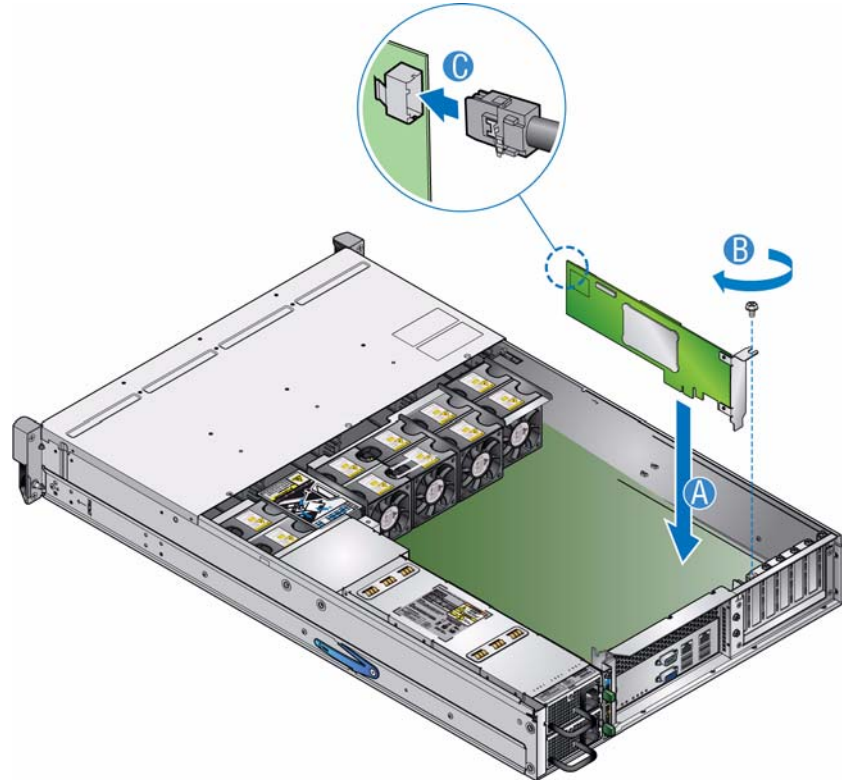


Figure 117. Connecting Cables and Standoff to Server Board

23. (Intel® Storage Server SSR212MC2R only) Install the Intel® RAID Controller SRC SAS144E in the leftmost PCI slot (see letter “A” in the following figure). Tighten the screw on the retaining bracket at the back of the enclosure (see letter “B”). Connect the SAS cable (see letter “C”).



AF0002149

Figure 118. Re-installing Intel® RAID Controller SRC SAS144E

24. (Intel® Storage Server SSR212MC2R only) Install the Intel® Intelligent AXXRIBBU1 Battery Backup Unit in the rightmost PCI slot (see letter “A” in the following figure). Tighten the screw on the retaining bracket at the back of the enclosure (see letter “B”). Connect the BBU cable to the Intel® RAID Controller SRC SAS144E (see letter “C”).

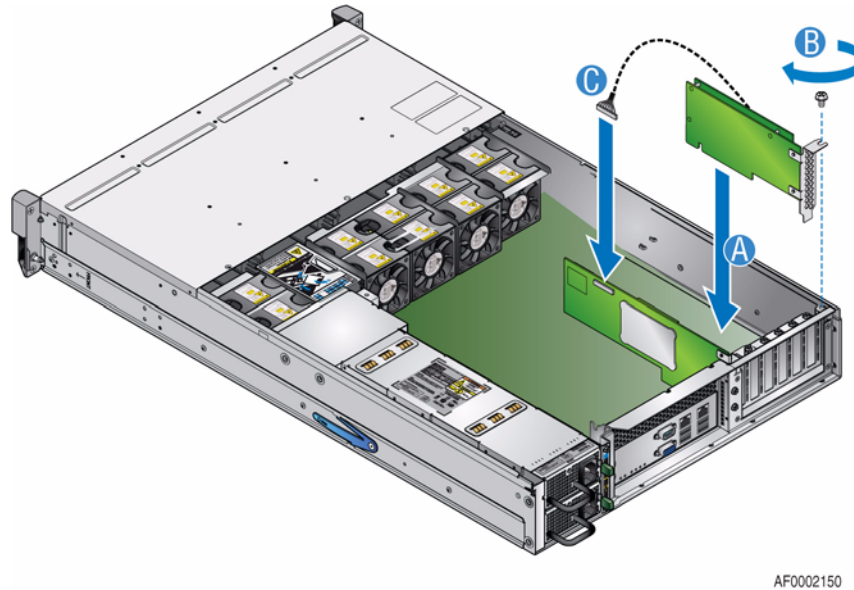


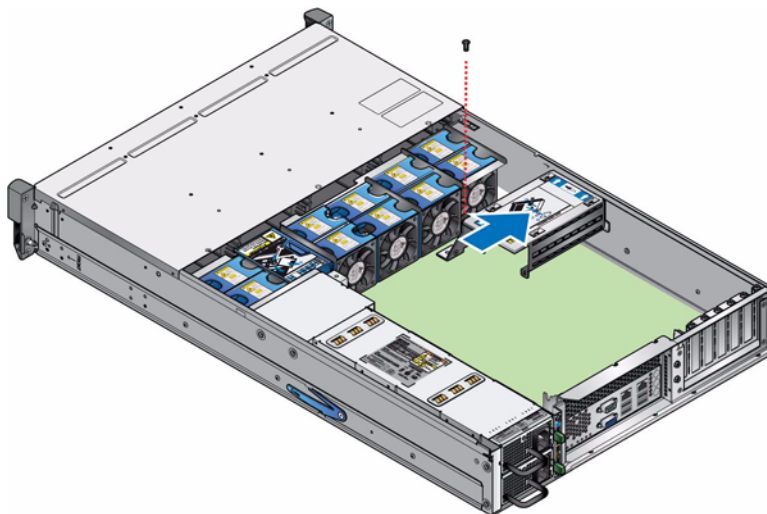
Figure 119. Re-installing Intel® Intelligent AXXRIBBU1 Battery Backup Unit

25. If used, install the SATA, USB, or ATA DOM. For instructions, see the appropriate DOM installation section in this chapter.
26. (IDE DOM or SATA DOM use only) Connect the P4 power cable to the power adapter for the IDE or SATA DOM.
27. (Boot Drive use only) Connect the P4 power cable to the boot drive module backplane.

Note: *The P4 power cable is connected to the boot drive module backplane when using boot drives. If using a SATA or IDE DOM then the P4 power cable is connected to the power adapter of the SATA or IDE DOM device. Power for a USB DOM device is provided by the USB connector.*

28. (Boot Drive use only) Connect the two SAS/SATA cables to the boot drive module backplane.

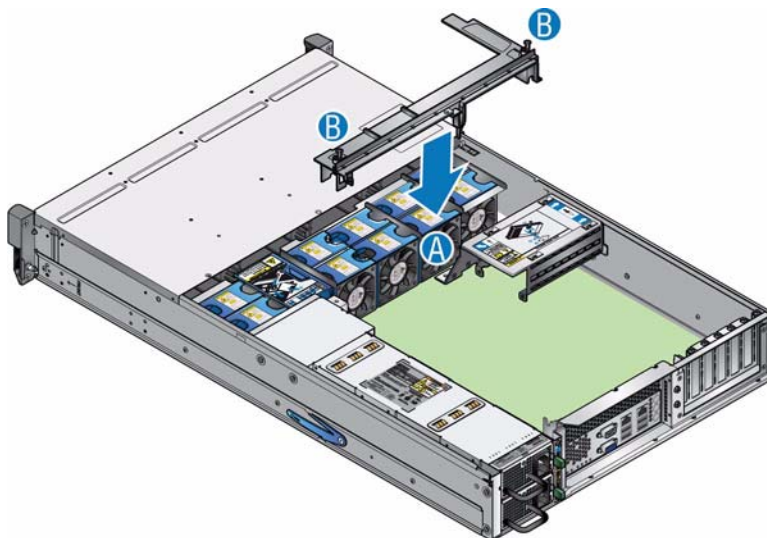
29. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 120. Re-installing Boot Drive Module

30. Re-install brace assembly in enclosure (see letter “A” in the following figure). Secure brace assembly to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 121. Re-installing Brace Assembly

31. Re-install the processor air duct. For instructions, see “Installing the Processor Air Duct” on page 45.
32. Re-install the enclosure cover. For instructions, see “Installing the Enclosure Cover” on page 28.

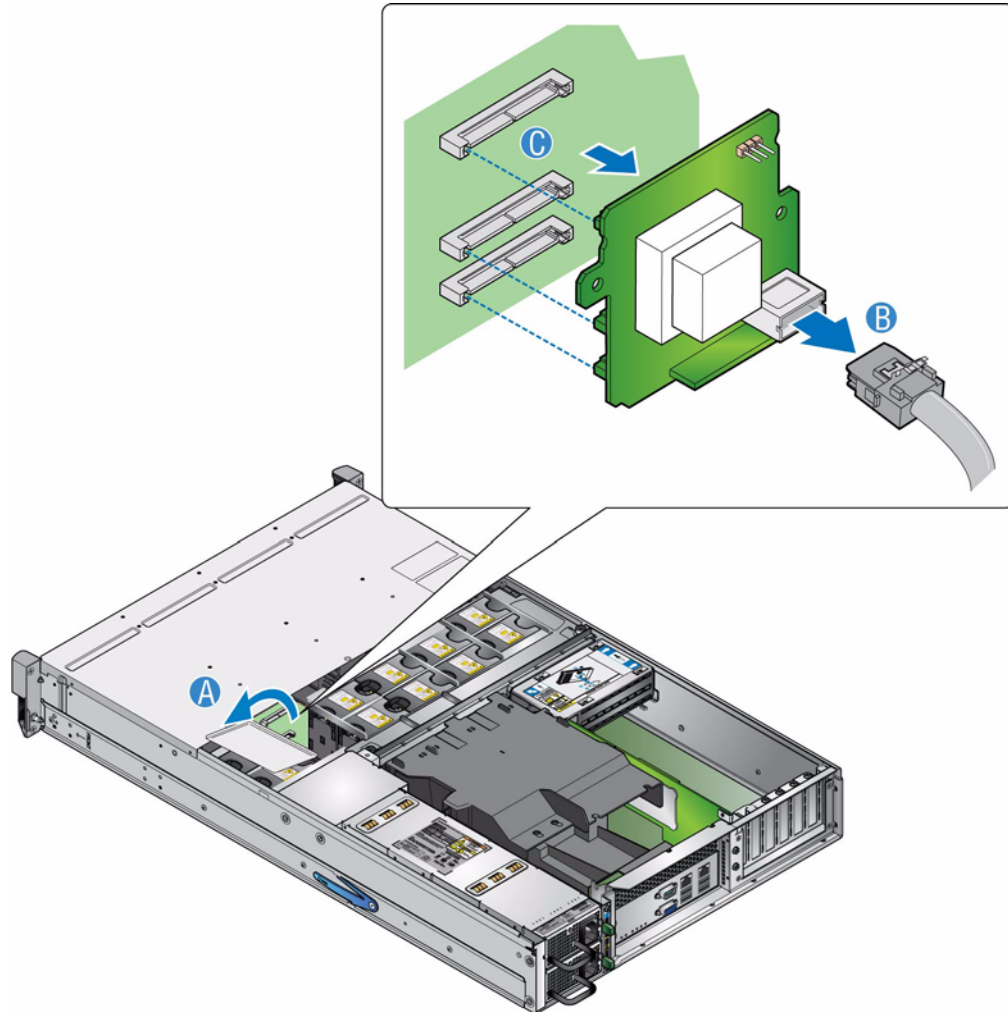
33. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing the SAS Expander PCB

Warning: *Hot Surfaces: Disconnect power and allow to cool before servicing*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).

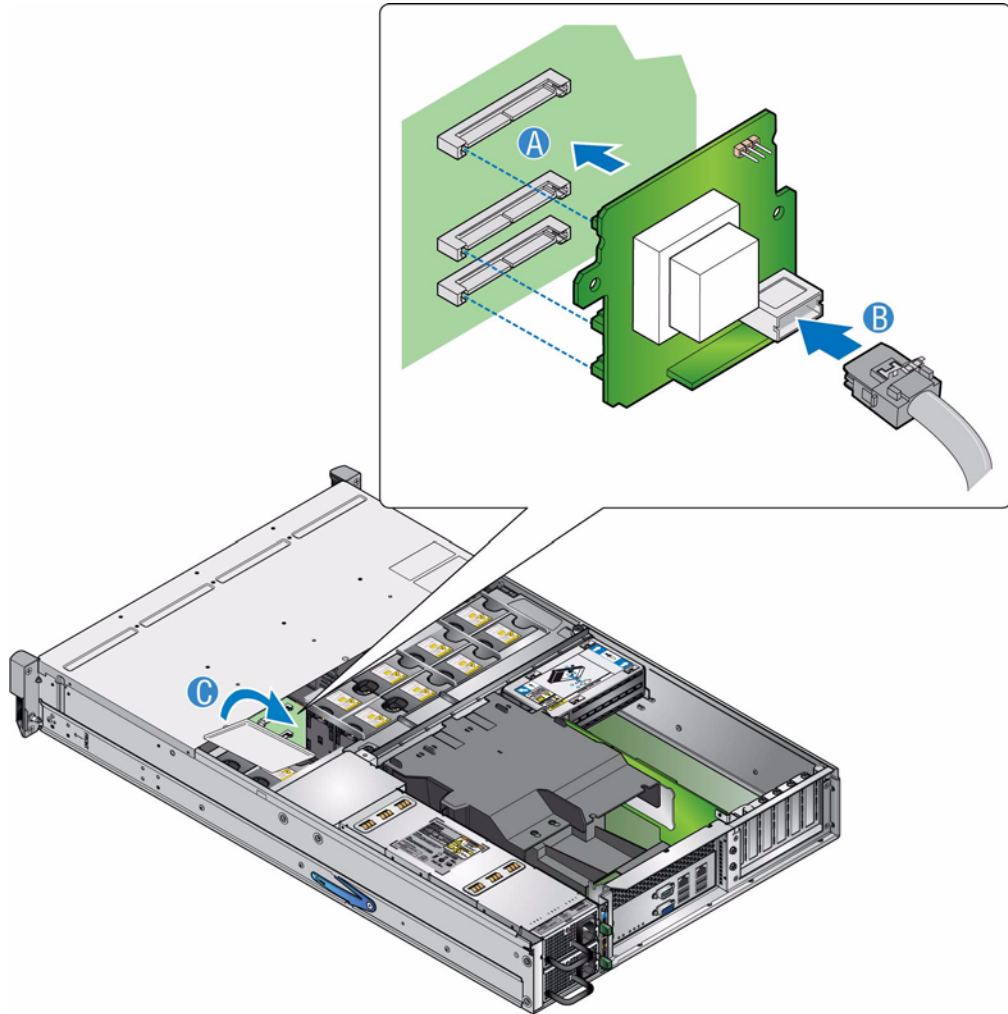
5. Open the PCB cover (see letter “A” in the following figure). Remove the SAS cable (see letter “B”). Pull the SAS Expander PCB assembly forward, unplugging it from the backplane (see letter “C”).



AF0002141

Figure 122. Removing the SAS Expander PCB

6. Insert the replacement SAS Expander PCB and plug the assembly into the backplane (see letter “A” in the following figure). Attach the SAS cable (see letter “B”). Close the PCB cover (see letter “C”).



AF0002142

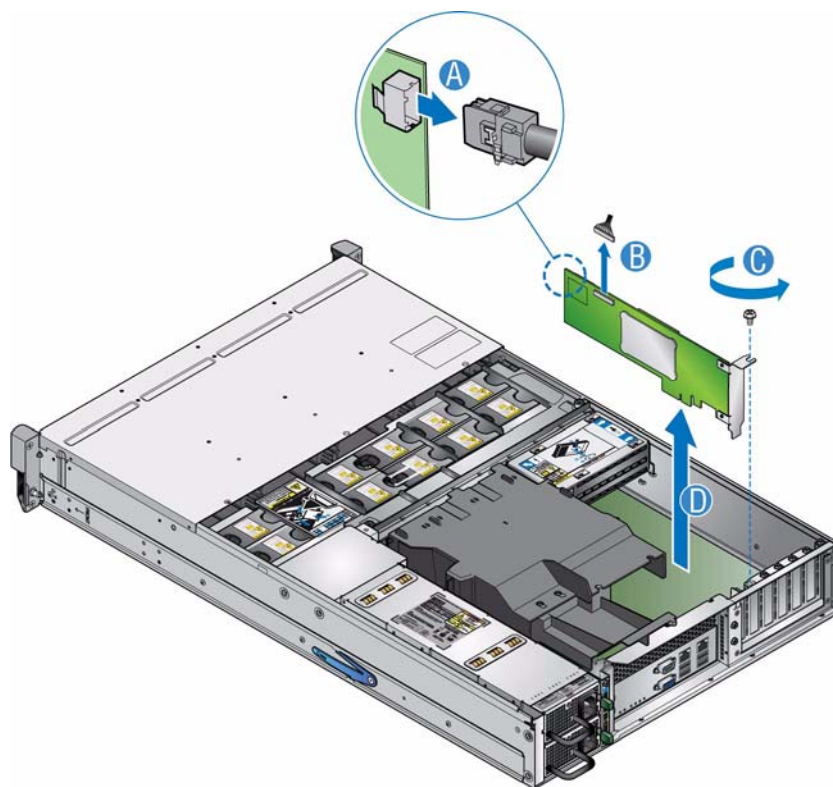
Figure 123. Installing the SAS Expander PCB

7. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
8. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing an Intel® RAID Controller SRCAS144E

The Intel® RAID Controller SRCAS144E is installed in the left-hand PCI slot (*when viewed from the rear*) of the Intel® Storage Server SSR212MC2/SSR212MC2R.

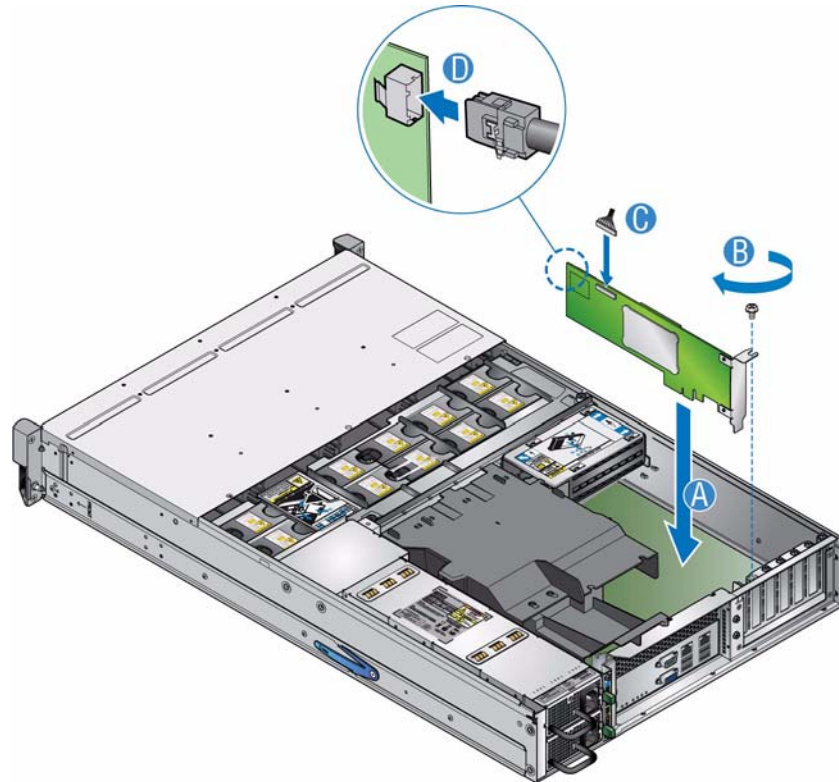
1. Observe all safety and ESD precautions listed in “[Safety Information](#)” on page 189.
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see “[Removing the Enclosure Cover](#)” on page 26.
5. Disconnect the SAS cable (see letter “A” in the following figure). Disconnect the BBU cable from the Intel® Intelligent AXXRIBBU1 Battery Backup Unit (see letter “B”). Release the screw on the retaining bracket at the back of the enclosure (see letter “C”). Ease the Intel® RAID Controller SRCAS144E upwards and out of the PCI slot (see letter “D”).



AF0002147

Figure 124. Removing the Intel® RAID Controller SRCAS144E

6. Install the replacement Intel® RAID Controller SRC SAS144E in the leftmost PCI slot (see letter “A” in the following figure), ensuring it is seated firmly in the slot. Replace the screw removed in the previous step (see letter “B”). Reconnect the BBU cable (see letter “C”). Reconnect the SAS cable (see letter “D”).



AF0002138

Figure 125. Installing the Intel® RAID Controller SRC SAS144E

7. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover”](#) on page 28.
8. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Replacing the Intel® Intelligent AXXRIBBU1 Battery Backup Unit

The Intel® Intelligent AXXRIBBU1 Battery Backup Unit is installed in the right-hand PCI slot (*when viewed from the rear*) of the Intel® Storage Server SSR212MC2/SSR212MC2R.

Warning: *Risk of explosion if battery pack is replaced by an incorrect type. The battery pack must only be replaced with a battery pack of the following type, which contains current limiting and temperature sensing devices:*

- *Battery type: NiMH (Nickel Metal Hydride), (Intel P/N C89496-150) or equivalent.*
- *Mounting Bracket*
- *1 x Screw, Pozi, CSK, ZN PL, M3x8*

Caution: *If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.*

The Intel® Intelligent AXXRIBBU1 Battery Backup Unit should only be replaced by a qualified service person.

