Intel® Server Platforms SR4850HW4 and SR4850HW4/M
Product Guide

Order Number: C92647-005

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

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The Intel® Server Platform SR4850HW4 and SR4850HW4/M may contain design defects or errors known as errata that may cause the product to deviate from published specifications. Current characterized errata are available on request.

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Preface

About this Manual

Thank you for purchasing and using the Intel® Server Platform SR4850HW4 and SR4850HW4/M.

This manual is written for system technicians who are responsible for troubleshooting, upgrading, and repairing this server platform. This document provides an overview of the features of the board/chassis, a list of accessories or other components you may need, troubleshooting information, and instructions on how to add and replace components on the Server Platform SR4850HW4 and SR4850HW4/M. For the latest version of this manual, see http://www.intel.com/support/motherboards/server/SR4850HW4/.

Manual Organization

This manual consists of four parts:

- *Preface* (this part): provides safety information, and where to find more information about this product and information about components that will work with this product.
- *Part 1: User's Guide* describes the server platform and procedures that do not require the services of a qualified service technician.
- *Part 2: Service Technician's Guide* describes procedures that require the services of a qualified service configuration technician.
- *Appendices* include technical information, an equipment log, troubleshooting information, regulatory information, and a glossary.

Product Accessories

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

- Processor
- Memory DIMMs
- Hard drives
- PCI adapters
- Operating system

For information about which of these items have been tested and can be used with your server platform, and for ordering information for Intel® products, see http://www.intel.com/support/motherboards/server/SR4850HW4/.

Additional Information and Software

If you need more information about this product or information about the accessories that can be used with this server board, use the following resources. These files are available at http://www.intel.com/support/motherboards/server/SR4850HW4/

Unless otherwise indicated in the table below, 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	Technical Product Specification
If you just received this product and need to install it	Intel® Server Board SR4850HW4 and SR4850HW4/M Quick Start User's Guide in the product box
For virtual system tours and interactive repair information	A link to the SMaRT Tool is available under "Other Resources" at the right side of the screen at http://www.intel.com/support/motherboards/server/SR4850HW4/
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 and Operating System List
Processors that have been tested with this product	Supported Processors
DIMMs that have been tested with this product	Supported Memory
To make sure your system falls within the allowed power budget	Power Budget
For software to manage your Intel® server	Intel® Server Management
For drivers	Driver (for an extensive list of drivers available) Operating System Driver (for operating system drivers)
For firmware and BIOS updates	Firmware Update
For diagnostics test software	Diagnostics

Safety Information

WARNING

Before working with your server product, 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.

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

See "Regulatory and Integration Information" for product Safety and EMC regulatory compliance information. This is an FCC Class A device. Integration of it into a Class B chassis does not result in a Class B device.

Intended 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, telecommunications, NEBS, residential, alarm systems, test equipment, etc.), other than an ITE application, may require further evaluation.

EMC Testing
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.

Warnings

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 server and disconnect the power cord, telecommunications systems, networks, and modems attached to the 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 procedures in this chapter only 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.

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 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.

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 stake pins on the board.

Removing server top cover: Only a QUALIFIED SERVICE TECHNICIAN is authorized to remove the server's top cover and to access any of the components inside the server, except as noted herein.

Anchor the equipment rack: The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of the rack on slides. The anchors must be able to withstand a force of up to 113 kg (250 lbs.). You must also consider the weight of any other device installed in the rack. A crush hazard exists should the rack tilt forward which could cause serious injury.

Main AC power disconnects: Users are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the server(s).

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

Overcurrent protection: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server.

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

- The power cord must have an IEC 320 C13 connector to plug into the power supply on the server.
- For North America or similar electrical distribution systems, the cord must be UL Listed/CSA Certified, 16/3 type SJT/SO, with NEMA 6-15P or equivalent attachment plug.
- For Europe or similar electrical distribution systems, the cord must be flexible VDE certified or HAR rated 250V, 3 x 1.0mm^2 minimum conductor size, and rated for no less than the product ratings.
- Cord length and flexibility: Cords must be less than 4.5 meters (14.76 feet) long.

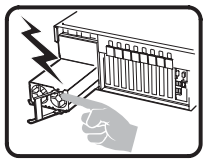
⚠ CAUTIONS

Temperature: The range of temperatures in which the server operates when installed in an equipment rack, must not go below 10 °C (50 °F) or rise above 35 °C (95 °F). Extreme fluctuations in temperature can cause a variety of problems in your server.

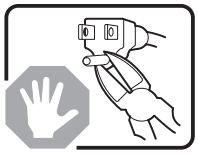
Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1470 W (5000 BTU/hr) for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server is used.

Safety Cautions

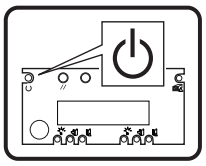
Read all caution and safety statements in this document before performing any of the instructions. See also *Intel® Server Boards and Server Chassis Safety Information* on the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD and/or at http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.