Caution: *It is recommended that you fit and check a suitable anti-static wrist or ankle strap and observe all conventional ESD precautions when handling plug-in modules and components. Avoid contact with backplane components and module connectors, etc.*

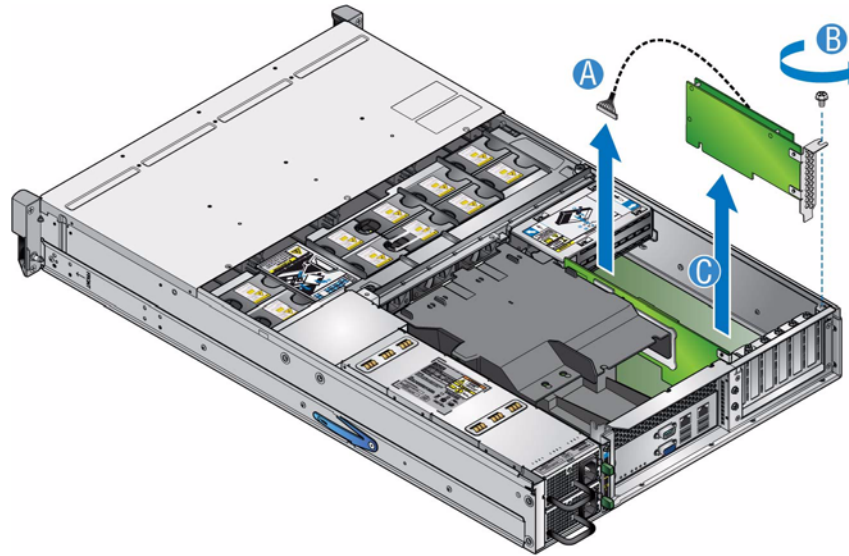
Important: *Dispose of the exhausted battery in accordance with National safety regulations.*

Caution: *The following procedure will remove all data from the cache.*

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).

5. Disconnect the BBU cable to the Intel® RAID Controller SRCAS144E (see letter “A” in the following figure). Release the screw in the retaining bracket at the back of the enclosure (see letter “B”). Ease the Intel® Intelligent AXXRIBBU1 Battery Backup Unit out of the PCI slot (see letter “C”).

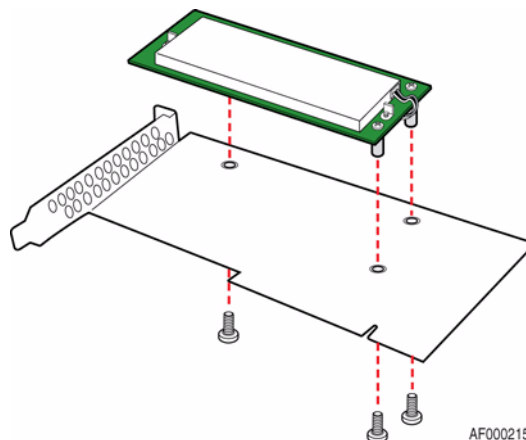
Caution: Support the Intel® Intelligent AXXRIBBU1 Battery Backup Unit while releasing the cable and take care not to bend the pins when unplugging the connector.



AF0002140

Figure 126. Removing the Intel® Intelligent AXXRIBBU1 Battery Backup Unit

6. Remove the three screws securing the battery assembly to the battery backup unit.



AF0002154

Figure 127. Removing Battery Assembly from Battery Backup Unit

7. Attach replacement battery to battery backup unit with three screws (see letter “A” in the following figure). Connect cable to activate battery (see letter “B”).

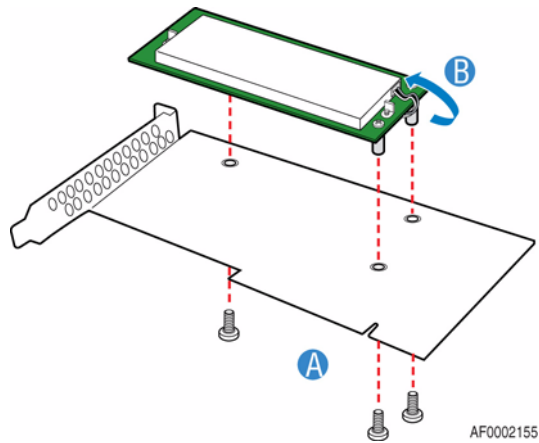


Figure 128. Attaching Battery to Battery Backup Unit

8. Install the new Intel® Intelligent AXXRIBBU1 Battery Backup Unit in the rightmost PCI slot (see letter “A” in the following figure). Support the Intel® Intelligent AXXRIBBU1 Battery Backup Unit while aligning the bracket and replacing the screw removed in step 5 (see letter “B”). Connect the BBU cable to the Intel® RAID Controller SRC SAS144E (see letter “C”).

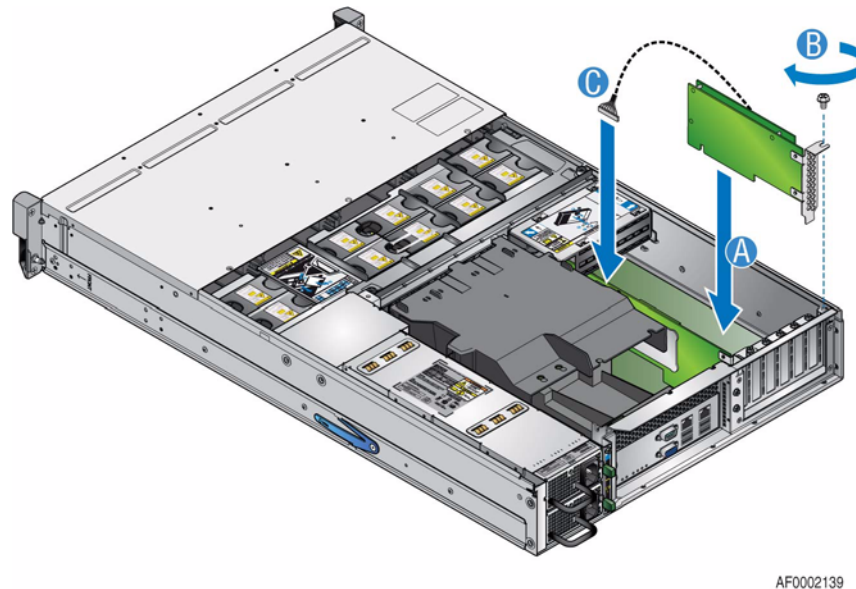


Figure 129. Installing the New Intel® Intelligent AXXRIBBU1 Battery Backup Unit

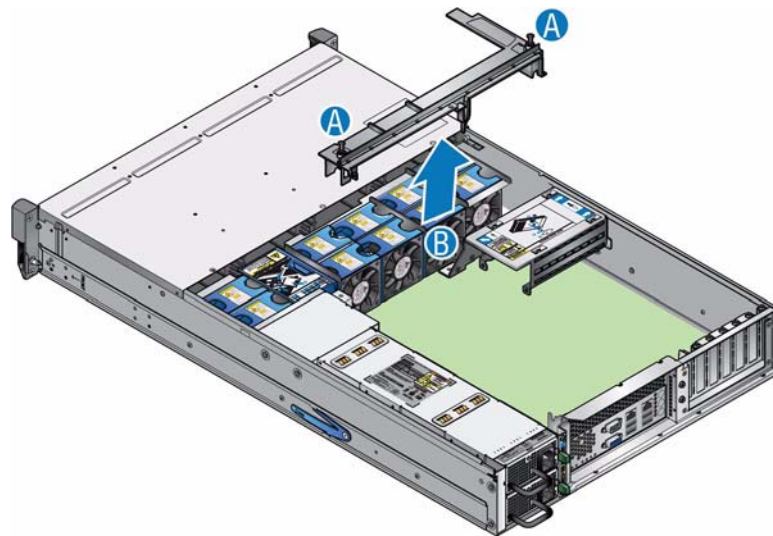
9. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
10. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing the Boot Drives

You can replace individual boot drives or the complete boot drive module.

Warning: Power down and wait 30 seconds for drives to spin down before removal

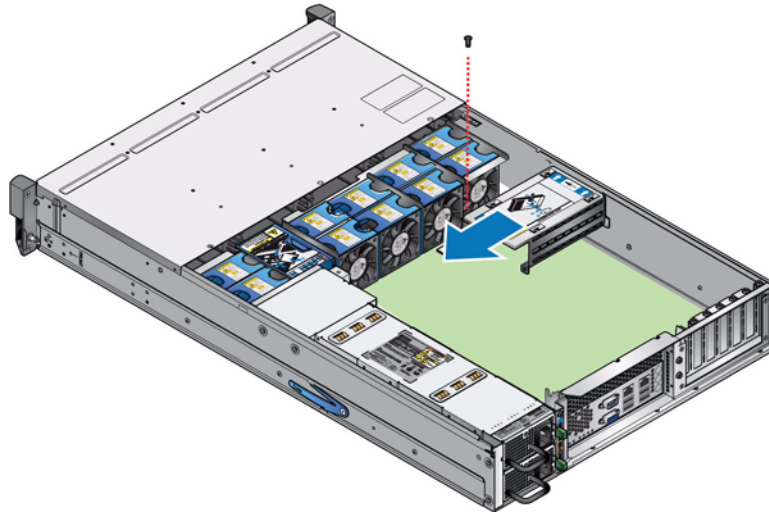
1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).
6. Loosen the two captive screws securing the brace assembly to the enclosure (see letter “A” in the following figure). Lift brace assembly out of enclosure (see letter “B”).



AF0002107

Figure 130. Removing Brace Assembly

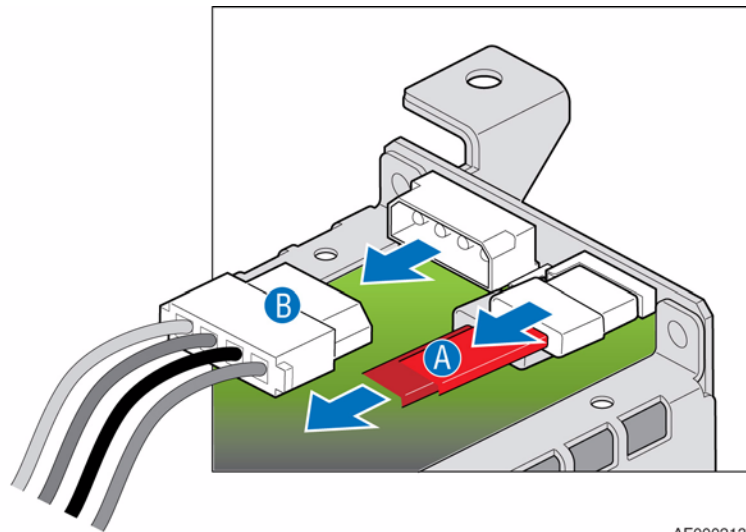
7. Remove the single screw at the top of the boot drive module and slide the module off the two chassis pins (as shown).



AF0002105

Figure 131. Removing Boot Drive Module

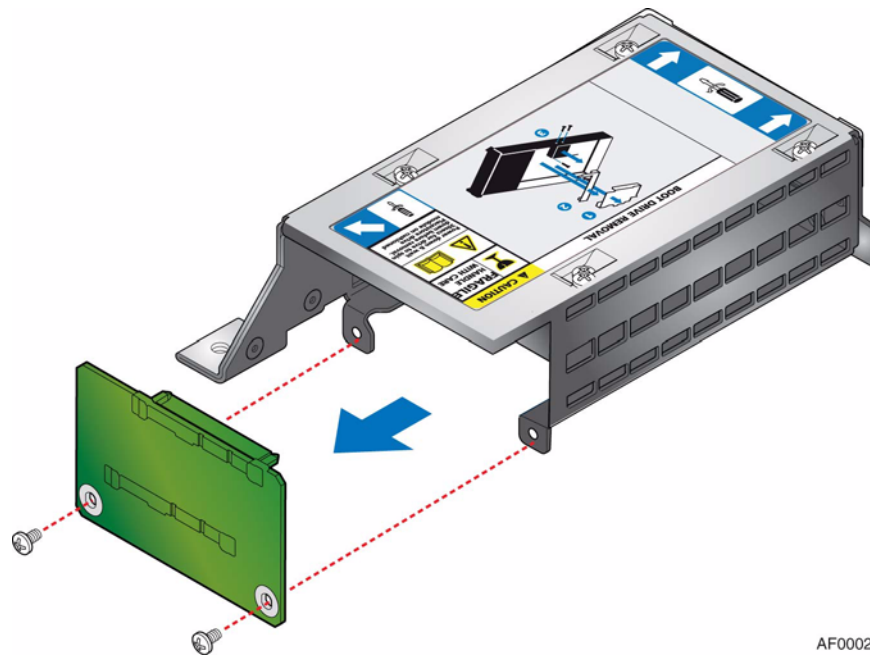
8. Turn the boot drive module over. Disconnect the disk drive cables (see letter “A” in the following figure) and the P4 power cable (see letter “B”) from the boot drive module backplane.



AF0002136

Figure 132. Disconnecting Power Cable and Disk Drive Cables from Boot Drive Module Backplane

9. Remove the two screws securing the backplane to the boot drive module. Remove the backplane from the boot drive module.

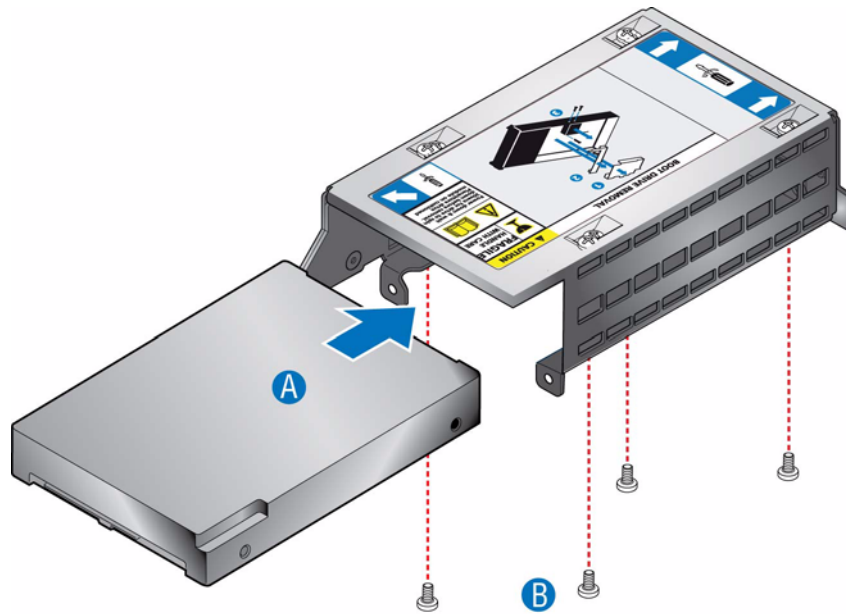


AF0002133

Figure 133. Removing Backplane from Boot Drive Module

10. Install lower boot drive in boot drive module with circuit side facing down and connectors oriented toward backplane (see letter “A” in the following figure). Secure disk drive to boot drive module with four screws (see letter “B”).

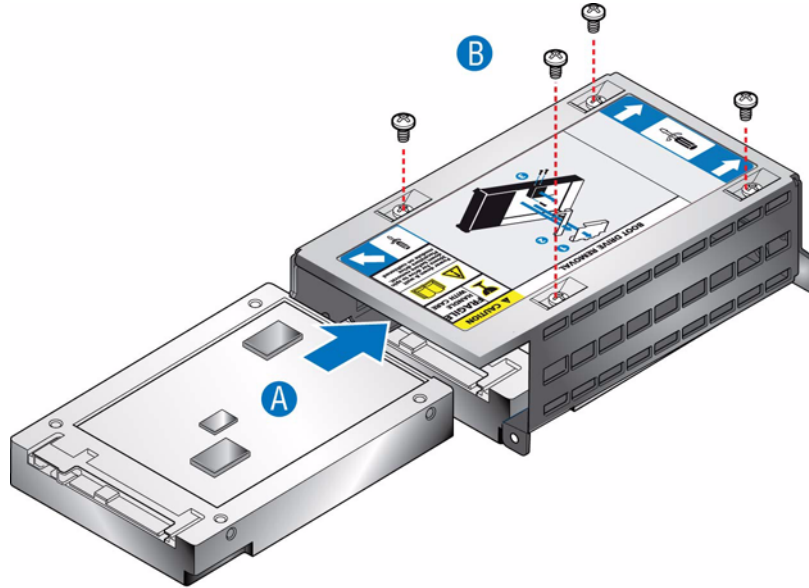
Caution: When handling drives, ensure that they are placed (and stored) on a cushioned surface.



AF0002131

Figure 134. Installing Lower Boot Drive

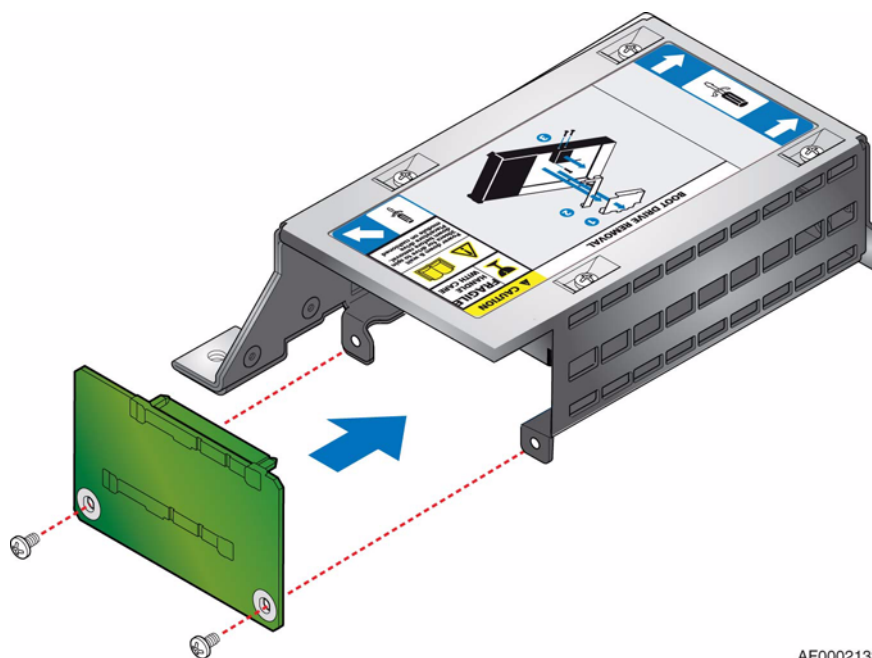
11. (Optional) Install second boot drive in upper slot with circuit side facing up and connectors oriented toward backplane (see letter “A” in the following figure). Secure disk drive to boot drive module with four screws (see letter “B”).



AF0002130

Figure 135. Installing Upper Boot Drive

12. Align backplane screw holes with screw holes on boot drive module. Ensure backplane connectors are aligned with the drive connectors on the boot drives. Ensure the top of the circuit board is flush with the top of the boot drive module. Secure backplane to boot drive module with two screws.

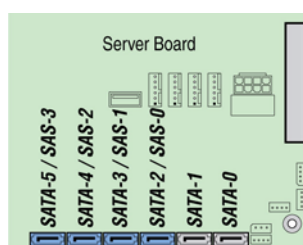


AF0002132

Figure 136. Attaching Backplane to Boot Drive Module

13. Reconnect SATA cables to backplane as follows:

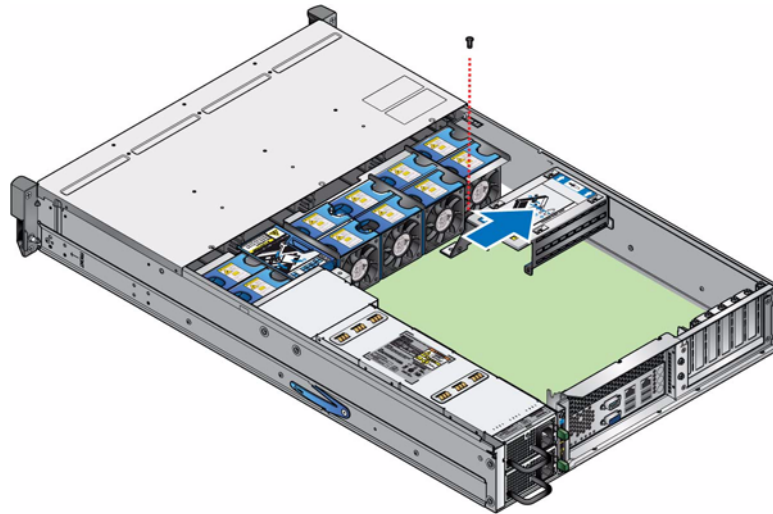
- For Intel® Storage Server SSR212MC2
 - Bottom boot drive to SATA 0 on server board
 - Top boot drive to SATA 1 on server board
- For Intel® Storage Server SSR212MC2R
 - Bottom boot drive to SAS 0 on server board
 - Top boot drive to SAS 1 on server board



AF0002153

Figure 137. Connector Locations on Server Board

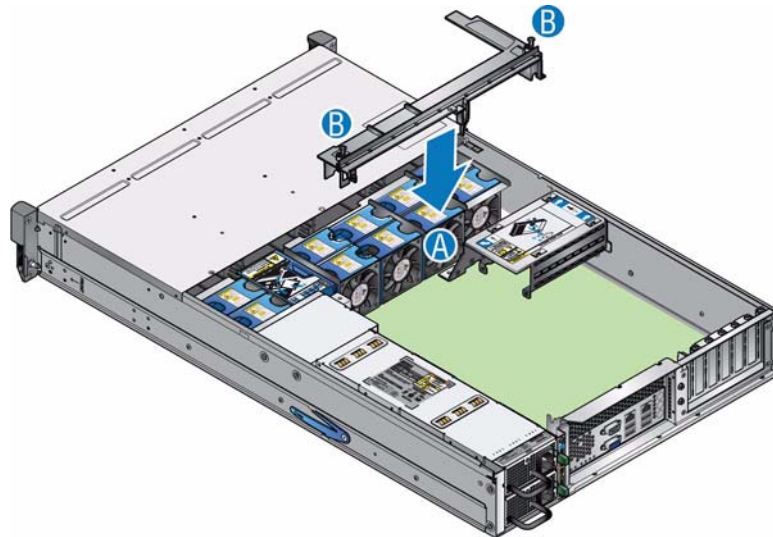
14. Reconnect power cable to the boot drive module.
15. Align the two holes at the back of the boot drive module with the two chassis pins. Push until seated properly. Secure the boot drive module to the chassis with the single screw previously removed.



AF0002106

Figure 138. Re-installing Boot Drive Module

16. Re-install brace assembly in enclosure (see letter “A” in the following figure). Secure brace assembly to enclosure by tightening the two captive screws (see letter “B”).



AF0002108

Figure 139. Re-installing Brace Assembly

17. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
18. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
19. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

Installing an Add-in Board

Note: You may want to install an operating system before installing any add-in boards.

Caution: Do not overload the server board by installing add-in boards that draw excessive current.

Caution: Add-in boards can be extremely sensitive to ESD and always require careful handling. After removing the board from its protective wrapper, place it component side up on a grounded, static-free surface or conductive foam pad, if available. Do not slide the add-in board over any surface.

1. Observe all safety and ESD precautions listed in [“Safety Information” on page 189](#).
2. Turn off all peripheral devices connected to the storage system. Power down the storage system.
3. Disconnect the AC power cord(s).
4. Remove the enclosure cover. For instructions, see [“Removing the Enclosure Cover” on page 26](#).
5. Remove the processor air duct. For instructions, see [“Removing the Processor Air Duct” on page 44](#).
6. Remove the screw securing the expansion slot cover to the chassis. Remove the expansion slot cover and save.
7. Remove the add-in board from its protective wrapper. Be careful not to touch the components or gold-edge connectors. Place add-in board on an anti-static surface.
8. Set any jumpers or switches on the add-in board according to the manufacturer’s instructions.
9. Hold add-in board by its top edge or upper corners. Firmly press the add-in board into an expansion slot on the server board. The tapered foot on the expansion card bracket must fit into the slot in the retention slot frame.
10. Align the rounded notch in the retaining bracket of the add-in board with the threaded hole in the frame. The retaining bracket fits the space that was previously occupied by the expansion slot cover.
11. Secure the add-in board to the chassis with the screw that was previously removed.
12. Attach cables, if necessary.

13. Re-install the processor air duct. For instructions, see [“Installing the Processor Air Duct” on page 45](#).
14. Re-install the enclosure cover. For instructions, see [“Installing the Enclosure Cover” on page 28](#).
15. Reconnect all peripheral devices and the AC power cord(s). Power up the storage system.

5 Troubleshooting and Problem Solving

Overview

The Intel® Storage Server SSR212MC2/SSR212MC2R includes an Enclosure Services Processor and associated monitoring and control logic to enable it to diagnose problems within the enclosure's power, cooling and drive systems.

The sensors for power and cooling conditions are housed within the PSUs and cooling fans. There is independent monitoring for each unit.

Initial Start-up Problems

Faulty Cords

First check that you have wired up the subsystem correctly. Call your supplier for replacement if:

- Cords are missing or damaged
- Plugs are incorrect
- Cords are too short

Alarm Sounds On Power Up

See “Audible Alarms” on page 129 for details.

Computer Doesn't Recognize the Subsystem

1. Check that the interface cables from the Intel® Storage Server SSR212MC2/SSR212MC2R to the host computer are fitted correctly.
2. Check that the LEDs on all installed drive carrier modules are illuminated (amber).

Note: Drive LEDs will not be lit during drive spin up.

3. Check that drive carrier modules have been correctly installed.

LEDs

A green LED is always used for good or positive indication. A flashing green/amber LED is used for non-critical conditions. With the exception of the drive carrier module LED, which is lit amber under Normal conditions (see [“Drive Carrier Module Faults” on page 133](#)), a continuous red or amber LED indicates the presence of a critical fault within the module.

Power Supply Units

The power supply unit provides a single external bi-color LED to indicate the status of the power supply. When AC is applied to the PSU and standby voltages are available, the LED will blink green. The LED will be solid on green to indicate that all power outputs are available. The LED will be solid on amber to indicate that the power supply has failed (i.e., shut down due to over current, shut down due to over temperature, or a predictive failure).

Table 11. Power Supply Unit LED States

Condition	LED State
No AC power to all PSUs	Off
Power supply direct current (DC) outputs ON and OK	Green
No AC power to this PSU only	Amber
AC present / only standby outputs	Blink Green
Power supply failure (includes over voltage, over temperature)	Amber
Voltage regulator module (VRM) failure (cage related)	Blink green
240VA limit (cage related)	Blink green
Current limit	Amber

Front Operator’s Panel

The Front Operator’s Panel displays the aggregated status of all the modules. Front Operator’s Panel LED states are defined in [Table 12](#).

Note: The Front Operator's Panel is supplied as an integral part of the enclosure core product and is not user replaceable.

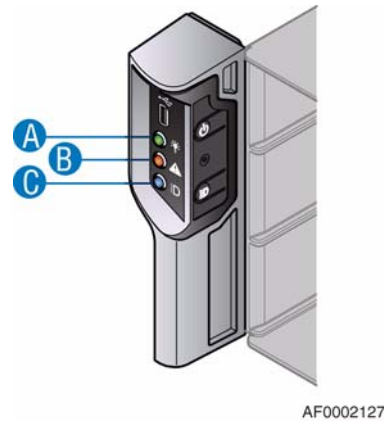


Figure 140. Front Operator's Panel LEDs

A. Power Active LED
B. Unit Fault LED
C. Enclosure ID LED

Table 12. Ops Panel LED States

LEDs	Normal Operation	Fault Condition
Power Active	Constant Green: good or positive indication.	
Unit Fault	OFF	Constant Amber: fault present
Enclosure ID	Blue: <i>only when activated</i>	

Cooling Fan LEDs

An amber LED incorporated in each cooling fan monitors its status. Constant On indicates a fault condition. A flashing light indicates that the fan ident is On.

Drive Carrier Module LEDs

Disk drive status is monitored by a green LED and an amber LED mounted on the front of each Drive Carrier module. The conditions for each LED are defined in [“Drive Carrier Module Faults”](#) on page 133.

Rear Panel LED

Table 13. Rear Panel Status LED

Enclosure ID LED	Blue (when activated)	Activated by push button on the Front Operator's Panel, or by system software. Used to identify a server from among several servers.
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Server Board LEDs

I/O Panel Status LEDs

The server board I/O panel contains a number of diagnostic LEDs, whose functions are summarized in the following table. Refer to your server board documentation for full details of each LED state.

Table 14. Server Board Status LEDs

LED	Color	Function
System Status LED	<ul style="list-style-type: none"> • Green • Off • Alternating Green/Amber • Amber • Green blink • Amber blink 	<ul style="list-style-type: none"> • System OK • AC power off • System not ready • Critical fault • System degraded • Non-fatal alarm, system likely to fail
4 x Power-On Self Test (POST) LEDs	Off *Amber	System Running normally The POST LEDs toggle between red, green, amber and Off at boot up. *(Lit amber only if a failure occurs).

I/O Panel NIC LEDs

The Network Interface Controller (NIC) LED states are summarized in the following table. Refer to your server board documentation for full details of each state.

Table 15. NIC LEDs

LED	LED State	Description
Left	Off	No network connection is in place
	Solid green	Active network connection is in place
	Blinking green	Transmit / receive activity is occurring
Right	Off	10 Mbps connection (if left LED is on or blinking)

Table 15. NIC LEDs

LED	LED State	Description
	Solid green	100 Mbps connection
	Solid amber	1000 Mbps connection

Audible Alarms

The PSUs incorporate audible alarms, which indicate when a fault state is present. A **Voltage Out Of Range** condition will activate the audible alarm.

The audible alarm can be muted by pressing the Enclosure ID button on the Front Operator's Panel.

Alarm Interpretation

The following table summarizes the various interpretations when combining LED states and audible alarms. Use this table to help understand a pattern of lights and beeps. Each light/beep is taken in turn and shows linked items, so some of the data is duplicated in several places to make ease of search better.

Note: There will be no beep if the enclosure is muted

Table 16. Light and Buzzer Interpretations

LED/Buzzer	State	Related	Meaning	Action
Front Operator's Panel Fault Light	Off	-	No warnings or worse	None - All OK
	Slow blink (0.5 seconds on, 3.5 seconds off)	Slow beep (half second beep every 8 seconds). No fan/drive lights lit constant. No beep if muted.	Warning state – usually approaching temperature threshold	Check ambient temperature and increase if too cold or decrease if too hot. If this does not work, check for fan failure that has a broken light too.
		Slow beep. Fan light constant. No beep if muted.	Fan broken or out of tolerance	Replace lit fan.
		Slow beep. Drive light constant. No beep if muted.	Drive fault	Replace drive

Table 16. Light and Buzzer Interpretations

	Fast Blink (alternating every half second)	Faster beep (1.5 seconds beep, 0.5 second silence). No fan lights constant. No beep if muted.	Critical state – usually temperature near edge of operating realm	Check ambient temperature and increase if too cold or decrease if too hot immediately. If this does not work, check for a fan failure that also has a broken light.
		Faster beep, More than one fan light on or a single PSU fan light on. No beep if muted.	Fans broken or out of tolerance	Replace fans immediately
	Constant On	Constant – no fan lights lit constant	Failure State – temperature in range where damage could occur	Check ambient temperature and increase if too cold or decrease if too hot immediately. If this does not work check for fan failure that has a broken light too.
		Constant – multiple fan lights lit constant	Fans broken or out of tolerance	Replace Fans immediately. Decrease ambient temperature
Fan Light	Constant On	Varying levels of beep and chassis fault light setting. No beep if muted.	Fan broken or out of tolerance	Replace Fans immediately.
	Flashing		Fan Ident On	
Drive Light (amber)	Constant On	Varying levels of beep and chassis fault – usually slow beep and slow flash. No beep if muted.	Drive faulty	Replace drive
	Flashing		Drive Ident On	
Front Operator's Panel ID LED	Flashing		Ops Panel Ident On	
Buzzer	Off	Front Operator's Panel Fault LED Off	No issues	
	Off	Front Operator's Panel Fault LED Flashing or Constant	Muted.	See Front Operator's Panel LED settings above for interpretation of lights and remedy.

Table 16. Light and Buzzer Interpretations

	Intermittent short beep (0.5 second beep every 32 seconds)	Various Front Operator's Panel Fault light flash states	Fault has occurred and system is muted but in remind mode	Check fault status using Ops Panel fault LED settings and remedy.
	Slow beep (half second beep every 8 seconds).	Front Operator's Panel Fault LED slow blink (0.5 seconds On, 3.5 seconds Off).	Warning Mode	See Front Operator's Panel fault LED settings above
	Faster beep (1.5 seconds beep, 0.5 second silence)	Front Operator's Panel Fault LED fast blink (alternating every half second)	Critical Mode	See unit fault LED settings above
	Constant beep	Front Operator's Panel Fault LED constant On	Failure Mode	See Front Operator's Panel fault LED settings above

Troubleshooting

The following sections describe common problems, with possible solutions, which can occur with your Intel® Storage Server SSR212MC2/SSR212MC2R.

For details on how to remove and replace a module see Section “[Hardware Installations and Upgrades](#)” on page 25.

System Faults

Symptom	Cause	Action
1. Audible alarm sounds	1. Internal fault detected (e.g., failure of an internal communications path)	1. Check for other amber LED indications on the Power Supply Units. If there is a PSU error present there may be a communications problem with that PSU. Remove and then re-fit the PSU. If the problem persists then change the PSU.

Power Supply Unit Faults

Symptom	Cause	Action
<ol style="list-style-type: none"> Front Operator's Panel unit fault LED amber Audible alarm sounding. 	<ol style="list-style-type: none"> Any power fault. A thermal condition which could cause PSU overheating. 	<ol style="list-style-type: none"> Check that the AC mains connection to PSU is live. Disconnect the PSU from mains power and remove the PSU from the power supply cage. Re-install. If problem persists, replace PSU. Reduce the ambient temperature.

Cooling Fan Faults

Symptom	Cause	Action
<ol style="list-style-type: none"> Front Panel fault LED amber. Audible alarm sounding. Fan LED is illuminated. 	<ol style="list-style-type: none"> Any power fault. A fan failure. 	<ol style="list-style-type: none"> Check to ensure DC power to cooling fans is correct and that the fan LED is not illuminated. Disconnect the PSU from mains power and remove the faulty fan from the system. Re-install. If problem persists, replace PSU. Reduce the ambient temperature.

Thermal Control

The Intel® Storage Server SSR212MC2/SSR212MC2R uses extensive thermal monitoring to ensure component temperatures are kept low and acoustic noise is minimized. Airflow is from front to rear of the enclosure.

Symptom	Cause	Action
<p>If the ambient air is cool (below 25 °C) and the fans are observed to increase in speed then some restriction on airflow may be causing an additional internal temperature rise.</p> <p>NOTE: This is not a fault condition.</p>	<p>The first stage in the thermal control process is for the fans to automatically increase in speed when a thermal threshold is reached. This may be caused by higher ambient temperatures in the local environment and may be perfectly normal.</p> <p>NOTE: This threshold changes according to the number of drives and power supplies fitted.</p>	<ol style="list-style-type: none"> Check the installation for any airflow restrictions at either the front or rear of the enclosure. A minimum gap of 25 mm at the front and 50 mm at the rear is recommended. Check for restrictions due to dust build-up; clean as appropriate. Check for excessive re-circulation of heated air from rear to front. Use in a fully enclosed rack installation is not recommended. Check that all blank modules are in place. Reduce the ambient temperature.

Thermal Alarm

Symptom	Cause	Action
<ol style="list-style-type: none"> 1. Front Operator's Panel Unit Fault LED amber. 2. An amber LED is lit on one or more PSUs. 	<p>If the internal temperature measured in the airflow through the enclosure exceeds a pre-set threshold, a thermal alarm will sound.</p>	<ol style="list-style-type: none"> 1. Check to ensure that local ambient environment temperature is below the upper 35°C specification. 2. Check the installation for any airflow restrictions at either the front or rear of the enclosure. A minimum gap of 25 mm at the front and 50 mm at the rear is recommended. 3. Check for restrictions due to dust build-up; clean as appropriate. 4. Check for excessive re-circulation of heated air from rear to front. Use in a fully enclosed rack installation is not recommended. 5. If possible, shut down the enclosure and investigate the problem before continuing.

Drive Carrier Module Faults

Each Drive Carrier module has two LEDs: an upper (green) LED and a lower (amber) LED.

- Under normal operation, the green LED is ON and will flicker as the drive operates
- Under normal operation, the amber LED will be:
 - OFF if there is no drive present
 - OFF as the drive operates
 - ON if a drive fault is present.

Note: Refer to your vendor-supplied documentation when using storage software for handling drive-related hardware faults.

Important: Dummy Drive Carrier modules must be fitted in all unused drive bays to maintain a balanced airflow.

Dealing with Hardware Faults

Ensure that you have obtained a replacement module of the same type *before* removing any faulty module.

- If the subsystem is powered up and you remove any module, replace it immediately. If the subsystem is used with modules or module blanks missing for more than a few

minutes, the enclosure can overheat, causing power failure and data loss. Such use will invalidate the warranty.

- Replace a faulty drive with a drive of the same type and equal or greater capacity.
- Refer to your vendor-supplied documentation when using storage software for handling drive-related hardware faults.
- All drive bays must be fitted with a Drive Carrier module in order to maintain a balanced airflow.
- All the supplied plug-in power supply units, electronics modules and blank modules must be in place for the air to flow correctly around the cabinet.

Caution: *Observe all conventional ESD precautions when handling modules and components. Avoid contact with backplane components and module connectors, etc.*

Important: *The top cover of the enclosure covers a service area which should be accessed only by qualified service personnel. When the cover is replaced it **MUST** be secured by turning the lock mechanism to the “locked” position.*

Continuous Operation During Replacement

Depending on how the enclosure system is set up, if a disk unit fails, it can normally be replaced without interrupting the use of the system.

If an enclosure contains two PSUs, either PSU can maintain power to the system while the other is being replaced.

A Upgrading Component Firmware

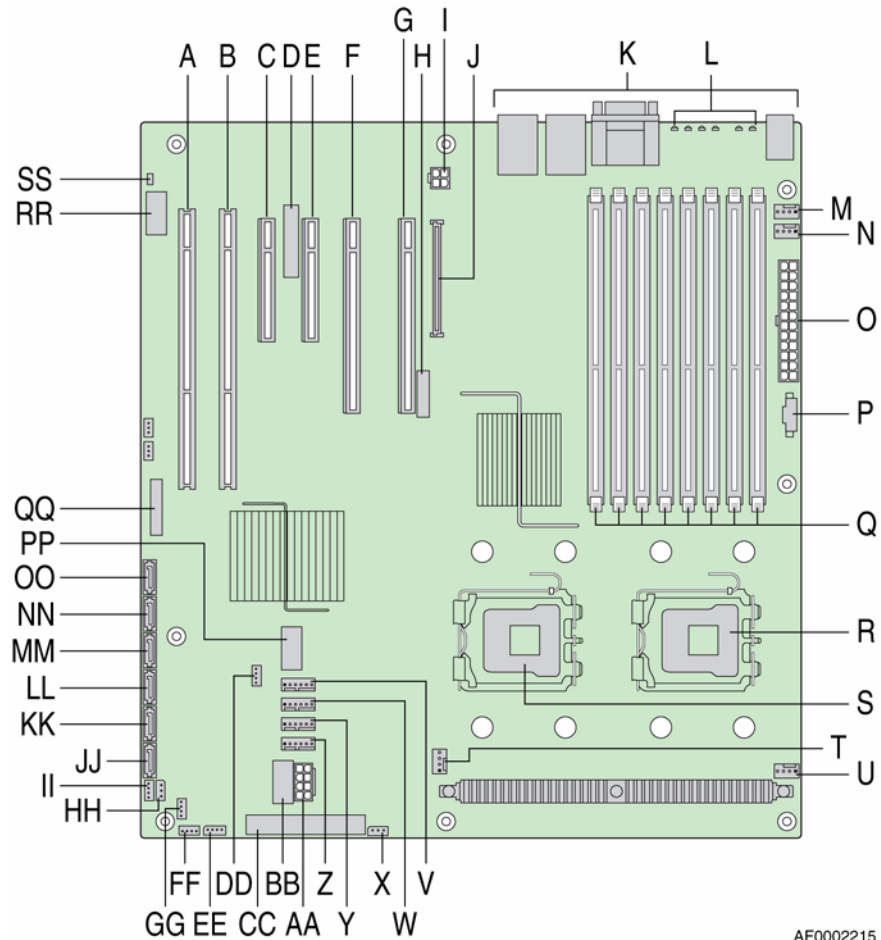
Upgrading Component Firmware or the Server Board BIOS

If replacing an Intel[®] Server Board S5000PSL or Intel[®] RAID Controller SRCSAS144E, refer to the support site at <http://www.intel.com/support/motherboards/server/ssr212mc2> for downloading the appropriate firmware or BIOS.

Upgrading Component Firmware

B Server Board Connector and Header Locations

Intel® Server Board S5000PSL



AF0002215

A. PCI-X* 640bit, 100-MHz slot 1	B. PCI-X* 64-bit, 100/133-MHz slot 2	C. PCI Express* x4 slot 3
D. RMM NIC connector	E. PCI Express x4 slot 4 (ROMB slot)	F. PCI Express x8 slot 5
G. PCI Express x8 slot 6	H. CMOS battery	I. P12V4 connector

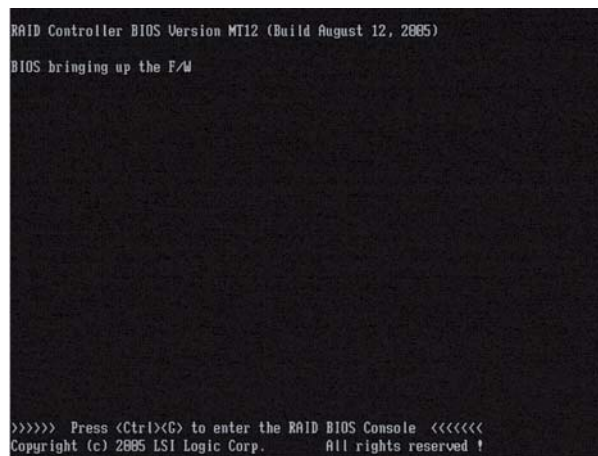
Server Board Connector and Header Locations

J. RMM connector (connector for Intel® Remote Management Module)	K. Back panel I/O ports	L. Diagnostic and Identify LEDs
M. System fan 6 header	N. System fan 5 header	O. Main power connector
P. Auxiliary power signal connector	Q. FBDIMM sockets	R. Processor 1 socket
S. Processor 2 socket	T. Processor 2 fan header	U. Processor 1 fan header
V. System fan 4 header	W. System fan 3 header	X. IPMB connector
Y. System fan 2 header	Z. System fan 1 header	AA. Processor power connector
BB. USB header	CC. IDE connector	DD. Enclosure management SATA SGPIO header
EE. Intel® Local Control Panel header	FF. Hot-swap backplane B header	GG. Enclosure management SAS SGPIO header
HH. Enclosure management SAS SES2	II. Hot-swap backplane A header	JJ. SATA 0
KK. SATA 1	LL. SATA 2 or SAS 0	MM. SATA 3 or SAS 1
NN. SATA 4 or SAS 2	OO. SATA 5 or SAS 3	PP. USB port
QQ. Front control panel header	RR. Serial B/emergency management port header	SS. Chassis intrusion header

C Setting up RAID on the Intel® Storage Server SSR212MC2R

Enter RAID BIOS Console

1. Reboot system.
2. Press <Ctrl> <G> at bootup when the following screen appears.



3. Once the Intel® RAID BIOS Console starts, a screen will appear displaying the adapter installed in the system. Select the **Adapter No. 0** radio button and then click **Start**.