The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.



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.

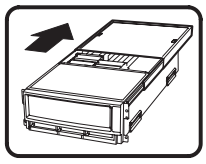


The power button on the system does not turn off system AC power. To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.

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.

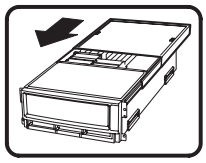
SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

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.



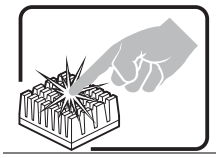
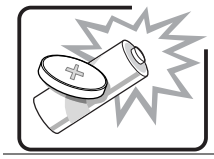
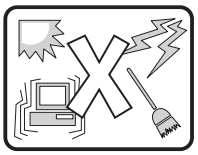
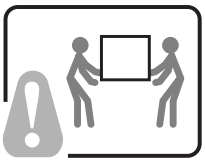
After you have completed the six SAFETY steps above, you can remove the system covers. To do this:

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 covers.



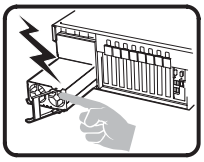
For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

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.

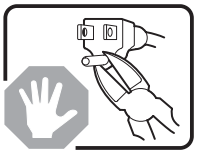
	A microprocessor and heat sink may be hot if the system has been running. In addition, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.
	Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.
	The system is designed to operate in a typical office environment. Choose a site that is: 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.
	Servers can be too heavy for a single person to lift or move safely. Depending on the server, use two people or a mechanical assist to lift or move the server.

Wichtige Sicherheitshinweise

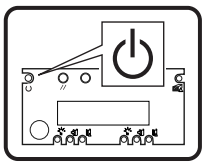
Lesen Sie zunächst sämtliche Warnund Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie hierzu auch die Sicherheitshinweise zu Intel Serverplatinen und Servergehäusen auf der *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* oder unter http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.



Benutzer können am Netzgerät dieses Produkts keine Reparaturen vornehmen. Das Produkt enthält möglicherweise mehrere Netzgeräte. Wartungsarbeiten müssen von qualifizierten Technikern ausgeführt werden.



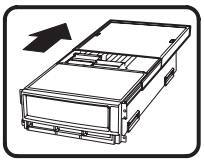
Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht genau um den erforderlichen Typ handelt. Ein Produkt mit mehreren Netzgeräten hat für jedes Netzgerät ein eigenes Netzkabel.



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.

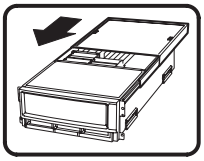
SICHERHEISMASSNAHMEN: Immer wenn Sie die Gehäuseabdeckung abnehmen um an das Systeminnere zu gelangen, sollten Sie folgende Schritte beachten:

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.



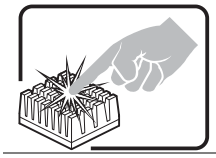
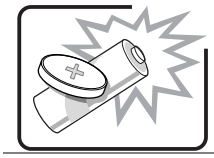
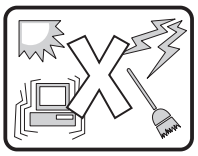
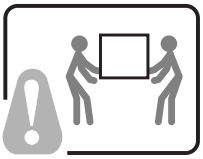
Nachdem Sie die oben erwähnten ersten sechs SICHERHEITSSCHRITTE durchgeführt haben, können Sie die Abdeckung abnehmen, indem Sie:

1. Öffnen und entfernen Sie die Verschlußeinrichtung (Padlock) auf der Rückseite des Systems, falls eine Verschlußeinrichtung installiert ist.
2. Entfernen Sie alle Schrauben der Gehäuseabdeckung.
3. Nehmen Sie die Abdeckung ab.



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:

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

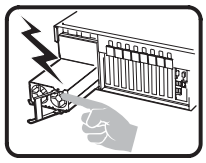
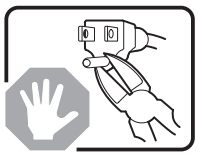
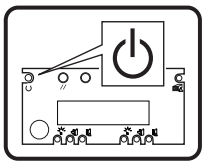
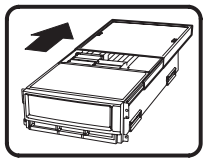
	wieder an.
	Der Mikroprozessor und der Kühler sind möglicherweise erhitzt, wenn das System in Betrieb ist. Außerdem können einige Platinen und Gehäuseteile scharfe Spitzen und Kanten aufweisen. Arbeiten an Platinen und Gehäuse sollten vorsichtig ausgeführt werden. Sie sollten Schutzhandschuhe tragen.
	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.
	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.
	Um einen Server sicher anzuheben und zu bewegen ist eine Person nicht ausreichend. Bewegen Sie den Server, je nach Größe, entweder zu zweit oder mittels einer mechanischen Hilfe.