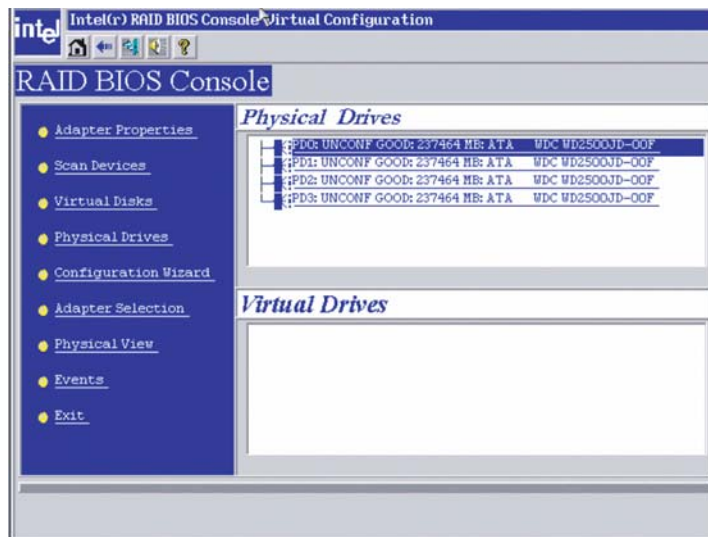


Create a RAID Volume

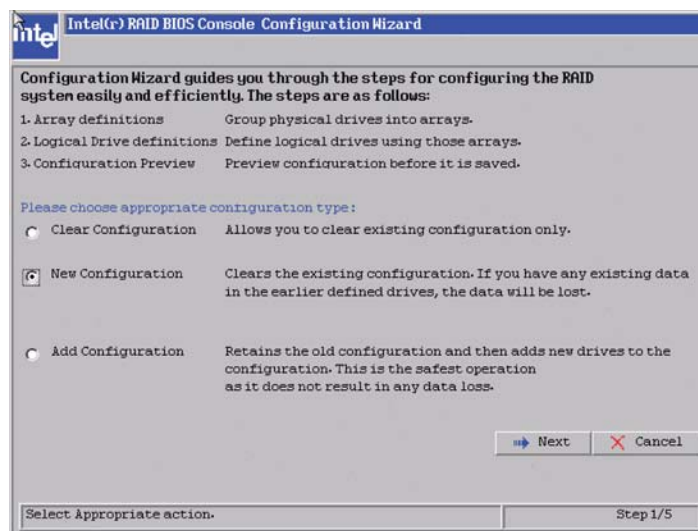
Note: Refer to the Intel® RAID Controller SRCAS144E Software User Guide on the Resource CD for a description of applicable RAID levels and logical drive parameters.

Note: Refer to the GUI Help files for more information on screen displays.

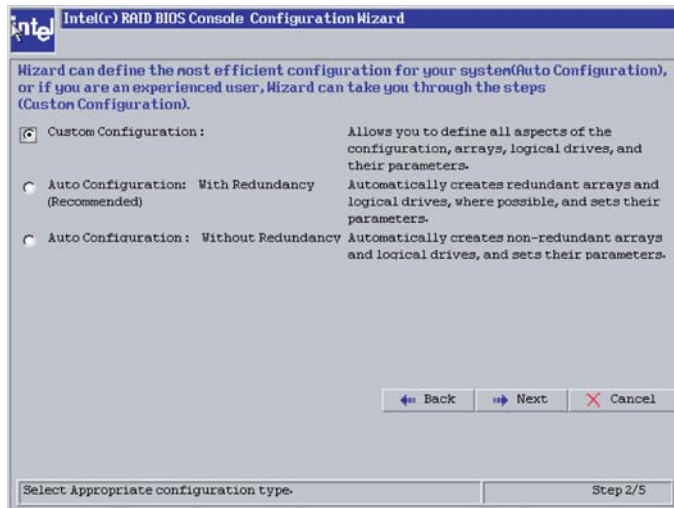
4. After a brief pause, the RAID BIOS Console screen will appear. Click on **Configuration Wizard**.



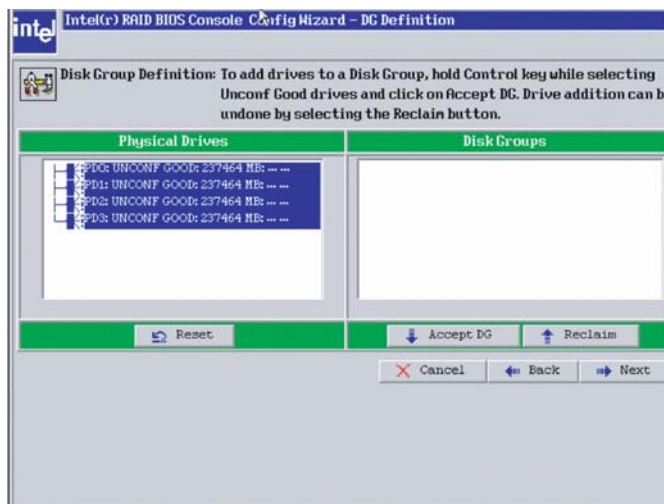
5. Select **New Configuration** and click **Next**.



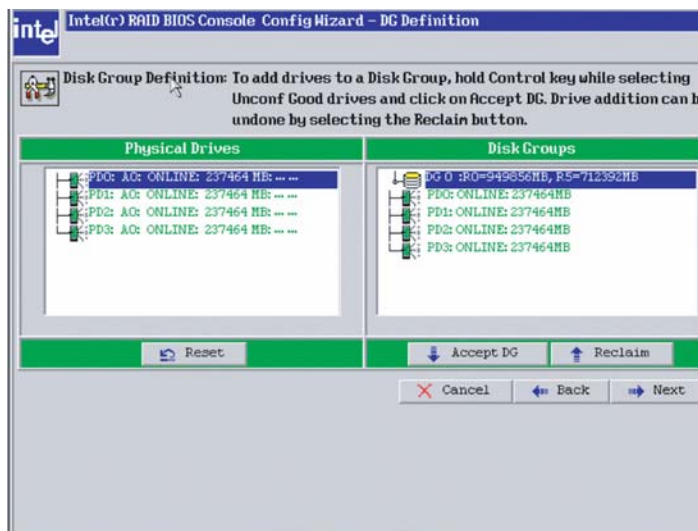
6. Select the configuration you wish to set up. (For this example, we selected “Custom Configuration”.) Click **Next** to continue.



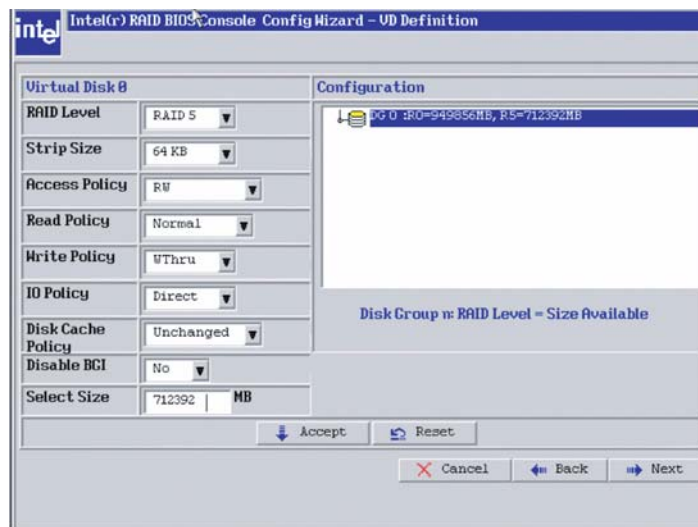
7. Add physical drives to the array by holding the control key while clicking on ready drives. Once you have selected all of the drives you wish to add to the array, click **Accept DG** and then click **Next**.



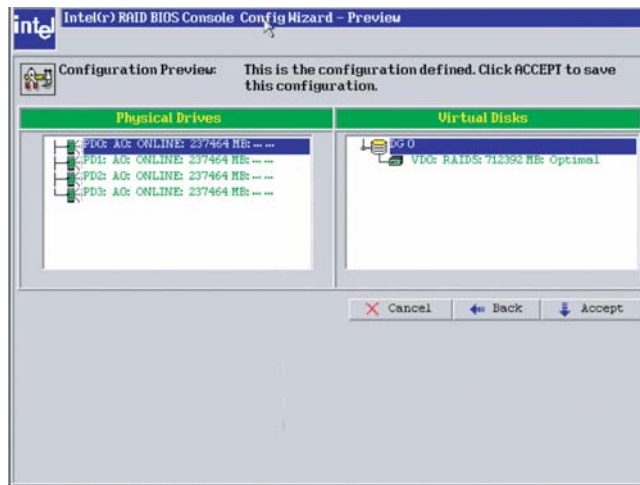
- If desired, define additional arrays. If finished, click **Accept DG**. Click **Next** to continue.



- Select the **RAID Level** from the pull-down box. Enter in the size of the logical drive. Click **Accept**.



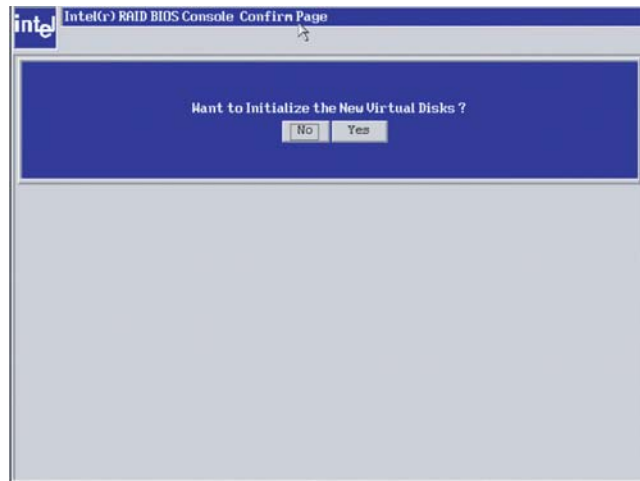
10. Click **Accept**.



11. Click **Yes** when asked to save the configuration.



12. Click **Yes** when asked to initialize the new logical drives. Depending on drive size and RAID level, initialization can take many hours to complete.



13. Select **Fast Initialize** or **Slow Initialize**, and then click **Go** to continue.

14. Click **Home**.

15. Click **Exit**.

16. Select **Yes** when asked to Exit Application.

17. Reboot system by pressing <Ctrl> <Alt> .

Setting up RAID on the Intel® Storage Server SSR212MC2R

D Setting Up RAID on the Boot Drives for the Intel® Storage Server SSR212MC2

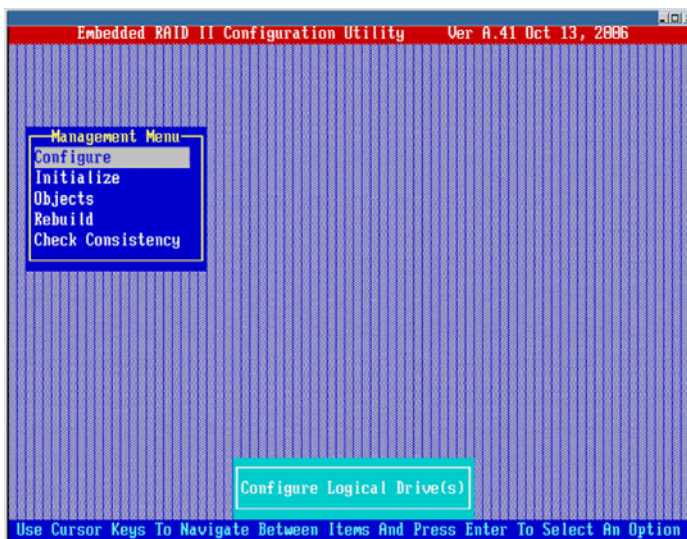
Start RAID Configuration Utility

Warning: *The maximum number of drives that can be used for software RAID is eight drives. Therefore, software RAID on the 12 drives connected to the backplane is not supported. Software RAID is only supported on the boot drives.*

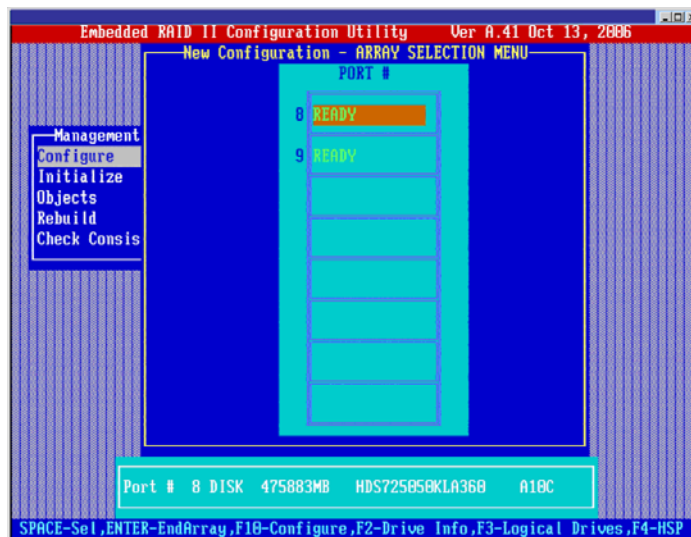
1. Boot the system.
2. Press <Ctrl> <E> when prompted to start the Intel® Embedded Server RAID BIOS Configuration utility.

Create a RAID Volume

3. Select **Configure** from the main menu.



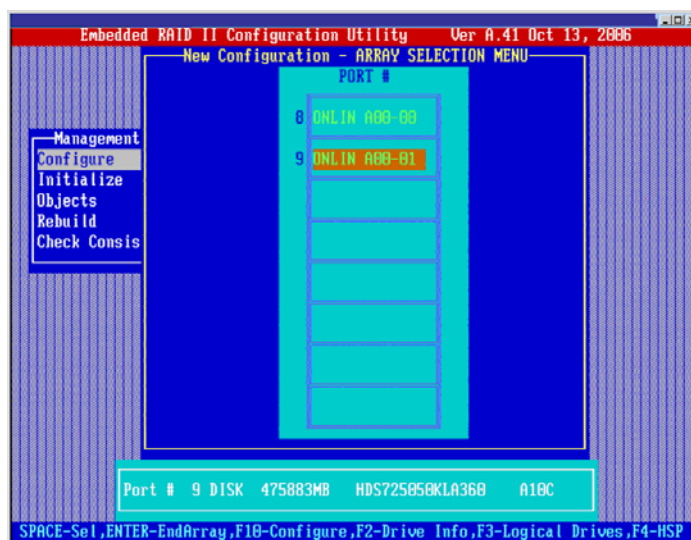
4. Select **New Configuration** and answer “yes” when prompted to proceed. The Array Selection Menu will be displayed.



5. Use the arrow keys to navigate to a drive. Press the space bar to add the selected drive to an array.

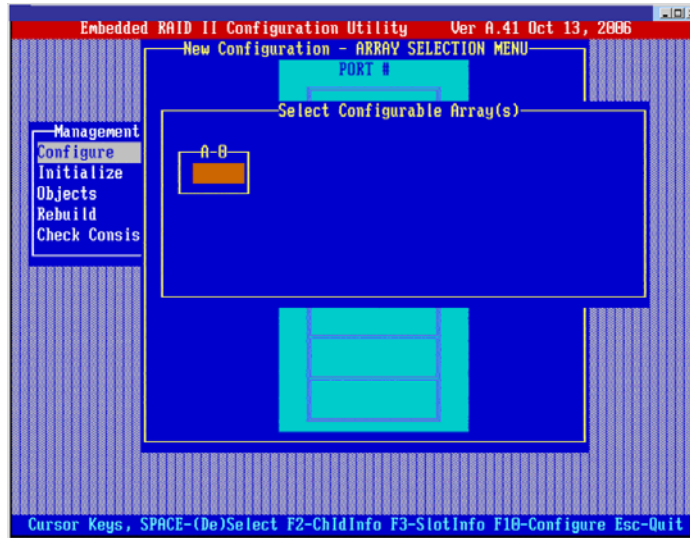
Note: The Intel® Embedded Server RAID BIOS Configuration utility limits each drive to the size of the smallest drive.

The status for each selected drive that is added to an array changes from READY to ONLIN A [array#]-[drive#]. For example, ONLIN A00-01 means array 0, disk drive 1.

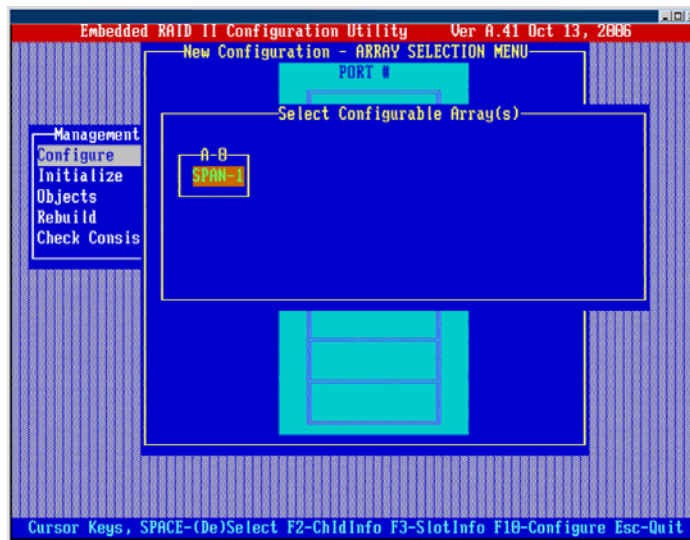


6. (Optional) Create a global hot spare drive by highlighting a drive that is marked READY and press the <F4> key. Then select **Yes** from the pop-up menu.

- Repeat Steps 5 and 6 to create a second array if desired. Press <F10> when finished with creating all arrays.



- Select an array by highlighting it and pressing the space bar. Press <F10> to configure the properties for the array.

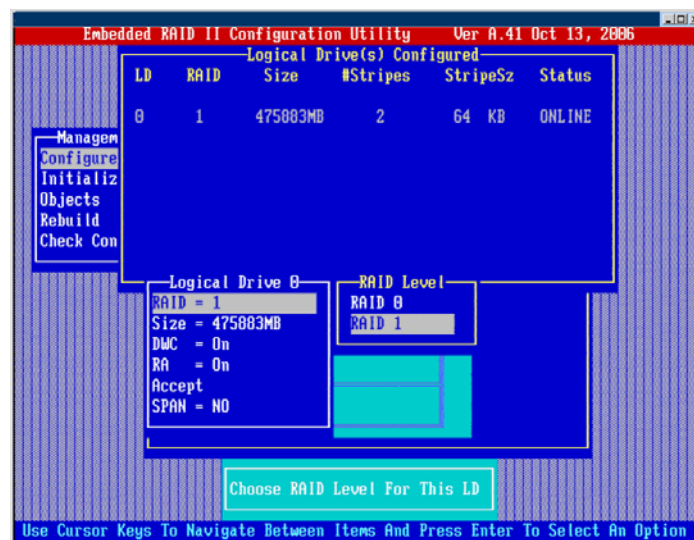


9. The Logical Drives Configured screen will be displayed. This screen shows the:

- Logical drive number
- RAID level
- Logical drive size
- Number of stripes in the physical array
- Stripe size
- State of the logical drive.

To set these options, highlight a property and press **Enter**. The available parameters for that property are displayed for the selection.

10. Select a RAID level (0,1, or 10) depending upon number of drives in array and purpose.

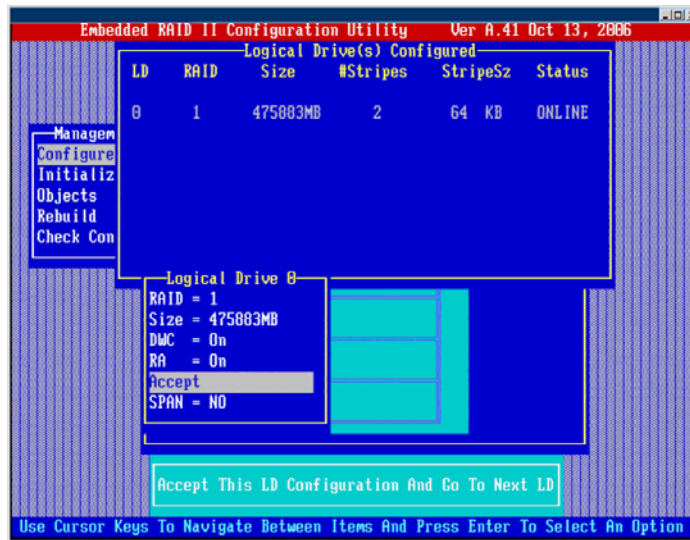


11. Consider whether you need to over-ride the default logical drive size. By default, all available space in the array is assigned to the current logical drive. For RAID 10 arrays, only one logical drive can be defined for the entire array.

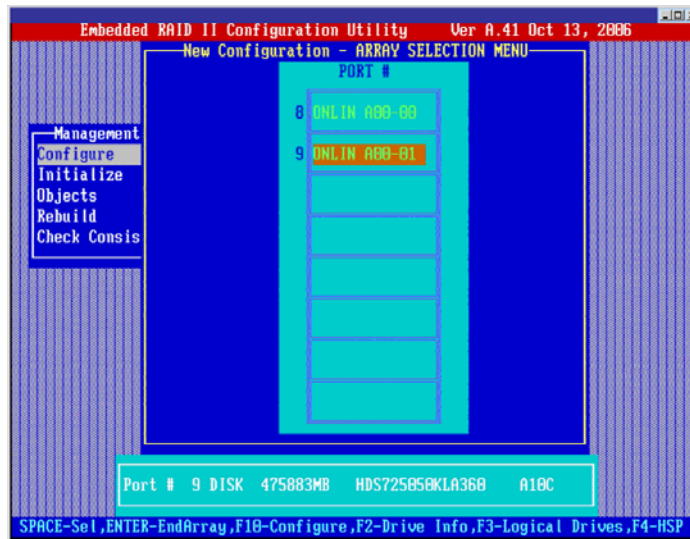
12. (Optional) Change the default **Write Cache** and **Read Ahead** policies.

Note: See the Intel® Embedded Server RAID BIOS Configuration Utility Manual for information on logical drive properties.

13. When you have finished defining the current logical drive, select **Accept** and press **Enter**.

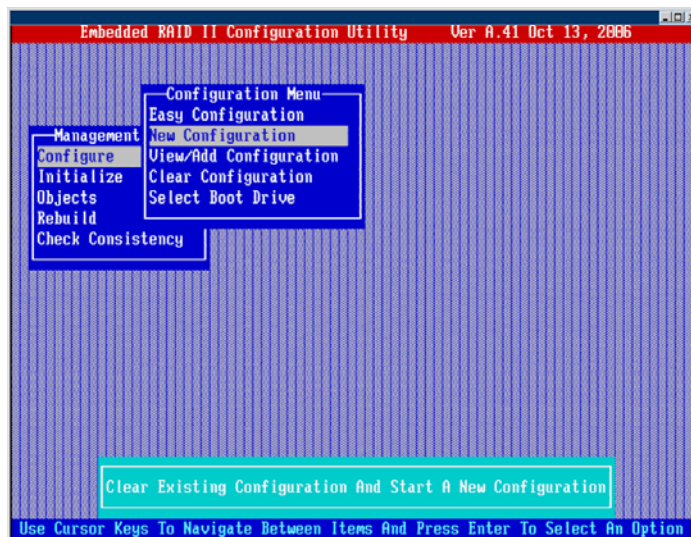


The Array Selection Menu screen will be displayed.



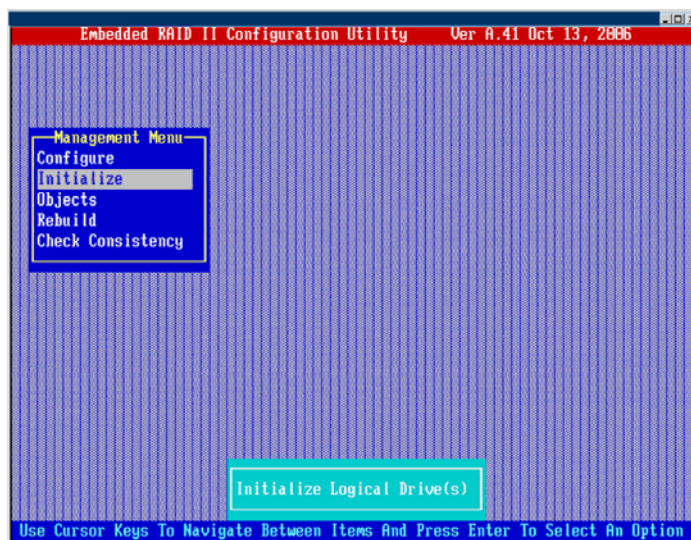
14. Repeat Steps 8 through 13 for all logical drives.

15. Select the array you just configured. Select “yes” when prompted to **Save** the configuration. Press **ESC** to return to the main menu.

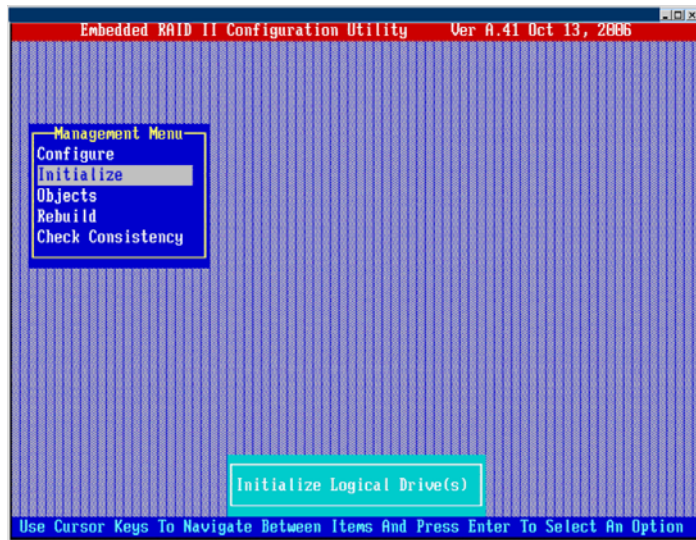


16. Select **Initialize**.

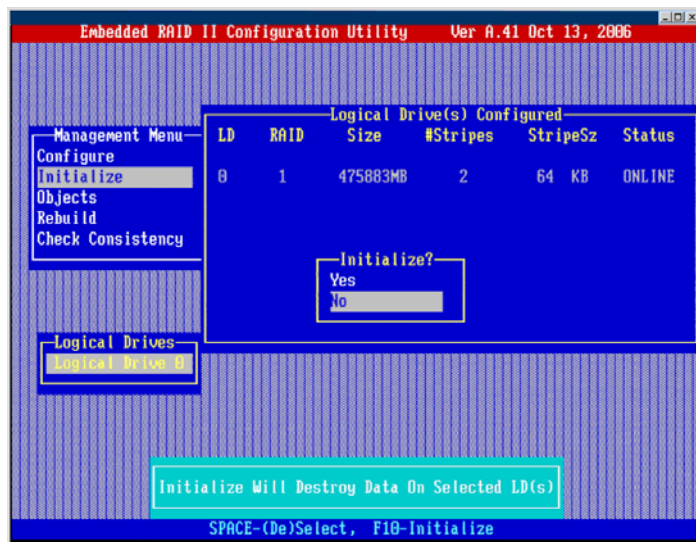
Caution: All data on the logical drive will be erased during an initialization.



Use the space bar to highlight the logical drive to initialize.



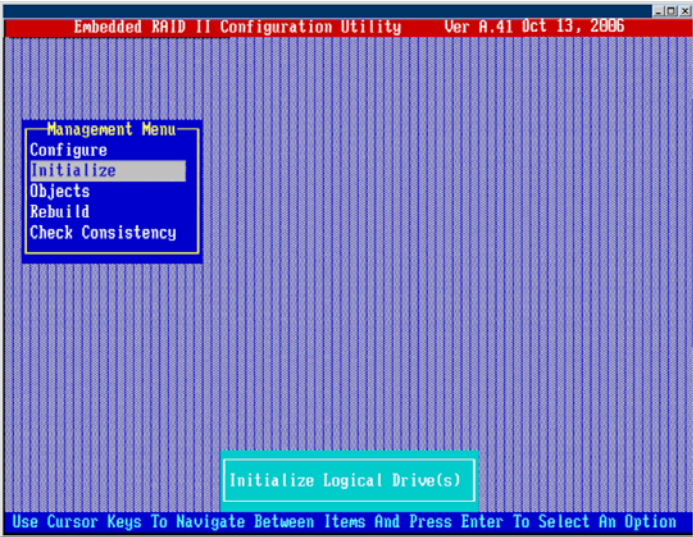
17. Press **F10**. Select **Yes** at the prompt and press **Enter** to begin the initialization.



18. A graph will appear showing progress of the initialization.



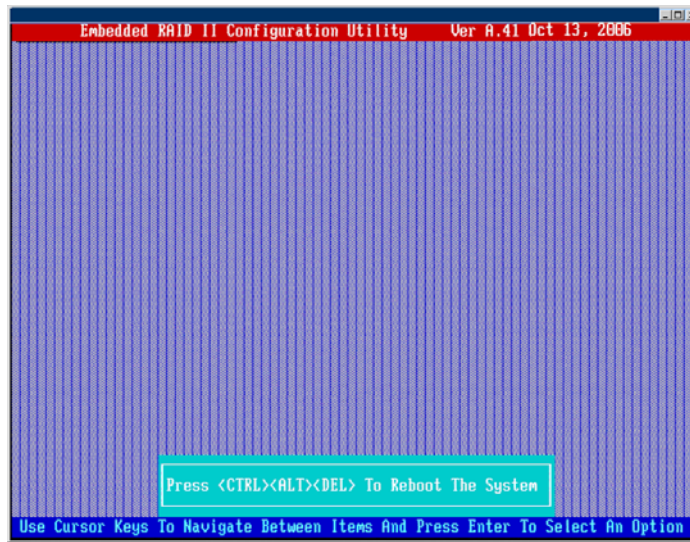
19. After the initialization is complete, press **ESC** to return to the previous menu.



20. Press **ESC** to return to the management menu.

21. Press **ESC** to exit. Select **Yes** and press **Enter**.

22. Reboot the system by pressing <Ctrl> <Alt> .



Setting Up RAID on the Boot Drives for the Intel® Storage Server SSR212MC2

E RAID Levels

RAID 0 - Data Striping

In RAID 0, data blocks are split into stripes based on the adjusted stripe size (for example, 128 KB) and the number of hard disks. Each stripe is stored on a separate hard disk. Significant improvement of the data throughput is achieved using this RAID level, especially with sequential read and write. RAID 0 includes no redundancy. When one hard disk fails, all data is lost. A single drive can be chosen as a RAID 0 drive as a method to pass a single drive through to the operating system; however, RAID 0 usually denotes two or more drives.

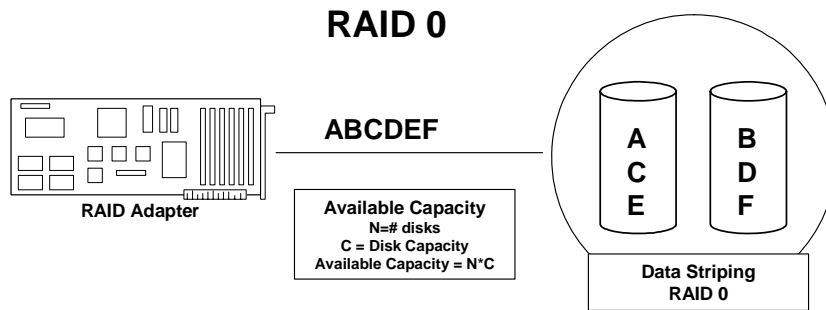


Figure 141. RAID 0 - Data Striping

RAID 1 - Disk Mirroring / Disk Duplexing

All data is stored twice, once each on two identical hard disks making one drive a “mirror” image of the other. When one hard disk fails, all data is immediately available on the other without any impact on performance and data integrity.

With Disk Mirroring, two hard disks are mirrored on one I/O channel. If each hard disk is connected to a separate I/O channel, it is called Disk Duplexing.

RAID 1 represents an easy and highly efficient solution for data security and system availability. It is especially suitable for installations that are not too large (the available capacity is only half of the installed capacity). Disk mirroring requires two drives and each mirrored set is limited to two drives.

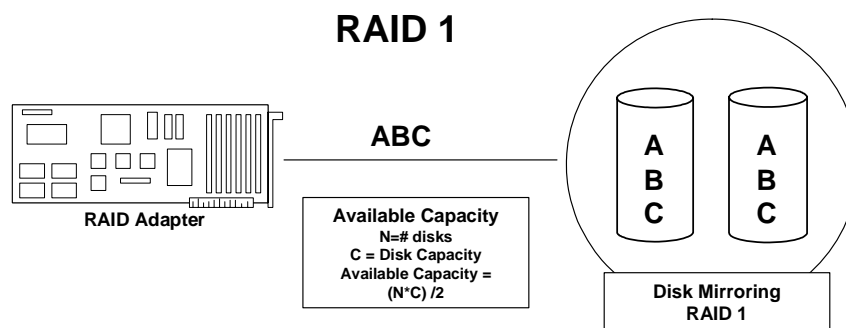


Figure 142. RAID 1 - Disk Mirroring / Disk Duplexing

RAID 5 - Data Striping with Striped Parity

RAID 5 works in the same way as RAID 0. The data is striped across the hard disks and the controller calculates redundancy data (parity information) that is striped across all hard disks. Should one hard disk fail, all data remains fully available. Missing data is recalculated from existing data and parity information. The RAID 5 disk array delivers a balanced throughput. Even with small data blocks, which are very likely in a multi-tasking and multi-user environment, the response time is very good. RAID 5 is particularly suitable for systems with medium to large capacity requirements, due to the efficient ratio of installed and available capacity. RAID 5 requires a minimum of three drives in the configuration but can expand to the physical drive capacity of the controller.

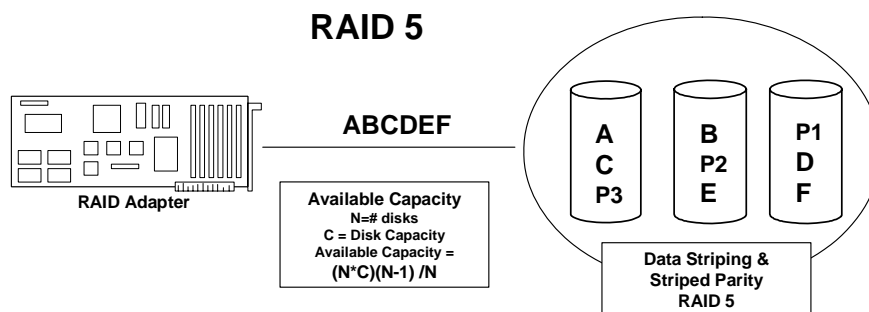


Figure 143. RAID 5 - Data Striping with Striped Parity

RAID 10 - Combination of RAID 1 and RAID 0

RAID 10 is a combination of RAID 0 (performance) and RAID 1 (data security). Unlike RAID 5, there is no need to calculate parity information. RAID 10 disk arrays offer good performance and data security. As in RAID 0, optimum performance is achieved in highly sequential load situations. Identical to RAID 1, 50% of the installed capacity is lost through redundancy. RAID 10 will tolerate a drive failure of one drive per stripe. RAID 10 also requires a minimum of four drives and is set up by spanning two or more RAID 1 arrays. Up to eight RAID 1 arrays can be spanned in a RAID 10 configuration.

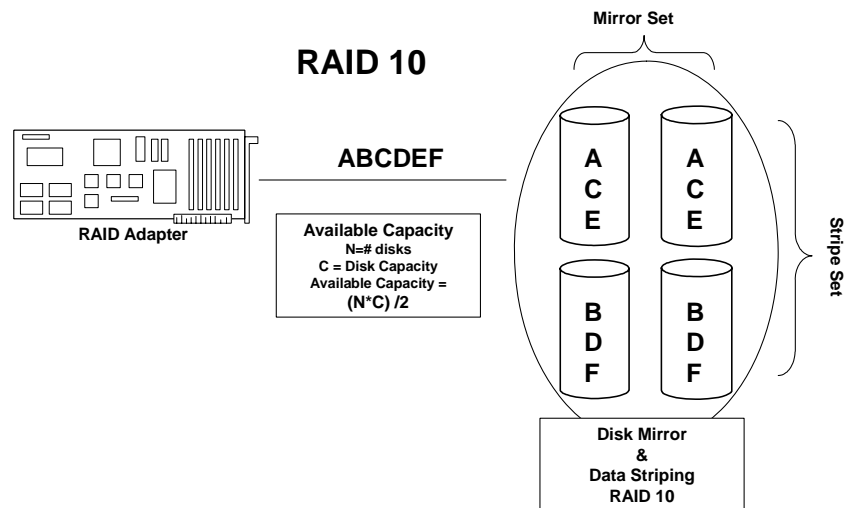


Figure 144. RAID 10 - Combination of RAID 1 and RAID 0

RAID 50 - Combination of RAID 5 and RAID 0

Like RAID 10, RAID 50 is created by first creating multiple RAID 5 arrays and spanning a logical drive across them. RAID 50 arrays provide the excellent performance of RAID 5 with added data security. RAID 50 requires a minimum of six drives and can span a maximum of eight RAID 5 arrays. RAID 50 will tolerate a single drive failure per stripe.

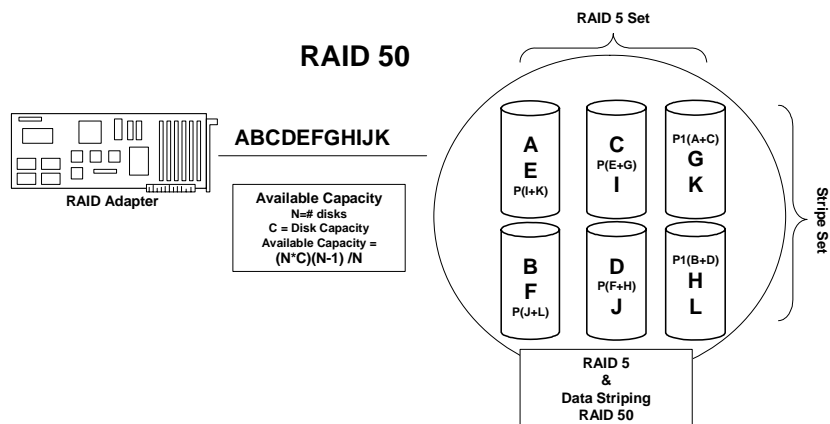


Figure 145. RAID 50 - Combination of RAID 5 and RAID 0

F Getting Help

World Wide Web

<http://support.intel.com/support/motherboards/server/ssr212mc2/>.

Telephone

All calls are billed US \$25.00 per incident, 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.

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

Europe

Belgium 02 714 3182
Denmark ... 38 487077
Finland 9 693 79297
France..... 01 41 918529
Germany ... 069 9509 6099
Holland 020 487 4562
Italy 02 696 33276
Norway 23 1620 50
Spain 91 377 8166
Sweden..... 08 445 1251
UK..... 870 6072439

In Asia-Pacific region

Australia.... 1800 649931
Cambodia .. 63 2 636 9797 (via Philippines)

Getting Help

China 800 820 1100 (toll-free)
..... 8 621 33104691 (not toll-free)

Hong Kong 852 2 844 4456

India..... 0006517 2 68303634 (manual toll-free. You need an IDD-equipped telephone)

Indonesia... 803 65 7249

Korea 822 767 2595

Malaysia 1 800 80 1390

Myanmar... 63 2 636 9796 (via Philippines)

New Zealand 0800 444 365

Pakistan..... 632 63684 15 (IDD via Philippines)

Philippines 1 800 1 651 0117

Singapore .. 65 6213-1311

Taiwan 2 2545-1640

Thailand 1 800 631 0003

Vietnam 632 6368416 (IDD via Philippines)

Japan

Domestic.... 0120 868686

Outside country 81 298 47 0800

Latin America

Argentina .. Contact AT&T USA at 0-800 222 1288. Once connected, dial 800 843 4481

Brazil 001-916 377 0180

Chile

- Easter Island.** Contact AT&T USA at 800 800 311. Once connected, dial 800 843 4481
- Mainland and Juan** .. Contact AT&T USA at 800 225 288. Once connected, dial 800 843 4481

Colombia ... Contact AT&T USA at 01 800 911 0010. Once connected, dial 800 843 4481

Costa Rica . Contact AT&T USA at 0 800 0 114 114. Once connected, dial 800 843 4481

Ecuador

(Andimate) Contact AT&T USA at 1 999 119. Once connected, dial 800 843 4481

(Pacifictel) Contact AT&T USA at 1 800 225 528. Once connected, dial 800 843 4481

Guatemala. Contact AT&T USA at 99 99 190. Once connected, dial 800 843 4481

Mexico Contact AT&T USA at 001 800 462 628 4240. Once connected, dial 800 843 4481

Miami 1 800 621 8423

Panama..... Contact AT&T USA at 00 800 001 0109. Once connected, dial 800 843 4481

Paraguay ... 001 916 377 0114

Peru 001 916 377 0114

Uruguay..... 001 916 377 0114

Venezuela... Contact AT&T USA at 0 800 2255 288. Once connected, dial 800 843 4481

Getting Help

G Regulatory and Compliance Information

Product Regulatory Compliance

Warning: *To ensure regulatory compliance, 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.*

To help ensure EMC compliance with your local regional rules and regulations, before computer integration, make sure that the chassis, power supply, and other modules have passed EMC testing using a server board with a microprocessor from the same family (or higher) and operating at the same (or higher) speed as the microprocessor used on this server board. The final configuration of your end system product may require additional EMC compliance testing. For more information, please contact your local Intel representative.

This is an FCC Class A device. Integration of it into a Class B chassis does not result in a Class B device.

Product Safety Compliance

This product, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

Intended Application

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as: medical, industrial, telecommunications, NEBS, residential, alarm systems, test equipment, etc.), other than an ITE application, may require further evaluation.

Product Safety Compliance

This product complies with the following product safety requirements:

- UL60950 - CSA 60950 (USA / Canada)
- EN60950 (Europe)
- IEC60950 (International)
- CB Certificate & Report, IEC60950

- GS Certification (Germany)
- GOST R 50377-92 - Certification (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- IRAM Certification (Argentina)
- GB4943- CNCA Certification (China)

Product EMC Compliance - Class A Compliance

This product has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed in a compatible Intel® host system. For information on compatible host system(s) refer to Intel's Server Builder Web site or contact your local Intel representative.

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- CISPR 22 - Emissions (International)
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- EN61000-3-2 - Harmonics (Europe)
- EN61000-3-3 - Voltage Flicker (Europe)
- CE - EMC Directive 89/336/EEC (Europe)
- VCCI Emissions (Japan)
- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)
- GOST R 29216-91 Emissions (Russia)
- GOST R 50628-95 Immunity (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- 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)
- MED Declaration of Conformity (New Zealand)
- BSMI Certification (Taiwan)
- GOST R Certification / Certification (Russia)
- Belarus Certification / Certification (Belarus)
- RRL Certification (Korea)
- IRAM Certification (Argentina)
- CNCA Certification (China)

Product Regulatory Compliance Markings

Table 17. Product Regulatory Compliance Markings

Regulatory Compliance	Region	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
BSMI Certification Number & Class A Warning	Taiwan	 <div style="border: 1px solid black; padding: 5px; width: fit-content;">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</div>
GOST R Marking	Russia	
RRL MIC Mark	Korea	 인증번호: CPU See the regulatory information document for additional information.
China Compulsory Certification Mark	China	

Table 17. Product Regulatory Compliance Markings

Regulatory Compliance	Region	Marking
Recycling Package Mark	China	
Recycling Package Mark	Other than China	
RoHS	China	

Electromagnetic Compatibility Notices

FCC Verification Statement (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 97124-6497
 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 Canadien 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 preceding notice:

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.

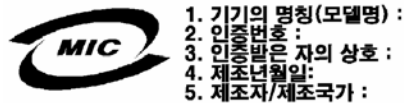
BSMI (Taiwan)

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 Compliance (RRL)

Following is the RRL certification information for Korea.



English translation of the notice above:

1. Type of Equipment (Model Name): On Certification 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

CNCA (CCC China)

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

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取可行的措施。

China RoHS Declaration

关于符合中国《电子信息产品污染控制管理办法》的声明

Management Methods on Control of Pollution from
Electronic Information Products

(China RoHS declaration)

产品中有毒有害物质的名称及含量

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
机箱子组件 Chassis subassembly	○	○	○	○	○	○
电源 Power Supply	○	○	○	○	○	○
印刷板组件 Printed Board Assemblies (PBA)	○	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006标准规定的限量要求以下。

○: Indicates that this hazardous substance contained in all homogeneous materials of this part is below the limit requirement in SJ/T 11363-2006.

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006标准规定的限量要求。

×: Indicates that this hazardous substance contained in at least one of the homogeneous materials of this part is above the limit requirement in SJ/T 11363-2006.

对销售之日的所售产品, 本表显示我公司供应链的电子信息产品可能包含这些物质。注意: 在所售产品中可能会也可能不会含有所有所列的部件

This table shows where these substances may be found in the supply chain of our electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

Perchlorate Material

Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate. This notice is required by California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials. This product/part includes a battery which contains perchlorate material.

Regulated Specified Components

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

Updated product information for configurations can be found on the Intel Server Builder Web site at the following URL:

<http://channel.intel.com/go/serverbuilder>

If you do not have access to Intel's Web address, please contact your local Intel representative.