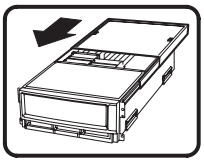
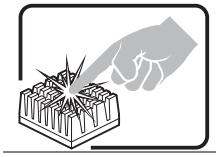
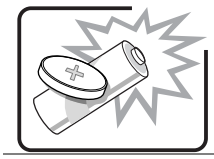
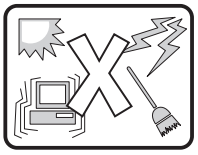
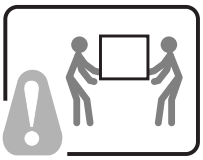
重要安全指导

在执行任何指令之前，请阅读本文档中的所有注意事项及安全声明。参见*Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD（资源光盘） 和/或 http://www.intel.com/support/motherboards/server/sb/cs-010770.htm 上的 *Intel Server Boards and Server Chassis Safety Information*（《Intel 服务器主板与服务器机箱安全信息》）。

Consignes de sécurité

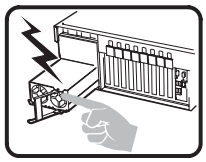
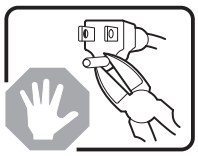
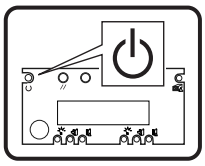
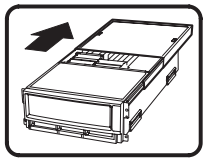
Lisez attention toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez *Intel Server Boards and Server Chassis Safety Information* sur le CD *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* ou bien rendez-vous sur le site http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

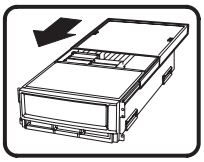
	Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plus d'un bloc d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.
	Ne pas essayer d'utiliser ni modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Le nombre de câbles d'alimentation CA fournis correspond au nombre de blocs d'alimentation du produit.
	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.
	CONSIGNES DE SÉCURITÉ -Lorsque vous ouvrez le boîtier pour accéder à l'intérieur du système, suivez les consignes suivantes: 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.
	Une fois TOUTES les étapes précédentes accomplies, vous pouvez retirer les panneaux du système. Procédez comme suit: 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.

	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: 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.
	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.
	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.
	Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être: 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).
	Il se peut que les serveurs soient trop lourds pour qu'une seule personne puisse les soulever et les déplacer en toute sécurité. En fonction du serveur, utilisez deux personnes ou utilisez un équipement mécanique auxiliaire pour soulever ou déplacer le serveur.

Instrucciones de seguridad importantes

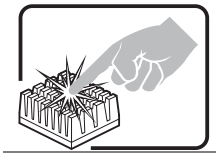
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquiera de las instrucciones. Vea *Intel Server Boards and Server Chassis Safety Information* en el *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* y/o en http://www.intel.com/support/motherboards/server/sb/cs-010770.htm.

	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.
	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.
	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.
 	INSTRUCCIONES DE SEGURIDAD: Cuando extraiga la tapa del chasis para acceder al interior del sistema, siga las siguientes instrucciones: 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 sujetada 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. Después de completar las seis instrucciones de SEGURIDAD mencionadas, ya puede extraer las tapas del sistema. Para ello: 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. 3. Extraiga las tapas.

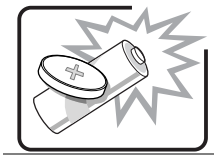


Para obtener un enfriamiento y un flujo de aire adecuados, reinstale siempre las tapas del chasis antes de poner en marcha el sistema. Si pone en funcionamiento el sistema sin las tapas bien colocadas puede dañar los componentes del sistema. Para instalar las tapas:

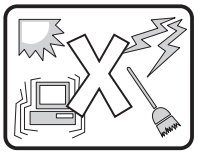
1. Asegúrese primero de no haber dejado herramientas o componentes sueltos dentro del sistema.
2. Compruebe que los cables, las placas adicionales y otros componentes se hayan instalado correctamente.
3. Incorpore las tapas al chasis mediante los tornillos extraídos anteriormente, tensándolos firmemente.
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.



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.



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.



El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

Limpio y libre de partículas en suspensión (salvo el polvo normal).

Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.

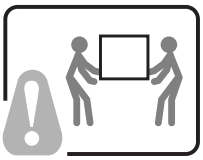
Alejado de fuentes de vibración.

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.

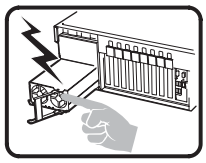
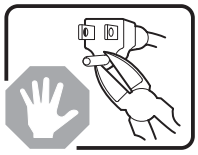
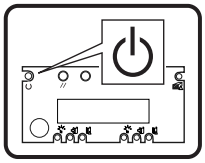
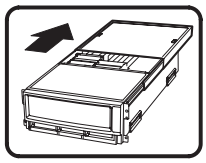
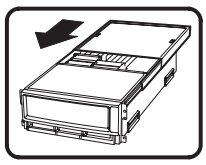
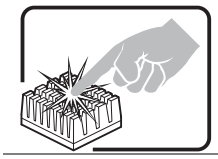
Provisto de una toma de tierra correctamente instalada.

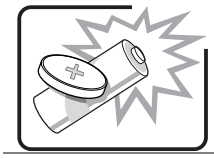
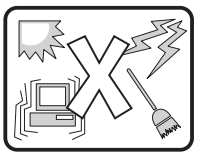
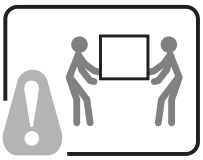
Provisto de espacio suficiente como para acceder a los cables de alimentación, ya que éstos hacen de medio principal de desconexión del sistema.



Los servidores pueden ser demasiado pesados para que una sola persona los levante o los mueva de forma segura.

Dependiendo del servido, utilice dos personas o una ayuda mecánica para levantar o mover el servidor.

	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.
	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.
	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.
 	PASSI DI SICUREZZA: Qualora si rimuovano le coperture del telaio per accedere all’interno del sistema, seguire i seguenti passi: 1. Spegnere tutti i dispositivi periferici collegati al sistema. 2. Spegnere 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. Dopo aver seguito i sei passi di SICUREZZA sopracitati, togliere le coperture del telaio del sistema come seque: 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.
	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: 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.
	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.

	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.
	Il sistema è progettato per funzionare in un ambiente di lavoro tipo. Scegliere una postazione che sia: 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.
	I server possono risultare troppo pesanti per essere sollevati o spostati da una sola persona. Alcuni server devono dunque essere sollevati o spostati da due persone o da un assistente tecnico.

Contents

Figures

Tables

Part I: User's Guide

Part 1: User's Guide describes the server platform and procedures that DO NOT REQUIRE a qualified service technician.

- Section 1 provides a brief overview of the Intel® Server Platform SR4850HW4 and SR4850HW4/M, focusing on the chassis features. In this chapter, you will find a list of the server board/chassis features, photos of the product, and product diagrams to help you identify components and their locations.
- Section 2 describes how to start up and shut down the server.
- Section 3 describes the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit*.
- Section 4 provides instructions on using the utilities that are shipped with the Server Platform or may be required to update the system. This includes how to navigate through the BIOS Setup screens, how to perform BIOS and firmware updates, and how to configure the server management features.

1 Platform Description

The Intel® Server Platform SR4850HW4 and SR4850HW4/M is a compact, high-density, rack-mount system with support for one to four Intel® Xeon® processors and 64GB of DDR2 400MHz SDRAM memory. The system is based on the Intel® Server Board Set SE8500HW4 and the Intel® E8500 chipset or the Intel® Server Board Set SE8501HW4 and the Intel® E8501 chipset. The platform supports Hot-plug PCI-X* and PCI Express* add-in cards; hot-swap, redundant power supply modules; hot-swap, redundant cooling fans, Hot-plug memory with RAS features, and hot-swap hard disk drives. The server platform is shown below.