- **Chassis:** (base chassis is provided with power supply and fans) - UL listed.
- **Server board:** you must use an Intel server board - UL recognized.
- **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 certified. Total server configuration is not to exceed the maximum loading conditions of the power supply.

Restriction of Hazardous Substances (RoHS) Compliance

Intel has a system in place to restrict the use of banned substances in accordance with the European Directive 2002/95/EC. Compliance is based on declaration that materials banned in the RoHS Directive are either (1) below all applicable threshold limits or (2) an approved / pending RoHS exemption applies.

RoHS implementation details are not fully defined and may change.

Threshold limits and banned substances are noted below:

- Quantity limit of 0.1% by mass (1000 PPM) for:
 - Lead
 - Mercury
 - Hexavalent Chromium
 - Polybrominated Biphenyls Diphenyl Ethers (PBDE)
- Quantity limit of 0.01% by mass (100 PPM) for:
 - Cadmium

End of Life / Product Recycling

Product recycling and end-of-life take back systems and requirements vary from country to country. Contact the retailer or distributor of this product for information on product recycling and / or take back.

H 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. See “Getting Help” for telephone numbers.

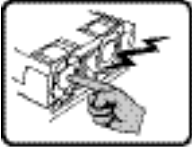
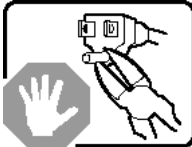
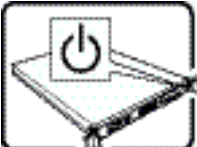

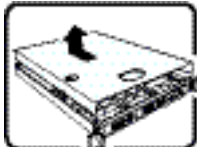
Returning a Defective Product

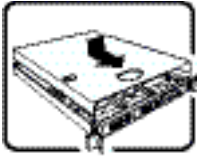
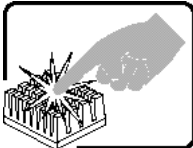

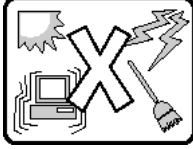
Before returning any product, call your authorized dealer/distribution authority.

Warranty

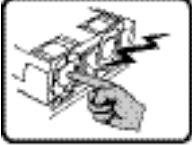
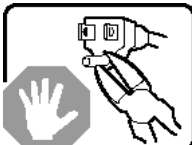
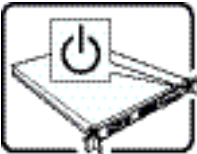

I Installation/Assembly Safety Instructions

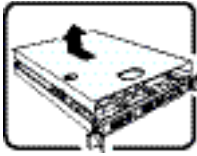
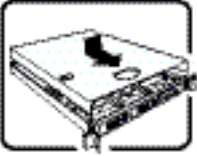
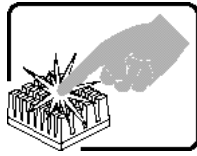
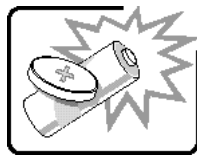
English

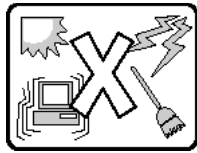
	<p>The power supply in this product contains no user-serviceable parts. Refer servicing only to qualified personnel.</p>
	<p>Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.</p>
	<p>The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.</p> <p>The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.</p>
	<p>SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:</p> <ol style="list-style-type: none"> 1. Turn off all peripheral devices connected to the system. 2. Turn off the system by pressing the power button. 3. Unplug all AC power cords from the system or from wall outlets. 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system. 5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components. 6. Do not operate the system with the chassis covers removed.
	<p>After you have completed the six SAFETY steps above, you can remove the system covers. To do this:</p> <ol style="list-style-type: none"> 1. Unlock and remove the padlock from the back of the system if a padlock has been installed. 2. Remove and save all screws from the covers. 3. Remove the cover(s).

	<p>For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:</p> <ol style="list-style-type: none"> 1. Check first to make sure you have not left loose tools or parts inside the system. 2. Check that cables, add-in boards, and other components are properly installed. 3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly. 4. Insert and lock the padlock to the system to prevent unauthorized access inside the system. 5. Connect all external cables and the AC power cord(s) to the system.
	<p>A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.</p>
	<p>Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.</p>
	<p>The system is designed to operate in a typical office environment. Choose a site that is:</p> <ul style="list-style-type: none"> • Clean and free of airborne particles (other than normal room dust). • Well ventilated and away from sources of heat including direct sunlight. • Away from sources of vibration or physical shock. • Isolated from strong electromagnetic fields produced by electrical devices. • In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppresser and disconnect telecommunication lines to your modem during an electrical storm. • Provided with a properly grounded wall outlet. • Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

Deutsch

	<p>Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.</p>
	<p>Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.</p>
	<p>Der Wechselstrom des Systems wird durch den Ein-/Aus-Schalter für Gleichstrom nicht ausgeschaltet. Ziehen Sie jedes Wechselstrom-Netzkabel aus der Steckdose bzw. dem Netzgerät, um den Stromanschluß des Systems zu unterbrechen.</p>
	<p>SICHERHEISSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none"> 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.

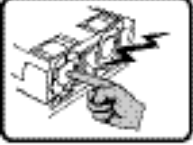
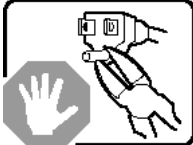


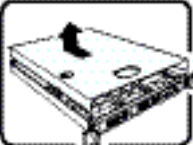
	<p>SICHERHEISSMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:</p> <ol style="list-style-type: none"> 1. Schalten Sie alle an Ihr System angeschlossenen Peripheriegeräte aus. 2. Schalten Sie das System mit dem Hauptschalter aus. 3. Ziehen Sie den Stromanschlußstecker Ihres Systems aus der Steckdose. 4. Auf der Rückseite des Systems beschriften und ziehen Sie alle Anschlußkabel von den I/O Anschlüssen oder Ports ab. 5. Tragen Sie ein geerdetes Antistatik Gelenkband, um elektrostatische Ladungen (ESD) über blanke Metallstellen bei der Handhabung der Komponenten zu vermeiden. 6. Schalten Sie das System niemals ohne ordnungsgemäß montiertes Gehäuse ein.
	<p>Zur ordnungsgemäßen Kühlung und Lüftung muß die Gehäuseabdeckung immer wieder vor dem Einschalten installiert werden. Ein Betrieb des Systems ohne angebrachte Abdeckung kann Ihrem System oder Teile darin beschädigen. Um die Abdeckung wieder anzubringen:</p> <ol style="list-style-type: none"> 1. Vergewissern Sie sich, daß Sie keine Werkzeuge oder Teile im Innern des Systems zurückgelassen haben. 2. Überprüfen Sie alle Kabel, Zusatzkarten und andere Komponenten auf ordnungsgemäßen Sitz und Installation. 3. Bringen Sie die Abdeckungen wieder am Gehäuse an, indem Sie die zuvor gelösten Schrauben wieder anbringen. Ziehen Sie diese gut an. 4. Bringen Sie die Verschlusseinrichtung (Padlock) wieder an und schließen Sie diese, um ein unerlaubtes Öffnen des Systems zu verhindern. 5. Schließen Sie alle externen Kabel und den AC Stromanschlußstecker Ihres Systems wieder an.
	<p>Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.</p>
	<p>Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.</p>

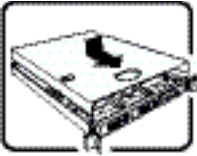
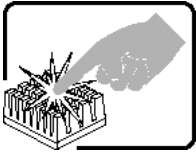
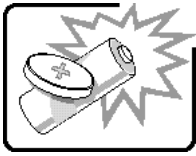
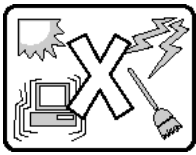


Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

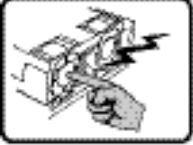
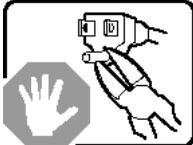


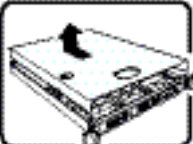
- "sauber und staubfrei sein (Hausstaub ausgenommen);
- "gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- "keinen Erschütterungen ausgesetzt sein;
- "keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- "in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;
- "mit einer geerdeten Wechselstromsteckdose ausgerüstet sein;
- "über ausreichend Platz verfügen, um Zugang zu den Netzkabeln zu gewährleisten, da der Stromanschluß des Produkts hauptsächlich über die Kabel unterbrochen wird

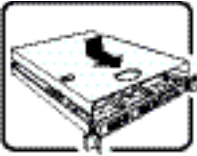
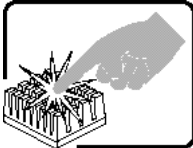

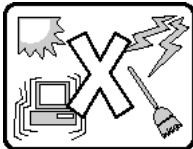
Français

	<p>Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.</p>
	<p>Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit</p>
	<p>Notez que le commutateur CC de mise sous tension /hors tension du panneau avant n'éteint pas l'alimentation CA du système. Pour mettre le système hors tension, vous devez débrancher chaque câble d'alimentation de sa prise.</p>
	<p>CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes:</p> <ol style="list-style-type: none"> 1. Mettez hors tension tous les périphériques connectés au système. 2. Mettez le système hors tension en mettant l'interrupteur général en position OFF (bouton-poussoir). 3. Débranchez tous les cordons d'alimentation c.a. du système et des prises murales. 4. Identifiez et débranchez tous les câbles reliés aux connecteurs d'E-S ou aux accès derrière le système. 5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier). 6. Ne faites pas fonctionner le système tandis que le boîtier est ouvert.
	<p>Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit:</p> <ol style="list-style-type: none"> 1. Si un cadenas a été installé sur à l'arrière du système, déverrouillez-le et retirez-le. 2. Retirez toutes les vis des panneaux et mettez-les dans un endroit sûr. 3. Retirez les panneaux.

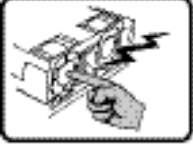
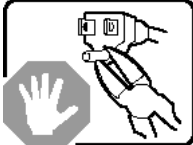

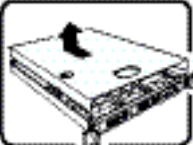
	<p>Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du boîtier avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit:</p> <ol style="list-style-type: none"> 1. Assurez-vous de ne pas avoir oublié d'outils ou de pièces démontées dans le système. 2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés. 3. Revissez solidement les panneaux du boîtier avec les vis retirées plus tôt. 4. Remettez le cadenas en place et verrouillez-le afin de prévenir tout accès non autorisé à l'intérieur du système. 5. Rebranchez tous les cordons d'alimentation c. a. et câbles externes au système.
	<p>Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Nous vous recommandons l'usage de gants de protection.</p>
	<p>Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le fabricant. Disposez des piles usées selon les instructions du fabricant.</p>
	<p>Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:</p> <ul style="list-style-type: none"> • "Propre et dépourvu de poussière en suspension (sauf la poussière normale). • "Bien aéré et loin des sources de chaleur, y compris du soleil direct. • "A l'abri des chocs et des sources de vibrations. • "Isolé de forts champs électromagnétiques géenérés par des appareils électriques. • "Dans les régions sujettes aux orages magnétiques il est recomandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage. • "Muni d'une prise murale correctement mise à la terre. • "Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).

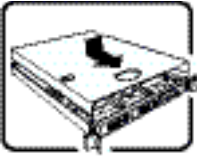
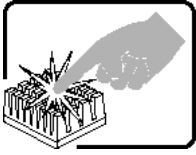
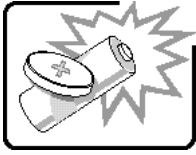
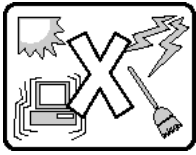
Español

	<p>El usuario debe abstenerse de manipular los componentes de la fuente de alimentación de este producto, cuya reparación debe dejarse exclusivamente en manos de personal técnico especializado. Puede que este producto disponga de más de una fuente de alimentación</p>
	<p>No intente modificar ni usar el cable de alimentación de corriente alterna, si no corresponde exactamente con el tipo requerido. El número de cables suministrados se corresponden con el número de fuentes de alimentación de corriente alterna que tenga el producto</p>
	<p>Nótese que el interruptor activado/desactivado en el panel frontal no desconecta la corriente alterna del sistema. Para desconectarla, deberá desenchufar todos los cables de corriente alterna de la pared o desconectar la fuente de alimentación.</p>
	<p>INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones:</p> <ol style="list-style-type: none"> 1. Apague todos los dispositivos periféricos conectados al sistema. 2. Apague el sistema presionando el interruptor encendido/apagado. 3. Desconecte todos los cables de alimentación CA del sistema o de las tomas de corriente alterna. 4. Identifique y desconecte todos los cables enchufados a los conectores E/S o a los puertos situados en la parte posterior del sistema. 5. Cuando manipule los componentes, es importante protegerse contra la descarga electrostática (ESD). Puede hacerlo si utiliza una muñequera antiestática sujeta a la toma de tierra del chasis - o a cualquier tipo de superficie de metal sin pintar. 6. No ponga en marcha el sistema si se han extraído las tapas del chasis.
	<p>Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello:</p> <ol style="list-style-type: none"> 1. Desbloquee y extraiga el bloqueo de seguridad de la parte posterior del sistema, si se ha instalado uno. 2. Extraiga y guarde todos los tornillos de las tapas. Extraiga las tapas.

	<p>Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:</p> <ol style="list-style-type: none"> 1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema. 2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente. 3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente. 4. Inserte el bloqueo de seguridad en el sistema y bloquéelo para impedir que pueda accederse al mismo sin autorización. 5. Conecte todos los cables externos y los cables de alimentación CA al sistema.
	<p>Si el sistema ha estado en funcionamiento, el microprocesador y el disipador de calor pueden estar aún calientes. También conviene tener en cuenta que en el chasis o en el tablero puede haber piezas cortantes o punzantes. Por ello, se recomienda precaución y el uso de guantes protectores.</p>
	<p>Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.</p>
	<p>El sistema está diseñado para funcionar en un entorno de trabajo normal. escoja un lugar:</p> <ul style="list-style-type: none"> • "Limpio y libre de partículas en suspensión (salvo el polvo normal). • "Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa. • "Alejado de fuentes de vibración. • "Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos. • "En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltage y desconectar el módem de las líneas de telecomunicación durante las tormentas. • "Provisto de una toma de tierra correctamente instalada. • "Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.

Italiano

	<p>Rivolgersi ad un tecnico specializzato per la riparazione dei componenti dell'alimentazione di questo prodotto. È possibile che il prodotto disponga di più fonti di alimentazione.</p>
	<p>Non modificare o utilizzare il cavo di alimentazione in c.a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto. Ad ogni fonte di alimentazione corrisponde un cavo di alimentazione in c.a. separato</p>
	<p>L'interruttore attivato/disattivato nel pannello anteriore non interrompe l'alimentazione in c.a. del sistema. Per interromperla, è necessario scollegare tutti i cavi di alimentazione in c.a. dalle prese a muro o dall'alimentazione di corrente.</p>
	<p>PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all'interno del sistema, seguire i seguenti passi:</p> <ol style="list-style-type: none"> 1. Spegner tutti i dispositivi periferici collegati al sistema. 2. Spegner il sistema, usando il pulsante spento/acceso dell'interruttore del sistema. 3. Togliere tutte le spine dei cavi del sistema dalle prese elettriche. 4. Identificare e sconnettere tutti i cavi attaccati ai collegamenti I/O od alle prese installate sul retro del sistema. 5. Qualora si tocchino i componenti, proteggersi dallo scarico elettrostatico (SES), portando un cinghia anti-statica da polso che è attaccata alla presa a terra del telaio del sistema - qualsiasi superficie non dipinta - . 6. Non far operare il sistema quando il telaio è senza le coperture.
	<p>Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come segue:</p> <ol style="list-style-type: none"> 1. Aprire e rimuovere il lucchetto dal retro del sistema qualora ve ne fosse uno installato. 2. Togliere e mettere in un posto sicuro tutte le viti delle coperture. 3. Togliere le coperture.

	<p>Per il giusto flusso dell'aria e raffreddamento del sistema, rimettere sempre le coperture del telaio prima di riaccendere il sistema. Operare il sistema senza le coperture al loro proprio posto potrebbe danneggiare i componenti del sistema. Per rimettere le coperture del telaio:</p> <ol style="list-style-type: none"> 1. Controllare prima che non si siano lasciati degli attrezzi o dei componenti dentro il sistema. 2. Controllare che i cavi, dei supporti aggiuntivi ed altri componenti siano stati installati appropriatamente. 3. Attaccare le coperture al telaio con le viti tolte in precedenza e avvitarle strettamente. 4. Inserire e chiudere a chiave il lucchetto sul retro del sistema per impedire l'accesso non autorizzato al sistema. 5. Ricollegare tutti i cavi esterni e le prolunghe AC del sistema.
	<p>Se il sistema è stato a lungo in funzione, il microprocessore e il dissipatore di calore potrebbero essere surriscaldati. Fare attenzione alla presenza di piedini appuntiti e parti taglienti sulle schede e sul telaio. È consigliabile l'uso di guanti di protezione.</p>
	<p>Esiste il pericolo di un'esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.</p>
	<p>Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia:</p> <ul style="list-style-type: none"> • "Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente). • "Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta. • "Al riparo da urti e lontana da fonti di vibrazione. • "Isolata dai forti campi magnetici prodotti da dispositivi elettrici. • "In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem. • "Dotata di una presa a muro correttamente installata. • "Dotata di spazio sufficiente ad accedere ai cavi di alimentazione, i quali rappresentano il mezzo principale di scollegamento del sistema.

J Safety Information

English

Server Safety Information

This document applies to Intel® server boards, Intel® server chassis (pedestal and rack-mount) and installed peripherals. To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this document and observe all warnings and precautions in this guide before installing or maintaining your Intel® storage server.







In the event of a conflict between the information in this document and information provided with the product or on the website for a particular product, the product documentation takes precedence.

Your server should be integrated and serviced only by technically qualified persons.

You must adhere to the guidelines in this guide and the assembly instructions in your server manuals 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 may result in noncompliance with product regulations in the region(s) in which the product is sold.

Safety Warnings and Cautions

To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and / or the product packaging.

CAUTION	Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.
WARNING	Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.
	Indicates potential hazard if indicated information is ignored.
	Indicates shock hazards that result in serious injury or death if safety instructions are not followed.
	Indicates hot components or surfaces.
	Indicates do not touch fan blades, may result in injury.
	Indicates to unplug all AC power cord(s) to disconnect AC power
	Please recycle battery

Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

Site Selection

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.

Equipment Handling Practices

Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.
- Use mechanical assistance or other suitable assistance when moving and lifting equipment.
- To reduce the weight for easier handling, remove any easily detachable components.

Power and Electrical Warnings

Caution: *The power button, indicated by the stand-by power marking, DOES NOT completely turn off the system AC power, 5V standby power is active whenever the system is plugged in. To remove power from system, you must unplug the AC power cord from the wall outlet. Your system may use more than one AC power cord. Make sure all AC power cords are*

unplugged. Make sure the AC power cord(s) is/are unplugged before you open the chassis, or add or remove any non hot-plug components.

Do not attempt to modify or use an AC power cord if it is not the exact type required. A separate AC cord is required for each system power supply.

Some power supplies in Intel® servers use Neutral Pole Fusing. To avoid risk of shock use caution when working with power supplies that use Neutral Pole Fusing.

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the server.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it.

Power Cord Warnings

If an AC power cord was not provided with your product, purchase one that is approved for use in your country.

Caution: *To avoid electrical shock or fire, check the power cord(s) that will be used with the product as follows:*

- *Do not attempt to modify or use the AC power cord(s) if they are not the exact type required to fit into the grounded electrical outlets*
- *The power cord(s) must meet the following criteria:*
- *The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.*
- *The power cord must have safety ground pin or contact that is suitable for the electrical outlet.*
- *The power supply cord(s) is/are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.*
- *The power supply cord(s) must be plugged into socket-outlet(s) that is /are provided with a suitable earth ground.*

System Access Warnings

Caution: *To avoid personal injury or property damage, the following safety instructions apply whenever accessing the inside of the product:*

- *Turn off all peripheral devices connected to this product.*
- *Turn off the system by pressing the power button to off.*
- *Disconnect the AC power by unplugging all AC power cords from the system or wall outlet.*

Safety Information

- *Disconnect all cables and telecommunication lines that are connected to the system.*
- *Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.*
- *Do not access the inside of the power supply. There are no serviceable parts in the power supply. Return to manufacturer for servicing.*
- *Power down the server and disconnect all power cords before adding or replacing any non hot-plug component.*
- *When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing the power supply from the server.*

Caution: *If the server has been running, any installed processor(s) and heat sink(s) may be hot. Unless you are adding or removing a hot-plug component, allow the system to cool before opening the covers. To avoid the possibility of coming into contact with hot component(s) during a hot-plug installation, be careful when removing or installing the hot-plug component(s).*

Caution: *To avoid injury do not contact moving fan blades. If your system is supplied with a guard over the fan, do not operate the system without the fan guard in place.*

Rack Mount Warnings

The equipment rack must be anchored to an unmovable support to prevent it from tipping when a server or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.

Install equipment in the rack from the bottom up, with the heaviest equipment at the bottom of the rack.

Extend only one piece of equipment from the rack at a time.

You are responsible for installing a main 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 unit, not just to the server(s).

To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.

Electrostatic Discharge (ESD)

Caution: *ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground -- any unpainted metal surface -- on your server when handling parts.*

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a

conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Other Hazards

Battery Replacement

Caution: *There is the danger of explosion if the battery is incorrectly replaced. When replacing the battery, use only the battery recommended by the equipment manufacturer.*

Dispose of batteries according to local ordinances and regulations.

Do not attempt to recharge a battery.

Do not attempt to disassemble, puncture, or otherwise damage a battery.