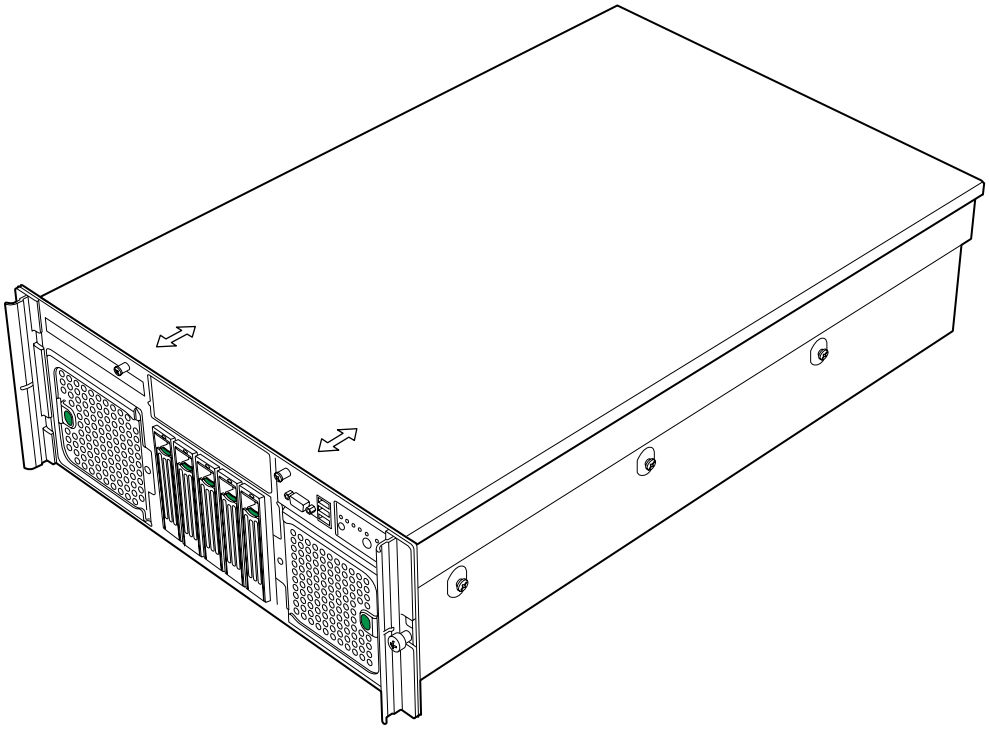


Figure 1. Intel® Server Platform SR4850HW4 and SR4850HW4/M Front View

Platform Features

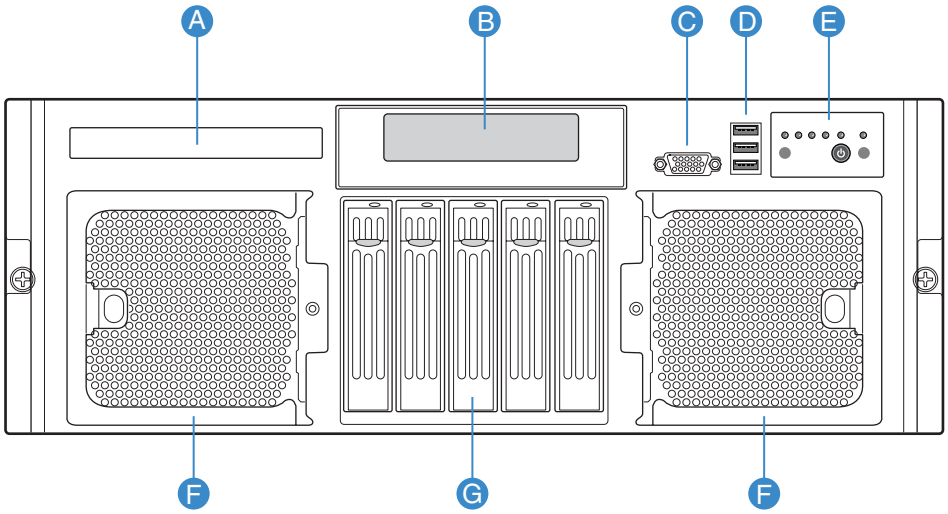
The platform features are outlined in the following table.

Table 1. Chassis Feature Summary

Feature	Description
Dimensions (4U rack-mount platform)	Height: 6.8 inches (173 mm) Width: 17.6 inches (447 mm) Depth: 27.8 inches (706 mm) Weight of fully configured system : 90 lbs (40 kg)
Clearance requirements	▪ Front clearance: 3 inches (76 mm) ▪ Side clearance: 1 inch (25 mm) ▪ Rear clearance: 6 inches (152 mm)
Configuration flexibility/scalability	▪ Support for one to four processors ▪ Support for at least two generations of processors ▪ Support for up to five Ultra 320 SCSI hard disk drives ▪ Support for up to seven PCI adapters ▪ Support for up to 64GB Double Data Rate-2 (DDR-2) 400 MHz Synchronous Dynamic Random Access Memory (SDRAM) memory support ▪ Option for front control panel with or without a LCD ▪ Option for 2Gbps Fibre Channel Module ▪ Choose either Intel® Management Module – Professional Edition or Intel® Management Module –Advanced Edition
Serviceability	▪ Front access to hot-swap hard disk drives ▪ Front access to hot-swap fans ▪ Rear access to hot-swap power supplies ▪ System power and system status LEDs ▪ System ID buttons and LEDs on front panel and rear of system ▪ Memory configuration and status LEDs ▪ Processor failure LEDs ▪ Color-coded parts to identify hot-swap and non-hot-swap serviceable components
Availability	▪ Four Hot-plug PCI-Express* slots ▪ One Hot-plug PCI-X* 133MHz slot ▪ Two PCI-X* 100MHz slots (not hot-swap) ▪ Two 1470W power supplies in a redundant (1+1) configuration ▪ Dual power cords (1+1) when two power supplies are installed ▪ Four hot-swap system fans in a redundant (2+2) configuration ▪ Five hot-swap 1-inch Ultra320* SCSI hard disk drives ▪ Four Hot-plug memory boards (operating system support required) ▪ RAID on motherboard (ROMB) with a battery-backed DDR2 400MHz DIMM for disk cache

Feature	Description
Manageability	▪ Server Management support through the Intel® Management Module – Professional Edition or Intel® Management Module –Advanced Edition ▪ Remote management ▪ Emergency Management Port (EMP) ▪ Intelligent Platform Management Interface (IPMI) 1.5 compliant, partial IPMI 2.0 compliance ▪ Wired For Management (WfM) 2.0 compliant ▪ Remote diagnostics support
Front control panel	▪ System power button and LED ▪ System reset button ▪ NMI button ▪ System ID button and LED ▪ Optional LCD ▪ System status LED ▪ Hard drive status LED ▪ LAN1 and LAN2 status LEDs ▪ Video connector ▪ Three USB 2.0 ports

Platform Front

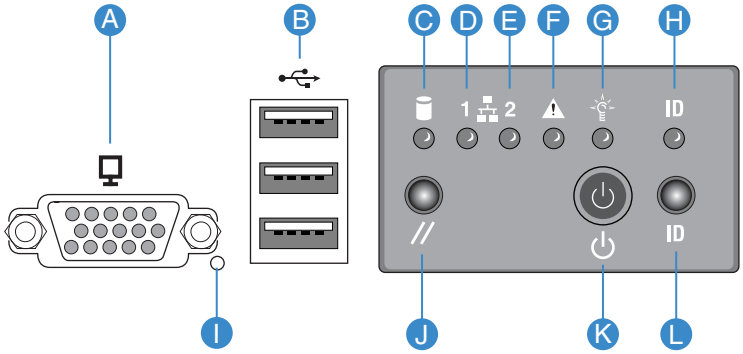


Item	Description
A	CD-ROM / DVD-ROM drive bay
B	5 ¼ peripheral bay
C	Video connector
D	USB 2.0 ports
E	Front control panel. Standard control panel shown.
F	Hot-swap fan modules
G	Hot-swap disk drives

Figure 2. Front Components

Standard Control Panel

The standard control panel provides a user interface for system management via switches and status LEDs. The control panel also contains the speaker. Figure 3 shows the location of the buttons and status LEDs on the standard control panel.

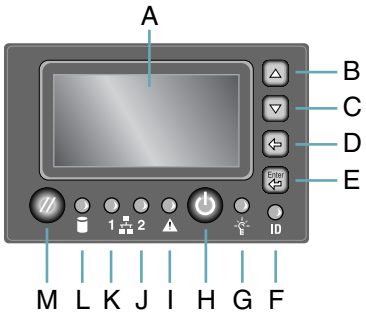


Item	Feature	Description		
Front Panel Connectors				
A	Video connector	Video port, standard VGA compatible, 15-pin connector		
B	Three USB connectors	Three USB 2.0 ports, 4-pin connectors		
Front Panel Buttons and LED Indicators				
C	Hard Drive Activity LED (green/amber)	Indicates hard drive activity and fault status.		
		LED	**State**	**Description**
		Green, On		A hard drive is being initialized.
		Green, Blinking		A hard drive is active.
		Amber, On		Hard drive/slot failure.
		Amber, Slow Blinking (~1Hz)		A predictive hard drive/slot failure or rebuild in process.
		Amber, Fast Blinking (~2.5Hz)		Hard drive rebuild interrupted or rebuild on empty slot.
D, E	LAN1, LAN2 Status LEDs (green)	Indicates LAN activity status.		
		LED	**State**	**Description**
		Off	Idle	
		On	Inactive	No Access
		Blinking	Active	Access

Item	Feature	Description		
F	System Status/Fault LED (green/amber)	Indicates system status.		
		LED	**State**	**Description**
		Off	Not ready	AC Power Off, POST error
		Green, On	Ready	System booted and ready
		Green, Blinking	Degraded	CPU or DIMM disabled
		Amber, On	Critical Alarm	Critical Power Supply, Blower, Voltage, or Temperature failure.
		Amber, Blinking	Non-Critical Alarm	Redundant Power Supply or Blower failure. Non-Critical Blower, Voltage, and Temperature failure.
G	System Power LED (green)	Indicates system power status.		
		LED	**State**	**ACPI**
		Off	Power off	No
		On	Power on	No
		Off	S4 / S5	Yes
		Blinking	S1	Yes
		On	S0	Yes
H	System ID LED (blue)	Identifies the system via server management or locally.		
I	NMI button	Asserts NMI.		
J	System Reset button	Press to reset the system.		
K	System Power button	Press to turn the system power on or off.		
L	System ID button	Press to turn the System ID LED on or off.		