Cooling and Airflow

Caution: *Carefully route cables as directed to minimize airflow blockage and cooling problems.*

For proper cooling and airflow, operate the system only with the chassis covers installed. Operating the system without the covers in place can damage system parts. To install the covers:

- *Check first to make sure you have not left loose tools or parts inside the system.*
- *Check that cables, add-in boards, and other components are properly installed.*
- *Attach the covers to the chassis according to the product instructions.*

Laser Peripherals or Devices

Caution: *To avoid risk of radiation exposure and/or personal injury:*

- *Do not open the enclosure of any laser peripheral or device*
- *Laser peripherals or devices have are not user serviceable*
- *Return to manufacturer for servicing*

Deutsch

Sicherheitshinweise für den Server

Das vorliegende Dokument bezieht sich auf Intel® Serverplatinen, Intel® Servergehäuse (Standfuß und Rack) sowie installierte Peripheriegeräte. Es enthält Warnungen und Vorsichtsmaßnahmen zur Vermeidung von Gefahren durch Verletzung, Stromschlag, Feuer und Beschädigungen von Geräten. Lesen Sie diese Dokument daher sorgfältig, bevor Sie Ihr Intel® Serverprodukt installieren oder warten.







Bei Widersprüchen zwischen den hier vorliegenden Angaben und den Informationen im Lieferumfang des Produkts oder auf der Website des betreffenden Produkts hat die Produktdokumentation Vorrang.

Die Integration und Wartung des Servers darf nur durch technisch qualifizierte Personen erfolgen.

Um die Einhaltung der vorhandenen Zulassungen und Genehmigungen für das Produkt zu gewährleisten, sind die Richtlinien in diesem Handbuch sowie die Montageanleitungen in den Serverhandbüchern zu beachten. Verwenden Sie nur die beschriebenen, zugelassenen Komponenten, die im vorliegenden Handbuch angegeben werden. Die Verwendung anderer Produkte oder Komponenten führt zum Erlöschen der UL-Zulassung und anderer Genehmigungen für das Produkt. Dadurch kann das Produkt gegen Produktbestimmungen verstoßen, die im Verkaufsland gelten.

Sicherheitshinweise und Vorsichtsmaßnahmen

Um Verletzungen und Beschädigungen zu vermeiden, sollten Sie vor dem Beginn der Produktinstallation die nachfolgend aufgeführten Sicherheitshinweise und -informationen sorgfältig lesen und befolgen. In dem vorliegenden Handbuch sowie auf dem Produkt und auf der Verpackung werden folgende Sicherheitssymbole verwendet:

VORSICHT	Weist auf eine Gefahrenquelle hin, die bei Nichtbeachtung des VORSICHTSHINWEISES zu leichteren Verletzungen bzw. Sachbeschädigungen führen kann.
WARNUNG	Weist auf eine Gefahrenquelle hin, die bei Nichtbeachtung der WARNUNG zu ernstesten Verletzungen führen kann.
	Weist auf potentielle Gefahr bei Nichtbeachtung der angezeigten Informationen hin.
	Weist auf die Gefahr eines Stromschlags hin, der bei Nichtbeachtung der Sicherheitshinweise zu schweren oder tödlichen Verletzungen führen kann.
	Weist auf Verbrennungsgefahr an heißen Bauteilen bzw. Oberflächen hin.
	Weist darauf hin, daß das Anfassen des Gebläses zu Verletzungen führen kann.
	Bedeutet, alle Netzkabel abzuziehen und das Gerät von der Netzspannung zu trennen.
	Bereiten Sie bitte Batterie auf

Zielbenutzer der Anwendung

Dieses Produkt wurde in seiner Eigenschaft als IT-Gerät getestet, das in Büros, Schulen, Computerräumen und ähnlichen öffentlichen Räumlichkeiten installiert werden kann. Die Eignung dieses Produkts für andere Einsatzbereiche als IT (z. B. Medizin, Industrie, Alarmsysteme oder Prüfgeräte) kann u. U. weitere Tests erfordern.

Standortauswahl

Das System ist für den Betrieb innerhalb normaler Büroumgebungen geeignet. Wählen Sie einen Standort, der folgenden Kriterien entspricht:

- Sauber, trocken und frei von Partikeln in der Luft (außer dem normalen Raumstaub).
- Gut belüftet, nicht in der Nähe von Wärmequellen und keiner direkten Sonnenbestrahlung ausgesetzt.
- Nicht in der Nähe von Vibrations- oder Erschütterungsquellen.
- Abgeschirmt von starken elektromagnetischen Feldern, die durch elektrische Geräte erzeugt werden.
- In gewittergefährdeten Gebieten sollten Sie das System an einen Überspannungsschutz anschließen und bei einem Gewitter die Telekommunikationskabel zum Modem abziehen.
- Eine ordnungsgemäß geerdete Wandsteckdose muß vorhanden sein.
- Ausreichender Freiraum für den Zugang zu den Netzkabeln, da diese die Hauptvorrichtung zum Trennen des Produkts von der Stromversorgung sind.

Handhabung von Geräten

Beachten Sie zur Vermeidung von Verletzungen oder Beschädigungen an den Geräten die folgenden Hinweise:

- Halten Sie beim Transportieren und Anheben von Geräten die örtlichen Gesundheits- und Sicherheitsvorschriften ein.
- Verwenden Sie mechanische oder andere geeignete Hilfsmittel zum Transportieren oder Anheben von Geräten.
- Entfernen Sie alle Komponenten, die sich leicht abnehmen lassen, um das Gewicht zu reduzieren und die Handhabung zu erleichtern.

Warnungen zu Netzspannung und Elektrizität

Vorsicht: Durch Betätigen der mit dem Standby-Symbol gekennzeichneten Netztaste wird das System NICHT vollständig vom Netz getrennt. Es sind weiterhin 5 V aktiv, solange das System eingesteckt ist. Um das System vollständig vom Strom zu trennen, muß das Netzkabel aus der Steckdose abgezogen werden. Das System verfügt möglicherweise über mehrere Netzkabel. Vergewissern Sie sich in diesem Fall, daß alle Netzkabel abgezogen sind. Wenn Sie Komponenten ein- oder ausbauen möchten, die nicht hot-plug-fähig sind, stellen Sie sicher, daß zuvor alle Netzkabel abgezogen sind.

Nehmen Sie keine Änderungen am Netzkabel vor, und verwenden Sie kein Kabel, das nicht genau dem geforderten Typ entspricht. Jedes Netzteil im System muß über ein eigenes Netzkabel angeschlossen werden.

Einige Netzteile von Intel Servern verwenden Nullleitersicherungen. Vorsicht ist geboten im Umgang mit Netzteilen, welche Nullleitersicherungen verwenden, um das Risiko eines elektrischen Schlages zu vermeiden

Das Netzteil in diesem Produkt enthält keine Teile, die vom Benutzer gewartet werden können. Öffnen Sie das Netzteil nicht. Im Netzteil bestehen gefährliche Spannungen, Ströme und Energiequellen. Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.

Wenn Sie ein hot-plug-fähiges Netzteil austauschen, ziehen Sie dessen Netzkabel ab, bevor Sie es aus dem Server ausbauen.

Zur Vermeidung von Stromschlägen schalten Sie den Server aus, und trennen Sie vor dem Öffnen des Geräts das Netzkabel sowie alle an den Server angeschlossene Telekommunikationssysteme, Netzwerke und Modems.

Hinweis für Netzkabel

Wenn kein Netzkabel mit dem Produkt geliefert wurde, kaufen Sie ein Kabel, das für die

Vorsicht: Prüfen Sie zur Vermeidung von Stromschlag- oder Feuergefahr die mit dem Produkt zu verwendenden Netzkabel wie folgt:

- Nehmen Sie keine Änderungen an einem Netzkabel vor, und benutzen sie es nicht, wenn es nicht genau in die geerdeten Netzsteckdosen paßt.
- Netzkabel müssen die folgenden Anforderungen erfüllen:
- Die Nennbelastbarkeit des Netzkabels muß mindestens so hoch sein wie die am Produkt angegebenen Nennstromaufnahme.
- Das Netzkabel muß einen zur Netzsteckdose passenden Schutzkontakt besitzen.
- Die Netzkabel sind die Hauptvorrichtung zum Trennen des Geräts vom Stromnetz. Die Steckdose muß in der Nähe der Anlage angebracht und gut erreichbar sein.
- Netzkabel müssen an eine ordnungsgemäß geerdete Steckdose angeschlossen sein.

Warnhinweise für den Systemzugang

Vorsicht: Um Verletzungen und Beschädigungen zu vermeiden, sollten Sie vor Arbeiten im Produktinneren folgende Sicherheitsanweisungen beachten:

- Schalten Sie alle am Produkt angeschlossenen Peripheriegeräte aus.
- Schalten Sie das System mit dem Netzschalter aus.
- Trennen Sie das Gerät von der Stromquelle, indem Sie alle Netzkabel vom System bzw. aus der Steckdose ziehen.
- Ziehen Sie alle Kabel und alle an das System angeschlossenen Telekommunikationsleitungen ab.
- Bewahren Sie alle Schrauben und anderen Befestigungselemente gut auf, nachdem Sie die Gehäuseabdeckung entfernt haben. Wenn Sie Ihre Arbeiten im Systeminneren beendet haben, befestigen Sie die Gehäuseabdeckung mit den Originalschrauben bzw. -befestigungselementen.
- Führen Sie keine Arbeiten im Netzteil aus. Das Netzteil enthält keine für den Benutzer wartungsbedürftigen Teile. Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.
- Schalten Sie den Server aus, und ziehen Sie alle Netzkabel ab, bevor Sie Komponenten ein- oder ausbauen, die nicht hot-plug-fähig sind.
- Wenn Sie ein hot-plug-fähiges Netzteil austauschen, ziehen Sie dessen Netzkabel ab, bevor Sie es aus dem Server ausbauen.

Vorsicht: War Ihr Server in Betrieb, können die installierten Prozessoren und Kühlkörper heiß sein. Sofern Sie keine Hot-Plug-Komponenten ein- oder ausbauen, warten Sie mit dem Abnehmen der Abdeckungen, bis das System abgekühlt ist. Gehen Sie beim Aus- oder Einbauen von Hot-Plug-Komponenten sorgfältig vor, um nicht mit heißen Komponenten in Berührung zu kommen.

Vorsicht: Berühren Sie nicht die rotierenden Lüfterflügel, um Verletzungen zu vermeiden. Falls Ihr System mit einer Lüfterabdeckung besitzt, darf es nicht ohne diese Abdeckung betrieben werden.

Warnhinweise für Racks

Das Geräte-Rack muß auf einer geeigneten, festen Unterlage verankert werden, um ein Umkippen zu vermeiden, wenn ein Server oder andere Geräte herausgezogen werden. Bei der Installation des Racks müssen die Anweisungen des Rack-Herstellers beachtet werden.

Gehen Sie bei der Installation von Geräten im Rack immer von unten nach oben vor, und bauen Sie das schwerste Gerät an der untersten Position im Rack ein.

Ziehen Sie jeweils immer nur ein Gerät aus dem Rack heraus.

Sie müssen für die gesamte Rack-Einheit einen Netztrennschalter einrichten. Dieser Netztrennschalter muß leicht zugänglich sein und über eine Kennzeichnung verfügen, die besagt, daß er die Stromzufuhr zur gesamten Einheit steuert und nicht nur zu den Servern.

Zur Vermeidung von Stromschlaggefahr müssen das Rack selbst und alle darin eingebauten Geräte ordnungsgemäß geerdet sein.

Elektrostatische Entladungen (ESD)

Vorsicht: *Elektrostatische Entladungen können zur Beschädigung von Festplatten, Platinen und anderen Komponenten führen. Daher sollten Sie alle Arbeiten an einer ESD-Workstation ausführen. Steht ein solcher Arbeitsplatz nicht zur Verfügung, erzielen Sie einen gewissen Schutz vor elektrostatischen Entladungen durch Tragen einer Antistatik-Manschette, die Sie während der Arbeit zur Erdung an einem beliebigen unlackierten Metallteil des Computergehäuses befestigen.*

Gehen Sie bei der Handhabung von Platinen immer mit größter Vorsicht vor. Sie können äußerst empfindlich gegenüber elektrostatischer Entladung sein. Halten Sie Platinen nur an den Kanten fest. Legen Sie die Platinen nach dem Auspacken aus der Schutzhülle oder nach dem Ausbau aus dem Server mit der Bauelementseite nach oben auf eine geerdete, statisch entladene Unterlage. Verwenden Sie dazu, sofern verfügbar, eine leitfähige Schaumstoffunterlage, aber nicht die Schutzhülle der Platine. Ziehen Sie die Platine nicht über eine Fläche.

Andere Gefahren

Batterieaustausch

Vorsicht: Wird die Batterie unsachgemäß ausgetauscht, besteht Explosionsgefahr. Verwenden Sie als Ersatz nur die vom Gerätehersteller empfohlene Batterie.

Beachten Sie bei der Entsorgung von Batterien die gültigen Bestimmungen.

Versuchen Sie nicht, eine Batterie aufzuladen.

Versuchen Sie nicht, eine Batterie zu öffnen oder sonstwie zu beschädigen.

Kühlung und Luftstrom

Vorsicht: Verlegen Sie Kabel sorgfältig entsprechend der Anleitung, um Störungen des Luftstroms und Kühlungsprobleme zu vermeiden.

Zur Gewährleistung des ordnungsgemäßen Kühlungs- und Luftstromverhaltens darf das System nur mit angebrachten Gehäuseabdeckungen betrieben werden. Die Inbetriebnahme des Systems ohne Abdeckung kann zur Beschädigung von Systemkomponenten führen. So bringen Sie die Abdeckung wieder an:

- Vergewissern Sie sich zunächst, daß Sie keine Werkzeuge oder Teile im Gehäuse vergessen haben.
- Prüfen Sie, ob Kabel, Erweiterungskarten sowie weitere Komponenten ordnungsgemäß angebracht sind.
- Befestigen Sie die Abdeckungen am Gehäuse des Produkts, wie in dessen Anleitung beschrieben.

Laser-Peripheriegeräte oder -Komponenten

Vorsicht: Beachten Sie zur Vermeidung von Strahlung und Verletzungen die folgenden Hinweise:

- Öffnen Sie keinesfalls das Gehäuse von Laser-Peripheriegeräten oder Laser-Komponenten.
- Laser-Peripheriegeräte oder -Komponenten besitzen keine für den Benutzer wartungsbedürftigen Teile.
- Schicken Sie das Gerät für Wartungsarbeiten an den Hersteller zurück.

Français

Consignes de sécurité sur le serveur

Ce document s'applique aux cartes serveur Intel®, au châssis de serveur Intel® (sur pieds et sur rack) et aux périphériques installés. Pour réduire les risques de dommages corporels, d'électrocution, d'incendie et de dommages matériels, lisez ce document et respectez tous les avertissements et précautions mentionnés dans ce guide avant d'installer ou de mettre à jour votre produit serveur Intel®.







En cas de conflit entre les informations fournies dans ce document et celles livrées avec le produit ou publiées sur le site Web pour un produit particulier, la documentation du produit prime.

Votre serveur doit être intégré et entretenu uniquement par des techniciens qualifiés.

Vous devez suivre les informations de ce guide et les instructions d'assemblage des manuels de serveur pour vérifier et maintenir la conformité avec les certifications et approbations de produit existantes. Utilisez uniquement les composants décrits et réglementés spécifiés dans ce guide. L'utilisation d'autres produits/composants annulera la liste UL et les autres approbations réglementaires du produit, et le produit peut ne pas être conforme aux autres lois et réglementations locales applicables au produit.

Sécurité: avertissements et mises en garde

Pour éviter de vous blesser ou d'endommager votre équipement, lisez et respectez toutes les informations et consignes de sécurité avant de commencer l'installation du produit. Les symboles de sécurité suivants peuvent être utilisés tout au long de cette documentation et peuvent figurer sur le produit ou sur son emballage.

ATTENTION	Indique la présence d'un risque pouvant entraîner des blessures physiques mineures ou endommager légèrement le matériel si la mise en garde n'est pas prise en compte.
AVERTISSEMENT	Indique la présence d'un risque pouvant entraîner des blessures corporelles graves si l'avertissement n'est pas pris en compte.
	Indique un risque potentiel si les informations signalées ne sont pas prises en compte.
	Indique des risques d'électrocution pouvant entraîner des blessures corporelles graves ou mortelles si les consignes de sécurité ne sont pas respectées.
	Signale des composants ou des surfaces soumis à des températures élevées.
	Indique de ne pas toucher aux pales de ventilateur, car cela peut entraîner des blessures.
	Indique de débrancher tous les cordons d'alimentation secteur pour déconnecter l'alimentation.
	Veillez réutiliser la batterie

Domaines d'utilisation prévus

Ce produit a été testé comme équipement informatique (ITE) et peut être installé dans des bureaux, des écoles, des salles informatiques et des endroits commerciaux similaires. L'utilisation du présent produit dans des catégories et environnements de produits et domaines d'application (par exemple, le domaine médical, industriel, résidentiel, les systèmes d'alarme et les appareils de contrôle) autres qu'ITE doit faire l'objet d'évaluations supplémentaires.

Sélection d'un emplacement

Le système est conçu pour fonctionner dans un environnement standard de bureau. Choisissez un emplacement respectant les conditions suivantes :

- Propre, sec et exempt de particules en suspension (autres que la poussière normale d'une pièce).
- Bien ventilé et à l'écart des sources de chaleur telles que la lumière directe du soleil et les radiateurs.
- À l'écart des sources de vibration ou des chocs physiques.
- Isolé des champs électromagnétiques importants produits par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques, nous vous recommandons de brancher votre système à un suppresseur de surtension et de déconnecter les lignes de télécommunication de votre modem pendant les orages.
- Équipé d'une prise murale reliée à la terre.
- Équipé d'un espace suffisant pour accéder aux cordons d'alimentation secteur, car ils servent de disjoncteur principal d'alimentation du produit.

Pratiques de manipulation de l'équipement

Réduisez le risque de dommages personnels ou matériels :

- Conformez-vous aux exigences de médecine du travail et de sécurité lorsque vous déplacez et soulevez le matériel.
- Utilisez l'assistance mécanique ou toute autre assistance appropriée lorsque vous déplacez et soulevez le matériel.
- Pour réduire le poids en vue de faciliter la manipulation, retirez tout composant amovible.

Alimentation et avertissements en matière d'électricité

Attention: Le bouton d'alimentation, indiqué par le symbole de mise en veille, NE COUPE PAS complètement l'alimentation secteur du système car le courant de veille 5 V reste actif lorsque le système est sous tension. Pour couper l'alimentation du système, vous devez débrancher le cordon d'alimentation secteur de la prise murale. Votre système peut utiliser plusieurs cordons d'alimentation secteur. Assurez-vous que tous les cordons d'alimentation sont débranchés. Vous devez les débrancher avant d'ouvrir le châssis, d'ajouter ou de supprimer un composant non connectable à chaud.

Les alimentations de certains serveurs Intel sont munies de doubles fusibles pôle/neutre: veuillez observer les précautions d'usage afin d'éviter tout risque d'électrocution.

N'essayez pas de modifier ou d'utiliser un cordon d'alimentation secteur s'il ne s'agit pas du type exact requis. Un cordon secteur est requis pour chaque alimentation système.

Le bloc d'alimentation de ce produit ne contient aucun composant réparable par l'utilisateur. N'ouvrez pas le bloc d'alimentation. L'intérieur de celui-ci est soumis à des niveaux dangereux de tension, de courant et d'énergie. Renvoyez-le au fabricant en cas de problème.

Lorsque vous remplacez un bloc d'alimentation à chaud, débranchez le cordon du bloc d'alimentation en cours de remplacement avant de le retirer du serveur.

Pour éviter tout risque d'électrocution, mettez le système hors tension et débranchez les cordons d'alimentation ainsi que les systèmes de télécommunication, réseaux et modems reliés au système avant d'ouvrir ce dernier.

Avertissements sur le cordon d'alimentation

Si aucun cordon d'alimentation secteur n'a été fourni avec votre produit, vous devez vous en procurer un qui soit approuvé pour une utilisation dans votre pays.

Attention: Pour éviter tout risque d'électrocution ou d'incendie, vérifiez les cordons d'alimentation qui seront utilisés avec le produit comme suit:

- N'essayez pas d'utiliser ou de modifier les cordons d'alimentation en CA s'ils ne correspondent pas exactement au type requis pour les prises électriques reliées à la terre.
- Les cordons d'alimentation doivent répondre aux critères suivants :
- Le cordon d'alimentation doit supporter une intensité supérieure à celle indiquée sur le produit.
- Le cordon d'alimentation doit posséder une broche ou un contact de mise à la terre approprié à la prise électrique.
- Les cordons d'alimentation électrique représentent le principal dispositif de déconnexion raccordé à l'alimentation secteur. Les prises de courant doivent se trouver à proximité de l'équipement et être facilement accessibles pour une déconnexion.
- Les cordons d'alimentation doivent être branchés sur des prises électriques correctement reliées à la terre.

Avertissements sur l'accès au système

Attention: Pour éviter de vous blesser ou d'endommager votre équipement, les consignes de sécurité suivantes s'appliquent chaque fois que vous accédez à l'intérieur du produit:

- Mettez hors tension tous les périphériques connectés à ce produit.
- Éteignez le système en appuyant sur le bouton d'alimentation.
- Déconnectez l'alimentation secteur en débranchant tous les cordons d'alimentation secteur du système ou de la prise murale.
- Déconnectez l'ensemble des câbles et lignes de télécommunication qui sont connectés au système.
- Mettez toutes les vis ou autres attaches de côté lorsque vous retirez les panneaux d'accès. Une fois que vous avez terminé d'accéder à l'intérieur du produit, refixez le panneau d'accès avec les vis ou attaches d'origine.
- N'essayez pas d'accéder à l'intérieur du bloc d'alimentation. Il ne contient aucune pièce réparable. Renvoyez-le au fabricant en cas de problème.
- Mettez le serveur hors tension et débranchez tous les cordons d'alimentation avant d'ajouter ou de remplacer tout composant non connectable à chaud.
- Lorsque vous remplacez le bloc d'alimentation à chaud, débranchez le cordon du bloc d'alimentation en cours de remplacement avant de retirer le bloc du serveur.

Attention: Si le serveur a été utilisé, les processeurs et dissipateurs de chaleur installés peuvent être chauds. À moins que vous n'ajoutiez ou ne retiriez un composant connectable à chaud, laissez le système refroidir avant d'ouvrir les panneaux. Pour éviter tout risque d'entrer en contact avec un composant chaud lors d'une installation à chaud, prenez toutes les précautions nécessaires lorsque vous retirez ou installez des composants connectables à chaud.

Attention: Pour éviter de vous blesser, ne touchez pas les pales de ventilateur en mouvement. Si votre système est fourni avec une protection sur le ventilateur, ne mettez pas le système en route sans la protection en place.