Figure 3. Front Panel Controls and Indicators

Intel® Local Control Panel



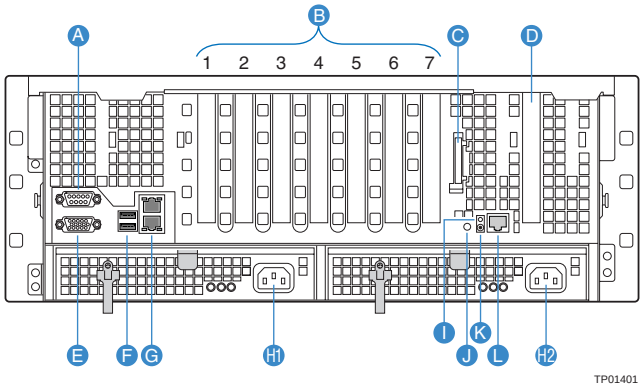
Item	Feature	Description		
A	LCD display	Video display		
B	Scroll up button	Press to scroll up on the LCD		
C	Scroll down button	Press to scroll down on the LCD		
D	Back button	Press to move to the previous LCD screen.		
E	Select button	Press to enter a command or select an option on the LCD.		
F	System ID LED (blue)	Helps identify the system via server management		
G	System Power LED (green)	Indicates system power status.		
		Off	Power off	ACPI: No
		On	Power on	ACPI: No
		Off	S4 / S5	ACPI: Yes
		Blinking	S1	ACPI: Yes
		On	S0	Yes
H	System Power button	Toggles system power		
I	System Status/Fault LED (green/amber)	Indicates system status.		
		Off	Not ready	AC power off, POST error
		Green, On	Ready	System booted and ready
		Green, Blinking	Degraded	Processor or DIMM disabled
		Amber, On	Critical Alarm	Critical power supply, blower, voltage, or temperature failure
		Amber, Blinking	Non-Critical Alarm	Redundant power supply or blower failure. Non-critical blower, voltage, or temperature failure.
J, K	LAN1, LAN2 Status LEDs (green)	Indicates LAN activity status.		
		Off	Idle	
		On	Inactive	No access
		Blinking	Active	Access

Item	Feature	Description		
L	Hard Drive Status LED (green/amber)	Indicates hard drive activity and fault status.		
		Green	On	A hard drive is being initialized
		Green	Blinking	A hard drive is active
		Amber	On	Hard drive/slot failure
		Amber	Slow Blinking (~1 Hz)	A predictive hard drive/slot failure or rebuild in process
		Amber	Fast Blinking (~2.5 Hz)	Hard drive rebuild interrupted or rebuild on empty slot
M	System Reset button	Resets the system		

Figure 4. Intel® Local Control Panel

Platform Rear

Figure 5 shows the features on the chassis back panel.



Item	Description	
A	Serial port connector. Emergency Management Port access is provided through the serial port.	
B	PCI Slots	
	Slot 1	PCI Express* x8 (Hot-plug)
	Slot 2	PCI-X* 133MHz, 64-bit (Hot-plug)
	Slot 3	PCI Express* x4 (Hot-plug)
	Slot 4	PCI Express* x4 (Hot-plug)
	Slot 5	PCI Express* x4 (Hot-plug)
	Slot 6	PCI-X* 100MHz, 64-bit (not Hot-plug)
	Slot 7	PCI-X* 100MHz, 64-bit (not Hot-plug)
C	External SCSI connector. The external SCSI bus supports both LVDS and SE signals through the external SCSI connector	
D	Fibre Channel Module Slot	
E	Video port, standard VGA compatible, 15-pin connector	
F	Two USB 2.0 ports	
G	Two LAN ports, RJ45 connector (LAN1 on top, LAN2 on bottom) LAN port LEDs:	
	Status LED (green)	On – ethernet link is detected Off – no ethernet connection Blinking – ethernet link is active
	Speed LED (green/amber dual color)	Off – 10 Mbps Green On – 100 Mbps Amber On – 1000 Mbps
H1, H2	AC input power connectors	
I	System ID button	
J	System ID LED (blue)	
K	DC jack (not used)	
L	Server Management RJ-45 connector (GCM)	

Figure 5. Rear Platform Features

Processors

The Intel® Server Platform SR4850HW4 and SR4850HW4/M supports upto four physical processors, either 64-bit Intel® Xeon® processor MP with 1MB L2 Cache, 64-bit Intel® Xeon® processor MP with 8MB L3 Cache, or Dual-Core Intel® Xeon® processor 7000 sequence. These processors are targeted for multiprocessor servers. Several architectural and microarchitectural enhancements have been added to this processor, including an increased L2 cache size, an integrated L3 cache (64-bit Intel® Xeon® processor MP with 8MB L3 Cache), or multiple processor cores within a physical package.