Avertissements sur le montage en rack

Le rack doit être fixé à un support inamovible pour éviter qu'il ne bascule lors de l'extension d'un serveur ou d'un élément de l'équipement. Le rack doit être installé conformément aux instructions du fabricant.

Installez les équipements dans le rack en partant du bas, en plaçant le plus lourd en bas du rack.

N'étendez qu'un seul élément de l'équipement à partir du rack à la fois.

Vous êtes responsable de l'installation d'un disjoncteur principal d'alimentation pour la totalité du rack. Ce disjoncteur principal doit être rapidement accessible et doit être étiqueté comme contrôlant toute l'unité, et pas uniquement le ou les serveurs.

Pour éviter tout risque d'électrocution, le rack et chaque élément de l'équipement installé dans le rack doivent être correctement reliés à la terre.

Décharges électrostatiques (ESD)

Attention: *Les décharges électrostatiques (ESD) peuvent endommager les lecteurs de disque dur, les cartes et d'autres pièces. Il est fortement conseillé d'effectuer l'ensemble des procédures décrites à un poste de travail protégé contre les ESD. Au cas où aucun poste de ce type ne serait disponible, protégez-vous contre les ESD en portant un bracelet antistatique relié à la masse du châssis (n'importe quelle surface métallique non peinte) de votre serveur lorsque que vous manipulez les pièces.*

Manipulez toujours les cartes avec précaution. Elles peuvent être extrêmement sensibles aux ESD. Ne tenez les cartes que par leurs bords. Après avoir retiré une carte de son emballage de protection ou du serveur, placez-la sur une surface reliée à la terre, exempte de charge statique, composants orientés vers le haut. Utilisez si possible un tapis de mousse conducteur, mais pas l'emballage de la carte. Veillez à ce que la carte ne glisse sur aucune surface.

Autres risques

Remplacement de la pile

Attention: Il existe un risque d'explosion si la pile n'est pas correctement remplacée. Lors du remplacement de la pile, utilisez uniquement celle recommandée par le fabricant du matériel.

Mettez la pile au rebut en vous conformant aux réglementations locales.

N'essayez pas de recharger une pile.

N'essayez pas de démonter, de percer ou d'endommager la pile d'une quelconque façon.

Refroidissement et ventilation

Attention: Routez les câbles avec précaution comme indiqué pour minimiser les blocages de circulation d'air et les problèmes de refroidissement.

Afin de permettre une ventilation et un refroidissement corrects, ne mettez le système en marche que lorsque les panneaux du châssis sont en place. L'utilisation du système sans les panneaux peut endommager les composants système. Pour installer les panneaux :

- Vérifiez tout d'abord que vous n'avez pas oublié d'outils ou de composants détachés à l'intérieur du système.
- Vérifiez que les câbles, les cartes d'extension et les autres composants sont correctement installés.
- Fixez les panneaux au châssis en suivant les instructions du produit.

Périphériques laser

Attention: Pour éviter tout risque d'exposition aux rayonnements et/ou de dommage personnel:

- N'ouvrez pas l'enceinte d'un périphérique laser.
- Les périphériques laser ne sont pas réparables par l'utilisateur.
- Retournez-les au fabricant en cas de problème.

Español

Información de seguridad del servidor

Este documento se aplica a las tarjetas de servidor de Intel[®], las carcadas de servidor de Intel[®] (montaje en bastidor y en pedestal) y los dispositivos periféricos. Para reducir el riesgo de daños corporales, descargas eléctricas, fuego y en el equipo, lea este documento y preste atención a todas las advertencias y precauciones de esta guía antes de instalar o mantener el producto de servidor de Intel[®].







En el caso de que haya diferencias entre la información para un producto en particular contenida en este documento y la información proporcionada con dicho producto o en el sitio Web, la documentación del producto es la que prevalece.

Sólo personal técnico cualificado debe montar y prestar los servicios para el servidor.

Debe ceñirse a las directrices de esta guía y a las instrucciones de montaje de los manuales del servidor para asegurar y mantener el cumplimiento con las certificaciones y homologaciones existentes de los productos. Utilice sólo los componentes descritos y homologados que se especifican en esta guía. El uso de otros productos o componentes anulará la homologación UL y otras certificaciones oficiales del producto, pudiendo dejar de ser compatible con las normativas locales de los países en los que se comercializa.

Advertencias y precauciones sobre seguridad

Para reducir la posibilidad de que se produzcan lesiones personales o daños en la propiedad, antes de empezar a instalar el producto, lea, observe y cumpla toda la información e instrucciones de seguridad siguientes. Puede que se utilicen los siguientes símbolos de seguridad en la documentación y es posible que aparezcan en el producto o en su embalaje.

PRECAUCIÓN	Indica la existencia de un riesgo que podría causar lesiones personales o daños en la propiedad leves si no se tiene en cuenta la PRECAUCIÓN.
ADVERTENCIA	Indica la existencia de un riesgo que podría causar lesiones personales graves si no se tiene en cuenta la ADVERTENCIA.
	Indica un riesgo potencial si no se tiene en cuenta la información indicada.
	Indica riesgo de descargas eléctricas que podrían causar lesiones graves o la muerte si no se siguen las instrucciones de seguridad.
	Indica componentes o superficies calientes.
	Indica que no se deben tocar las aspas de los ventiladores, ya que de lo contrario se podrían producir lesiones.
	Indica que es necesario desenchufar los cables de alimentación de CA para desconectar la alimentación de CA
	Recicle por favor la batería

Aplicaciones y usos previstos

Este producto ha sido evaluado como equipo de tecnología informática (ITE) que puede instalarse en oficinas, escuelas, salas de equipos informáticos o lugares de ámbito comercial similares. Es posible que sea necesario llevar a cabo una evaluación adicional para comprobar si este producto es apropiado para otras categorías de productos y entornos además de las aplicaciones informáticas (por ejemplo, soluciones médicas, industriales, residenciales, sistemas de alarma y equipos de pruebas).

Selección de la ubicación

El sistema se ha diseñado para funcionar en un entorno normal de oficinas. Seleccione una ubicación que esté:

- Limpia, seca y libre de macropartículas en suspensión en el aire (que no sean el polvo habitual de la habitación).
- Bien ventilada y alejada de fuentes de calor, incluida la luz solar directa y los radiadores.
- Alejada de fuentes de vibración o de golpes físicos.
- Aislada de campos electromagnéticos producidos por dispositivos eléctricos.
- En zonas propensas a tormentas eléctricas, se recomienda que conecte el servidor a un supresor de sobretensiones y desconecte las líneas de telecomunicaciones al módem durante una tormenta eléctrica.
- Provista de una toma de corriente alterna correctamente conectada a tierra.
- Provista de espacio suficiente para acceder a los cables de la fuente de alimentación ya que constituyen la desconexión principal de la alimentación.

Manipulación del equipo

Reduzca el riesgo de daños personales o en el equipo:

- Respete los requisitos de sanidad y seguridad laborales de su país cuando traslade y levante el equipo.
- Utilice medios mecánicos u otros que sean adecuados al trasladar o levantar el equipo.
- Para que el peso sea menor para manipularlo con más facilidad, extraiga los componentes que sean de fácil extracción.

Advertencias de alimentación y eléctricas

Precaución: El botón de encendido, indicado con la marca del modo de reposo o stand-by, NO DESCONECTA completamente la alimentación de CA del sistema, ya que el modo de reposo de 5 V sigue activo mientras el sistema está enchufado. Para desconectar el sistema debe desenchufar el cable de alimentación de CA de la toma de la pared. Puede usar más de un cable de alimentación de CA con el sistema. Asegúrese de que todos los cables de alimentación de CA estén desenchufados. Asegúrese de que los cables de alimentación de CA estén desenchufado antes de abrir la carcasa, agregar o extraer cualquier componente que no es de conexión en funcionamiento.

Algunas fuentes de alimentación de electricidad de los servidores de Intel utilizan el polo neutral del fuselaje. Para evitar riesgos de choques eléctricos use precauciones al trabajar con las fuentes de alimentación que utilizan el polo neutral de fuselaje.

No intente modificar ni utilizar un cable de alimentación de CA si no es del tipo exacto requerido. Se necesita un cable de CA para cada fuente de alimentación del sistema.

La fuente de alimentación de este producto no contiene piezas que puedan ser reparadas por el usuario. No abra la fuente de alimentación. Dentro de la fuente de alimentación puede haber niveles de tensión, corriente y energía peligrosos. Devuélvala al fabricante para repararla.

Al reemplazar una fuente de alimentación de conexión en funcionamiento, desenchufe el cable de alimentación de la fuente de alimentación que va a reemplazar antes de extraerla del servidor.

Para evitar el riesgo de descargas eléctricas, antes de abrir el servidor, apáguelo, desconecte el cable de alimentación, los sistemas de telecomunicaciones, las redes y los módems conectados al mismo.

Advertencias sobre el cable de alimentación

Si no se ha proporcionado con el producto ningún cable de alimentación de CA, adquiera alguno cuyo uso esté aprobado en su país.

Precaución: Para evitar descargas eléctricas o fuego, revise los cables de alimentación que usará con el producto tal y como se describe a continuación:

- No intente modificar ni utilizar los cables de alimentación de CA si no son exactamente del modelo especificado para ajustarse a las tomas de corriente conectadas a tierra
- Los cables de alimentación deben reunir los siguientes requisitos:
- El cable de alimentación debe disponer de una capacidad nominal de corriente eléctrica mayor que la capacidad especificada en el producto.
- El cable de alimentación debe disponer de una patilla o contacto de conexión a tierra que sea apto para la toma de corriente.
- Los cables de la fuente de alimentación son los dispositivos de desconexión principales a la corriente alterna. El enchufe o enchufes de zócalo deben encontrarse cerca del equipo y el acceso a ellos debe poderse efectuar de forma inmediata con el fin de desconectarlos.

- Los cables de la fuente de alimentación deben estar conectados a los enchufes con una toma de tierra adecuada.

Advertencias el acceso al sistema

Precaución: Para evitar lesiones personales o daños en la propiedad, se aplican las siguientes instrucciones de seguridad siempre que se acceda al interior del producto:

- Apague todos los dispositivos periféricos conectados a este producto.
- Pulse el botón de alimentación para apagar el sistema.
- Desconecte la alimentación de CA desenchufando los cables de alimentación de CA del sistema o de la toma de corriente alterna.
- Desconecte todos los cables y líneas de telecomunicación que estén conectados al sistema.
- Guarde todos los tornillos o elementos de fijación cuando retire las cubiertas de acceso. Cuando termine de operar en el interior del producto, vuelva a colocar los tornillos o los elementos de fijación originales de la cubierta de acceso.
- No acceda al interior de la fuente de alimentación. No hay elementos en la fuente de alimentación que usted pueda reparar y utilizar. Devuélvala al fabricante para repararla.
- Apague el servidor y desconecte todos los cables de alimentación antes de agregar o reemplazar cualquier componente que no es de conexión en funcionamiento.
- Al reemplazar una fuente de alimentación de conexión en funcionamiento, desenchufe el cable de alimentación de la fuente de alimentación que va a reemplazar antes de extraerla del servidor.

Precaución: Si el servidor se ha estado ejecutando, los procesadores y disipadores de calor estarán recalentados. A no ser que esté instalando o extrayendo un componente de conexión en funcionamiento, deje que el sistema se enfríe antes de abrir las cubiertas. Para que no llegue a tocar los componentes que estén calientes cuando esté realizando una instalación de conexión en funcionamiento, tenga cuidado al extraer o instalar los componentes de conexión en funcionamiento.

Precaución: Para evitar posibles daños, no toque las aspas en movimiento de los ventiladores. Si el sistema se le ha suministrado con una protección para el ventilador, asegúrese de que cuando esté funcionando el sistema la protección esté en su sitio.

Advertencias sobre el montaje en bastidor

El bastidor del equipo se debe sujetar con un soporte fijo para evitar que se caiga cuando se extraiga un servidor o una pieza del mismo. El bastidor del equipo debe instalarse siguiendo las instrucciones del fabricante del bastidor.

Instale el equipo en el bastidor comenzando desde la parte de abajo, con el equipo más pesado en la parte inferior del bastidor.

Extraiga las piezas del equipo del bastidor de una a una.

El usuario es el responsable de la instalación de un dispositivo de desconexión de la alimentación principal para toda la unidad del bastidor. El acceso a este dispositivo de desconexión deberá ser de fácil acceso y deberán incluirse indicaciones que lo identifiquen como el control de alimentación eléctrica de toda la unidad, no sólo de los servidores.

Para evitar el riesgo de descargas eléctricas, deberá instalar una conexión a tierra apropiada para el bastidor y para cada pieza del equipo instalada en el mismo.

Descarga electrostática (ESD)

Precaución: *Las descargas electrostáticas pueden dañar las unidades de disco, las tarjetas y otros componentes. Recomendamos que realice todos los procedimientos en una estación de trabajo protegida contra descargas electrostáticas. En caso de que no haya una disponible, protéjase de alguna forma contra las descargas llevando un brazalete antiestático conectado a la toma de tierra de la carcasa (cualquier superficie de metal que no esté pintada) del servidor cuando manipule las piezas.*

Manipule siempre las tarjetas con el máximo cuidado. Pueden ser sumamente sensibles a las descargas electrostáticas. Sujételas sólo por los bordes. Una vez extraída la tarjeta de su envoltorio de protección o del servidor, colóquela con el lado de los componentes hacia arriba sobre una superficie con toma de tierra y sin carga estática. Utilice una almohadilla de espuma conductora si dispone de ella, pero nunca el envoltorio de la tarjeta. No deslice la tarjeta sobre ninguna superficie.

Sustitución de la batería

Precaución: Existe el peligro de explosión si la batería no se reemplaza correctamente. Al reemplazar la batería, utilice sólo la batería recomendada por el fabricante del equipo.

Deseche las baterías respetando la normativa local.

No intente recargar la batería.

No intente desmontar, pinchar o causar cualquier otro desperfecto a una batería.

Enfriamiento y circulación de aire

Precaución: El tendido de los cables debe realizarse cuidadosamente tal y como se le indica para reducir al mínimo los problemas de obstrucción de la ventilación y de refrigeración.

Para conseguir una refrigeración y corriente de aire adecuadas, compruebe que cuando sistema esté funcionando, las cubiertas de la carcasa están instaladas. Si utiliza el sistema sin las cubiertas, podría dañar sus componentes. Para instalar las cubiertas:

- *Compruebe primero que no ha dejado herramientas o piezas sueltas dentro del sistema.*
- *Compruebe que los cables, tarjetas adicionales y otros componentes están instalados correctamente.*
- *Sujete las cubiertas a la carcasa siguiendo las instrucciones del producto.*

Periféricos o dispositivos láser

Precaución: Para evitar el riesgo de la exposición a radiaciones o de daños personales:

- *No abra la caja de ningún periférico o dispositivo láser*
- *Los periféricos o dispositivos láser no pueden ser reparados por el usuario*
- *Haga que el fabricante los repare.*

简体中文

服务器安全信息

本文档适用于 Intel® 服务器主板、Intel® 服务器机箱（基座和机架固定件）和已安装的外设。为减少人身伤害、电击、火灾以及设备损坏的危险，请在安装或维护 Intel® 服务器产品之前阅读本文档并遵循本指南中的所有警告和预防措施。






如果本文档中的信息与特定产品的随附信息或 Web 站点信息之间存在不一致，请以产品文档为准。

服务器须由合格的技术人员进行集成和维护。

必须遵守本指南的规定和服务器手册的装配指导，以确保符合现有的产品认证和审批。仅使用本指南中描述和规定的指定组件。使用其他产品 / 组件将使产品的 UL 认证和其他管理审批无效，并可能导致产品不符合销售地的产品法规。

安全警告与注意事项

为避免人身伤害与财产损失，安装本产品之前，请阅读以下所有安全指导和信息。下面所列的安全符号可能在整个文档中使用并可能标注于产品和 / 或产品包装之上。

注意	表示如果无视此“ ??? 项” ??????? 轻微人身伤害或财产损失的危险。
警告	表示如果无视此“ ?? ” ??????? 严重人身伤害的危险。
	表示如果无视所示信息，即存在潜在的危险。
	表示如果不遵守安全指导，存在可导致严重伤害或死亡的电击危险。
	表示灼热组件或表面。
	表示请勿触摸风机叶片，否则可能致伤。
	表示拔下所有交流电线，断开交流电源

预期应用使用

根据评估，本产品为信息技术设备 (ITE)，可安装在办公室、学校、计算机房和类似的商业场所。本产品对于非 ITE 应用的其他产品种类和环境（如医疗、工业、住宅、报警系统和测试设备）的适用性尚有待进一步的评估。

场地选择

本系统专为在典型办公环境运行而设计。请选择符合以下条件的地点：

- 清洁、干燥，无气载微粒（而非一般的室内尘埃）。
- 通风良好，远离热源（包括直接日晒和散热器）。
- 远离振动源或物理震动。
- 与电气设备产生的强大电磁场隔离。
- 在易受闪电袭击的地区，我们建议将系统插入电涌抑制器并在闪电期间断开通信线路与调制解调器之间的连接。
- 提供正确接地的墙壁插座。
- 提供足够的空间，以便拿取电源供应线，因为这是本产品的主要电源断开器。

设备操作规范

减少人身伤害或设备受损的危险：

- 移举设备时遵守当地的职业健康与安全要求。
- 借助机械手段或其他合适的手段移举设备。
- 拆除一切易分离组件，以降低重量并方便操作。

电源与电气警告

注意事项

电源按钮（如待机电源标记所示）并不能完全关闭系统的交流电源，只要系统已接通电源，就存在 5V

待机电源。要从系统切断电源，须从墙壁电源插座中拔下交流电线。您的系统可能不止使用一根交流电线。请确保所有的交流电线都已拔下。打开机箱或增加或删除任何热插拔组件之前，确保交流电线已拔下。

若非所需的确切类型，请勿尝试修改或使用交流电线。系统的每个电源供应设备都需要一根单独的交流电线。

本产品的电源供应设备包含非用户维修部件。请勿打开电源供应设备。电源供应设备包含非常危险的电压级、电流级和能量级。请与生产商联系维修事宜。

替换热插拔电源供应设备时，请先拔下需替换的电源供应设备上的电源线，再将其从服务器上移除。

为避免电击，请在打开服务器之前，关闭服务器并断开服务器上连接的电源线、电信系统、网络和调制解调器。

电源线警告

如果产品未提供交流电线，请购买一根您所在国家批准使用的交流电线。

注意事项

为避免电击或火灾危险，请按如下所述对产品所用的电源线进行检查：

- 若非所需的符合接地插座的确切类型，请勿尝试修改或使用交流电线
- 电源线须符合以下标准：
 - 电源线的电气额定值须大于产品上标注的电流额定值。
 - 电源线须拥有适合插座的安全接地插头或触点。
- 电源线为交流电源的主要断开设备。插座须靠近设备并可随时断开。
- 电源线须插入所提供的拥有合适接地的插座。

系统使用警告

注意事项

为避免人身伤害或财产损失，无论何时检查产品内部，以下安全指导都适用：

- 关闭所有与本产品相连的外设。
- 按下电源按钮至关闭状态，关闭系统。
- 从系统或墙壁插座上拔下所有交流电线，断开交流电源。
- 断开与系统相连的所有线缆和通信线路。
- 卸除舱口盖时，保留所有螺钉及其他紧固件。完成产品内部检查之后，请用螺钉或紧固件重新固定舱口盖。
- 请勿打开电源供应设备。电源供应设备内没有可维修部件。请与生产商联系维修事宜。
- 增加或替换任何非热插拔组件之前，请关闭服务器电源并断开所有电源线。
- 替换热插拔电源供应设备时，请先拔下需替换的电源供应设备上的电源线，然后再从服务器上移除电源供应设备。

注意事项

如果服务器一直在运行，任何已安装的处理器和吸热设备都可能很热。除非要增加或移除热插拔组件，否则请待系统冷却后再开盖。为避免在热插拔组件安装过程中接触灼热组件，移除或安装热插拔组件时务须小心。

  **注意事项**

为避免受伤，请勿触摸运转的风机叶片。如果系统的风机上配有防护装置，请勿卸下风机防护装置运行系统。

机架固定件警告

设备的机架须固定在稳固的支座上，以防从中安装服务器或设备时倒塌。须按照机架生产商提供的安装说明进行安装。



从下往上将设备安装在机架上，最重的设备安装在机架的最底层。

一次只从机架上安装一件设备。

您须负责安装整个机架装置的主要电源断开设备。此主要断开设备须随时可用，且须标明为控制整个装置（而不仅限于服务器）的电源。

为避免潜在的电击危险，须对机架及其上所安装的每一件设备实行正确的安全接地。

静电放电 (ESD)

  **注意事项**

ESD 会损坏磁盘驱动器、主板及其他部件。我们建议您执行 ESD 工作站的所有步骤。如果没有 ESD

工作站，则采取一些静电放电保护措施，操作部件时，戴上与服务器上的机箱接地或任何未喷漆金属表面连接的防静电腕带。

操作主板时始终保持小心。它们可能对 ESD

非常敏感。拿持主板时只接触边缘。从保护包装中或从服务器上取出主板后，请将主板组件侧面朝上放置于无静电的接地表面上。请使用导电泡沫垫（若有），不要使用主板包装。请勿将主板在任何表面上滑动。

其他危险

替换电池

注意事项

不正确替换电池可能导致爆炸危险。替换电池时，请只使用设备生产商推荐使用的电池。

请按当地法规处置电池。

请勿对电池充电。

请勿拆卸、刺穿或以其他方式损坏电池。

冷却和气流

注意事项

按照说明小心布置线缆，尽量减少气流阻塞和冷却问题。

为保证适当的冷却和气流，运行系统时请确保机箱盖已安装。未安装机箱盖即运行系统可能导致系统部件受损。安装机箱盖的步骤如下：

- 首先检查并确保系统内没有遗留的未固定工具或部件。
- 检查线缆、内插板和其他组件已正确安装。
- 按产品说明安装机箱盖。

激光外设或激光设备

注意事项

为避免幅射暴露和 / 或人身伤害：

- 请勿打开任何激光外设或激光设备的外壳
- 激光外设或激光设备为非用户维修设备

请与生产商联系维修事宜