Plug-in Voltage Regulator Module (VRM) Converters

Two types of plug-in voltage regulator module (VRM) converters are used in the system:

- L3Cache VRM9DO
- VRM 10.2

Input power to the main board is 12V and 3.3 Volts Standby (VSB). All other voltages must be generated on the board set including 3.3V and 5V. There are numerous VRDs used to generate the required voltage levels. Processor core voltage to processors 1 and 2 is generated by embedded VRDs. Core voltage to processors 3 and 4 comes from two 10.2 VRMs. There is one embedded L3Cache VRM9DO required for converting the cache voltage for processors 1 and 2. A plug-in L3Cache VRM9DO is required for processors 3 and 4, if the installed processors have an L3 cache.

System Memory

The memory boards connect to the main board through x16 PCI Express* connectors. Between one and four memory boards can be installed. Each memory board has four DIMM sockets that support two DDR2 channels with two DIMMs per channel. The memory boards support both single-rank and double-rank registered DIMMs. Do not use unbuffered DIMMs.

The DIMMs on each memory board must be installed in pairs. Each pair is referred to as a bank. A bank may consist of one rank (a pair of single-sided DIMMs) or two ranks (a pair of double-sided DIMMs). The BIOS executes a memory test prior to configuring the memory in POST and when a memory board is inserted into the system during a Hot-plug operation.

A DIMM bank will be disabled if any of the following occur:

- Uncorrectable errors are found during a memory test
- An uncorrectable ECC error occurred during runtime
- The DIMM rank correctable error count passes the error sparing threshold on a memory board where sparing is enabled
- A memory board fails

If a DIMM fails the memory test, an LED will light on the memory board to identify the location of the bad DIMM and the DIMM bank will be disabled. The failing DIMM event is logged to the System Event Log (SEL) and the BIOS disables the memory DIMM and/or the memory board. Upon subsequent reboots, this memory is not initialized unless the BIOS setup option “Retest all system memory” or “Retest board memory” is selected.

Available Memory Configurations

Four memory configurations are available in the BIOS Setup utility.

- **Maximum Performance:** Maximum Performance is the default configuration in BIOS setup. With this configuration, the BIOS first attempts to configure the memory boards as four-way interleaved. If four-way interleaving cannot be accomplished, it will attempt to two-way interleave. It will then use one-way interleaving if any remaining memory cannot be four-way or two-way interleaved. This interleaving process configures the memory for maximum performance. This configuration cannot be used if you want hot-add or hot-replace memory.
- **Maximum Compatibility:** Maximum Compatibility provides the most flexibility with DIMMs and memory boards. This option allows memory to be hot-added. Server performance will be reduced due to one-way interleaving.
- **Memory Mirroring:** The Memory Mirroring feature provides redundancy. It uses either two or four memory boards, paired as sets of two. Memory boards in slots A and B form one set. Memory boards in slots C and D form the second set. One board within a set of memory boards duplicates the second board in the set. Each memory board in a set must have the same amount of memory installed.

  When a hardware or DIMM error is detected on a primary memory board, the second board becomes the primary board and remains primary until the failing board or DIMM is replaced. Memory Mirroring uses board-level redundancy, allowing for hot-replacement. Hot-add is supported by adding two additional mirrored memory boards.

  The BIOS turns on the mirror LED on each memory board when the system is configured for mirroring.
- **Memory RAID:** If the server contains four memory boards with equal memory capacity, the system can be configured for Memory RAID. Data is written to three of the memory boards while one is reserved for redundant parity information. This reduces the total overall available memory by one-fourth. The RAID LED on the memory board will indicate that the memory board is in a RAID configuration.

  When a DIMM rank or board fails, the system will continue to operate with the remaining three boards by recreating the data from the failed board. The system loses its redundancy at this point, and will remain in this non-redundant state until the failing board and/or memory can then be replaced.

  This configuration allows for hot-replacement of failing memory boards and hot-add and hot-replacement of memory DIMMs.

The server BIOS also includes two additional memory reliability, accessibility, and serviceability (RAS) features:

- **Memory Sparing:** A rank on each memory board can be reserved as a "spare" and can only be used as a backup for other ranks on the same memory board. The memory rank that is configured as spare is held in reserve and cannot be used by the operating system. Hot-removal cannot be performed when in a Memory Sparing configuration.

  When the error rate for a failing rank exceeds an established threshold, the contents of that rank are copied to the spare rank. At the completion of the copy, the failing rank is disabled and the spare is used in its place. This is called *Memory Sparing*. By enabling memory sparing, the total memory of each memory board is reduced by the largest DIMM rank installed on the memory board. This ensures that the any failing rank will fit on the spare rank.

  When the failing rank switches to the spare, the BIOS will turn on the memory board LED to indicate the bad DIMM. The failing DIMM is then disabled on subsequent system boots.
- **Memory Hot-plug:** This memory RAS feature provides the ability to hot-replace and hot-add memory boards while the system is running. This feature can be used to perform:
  - **Memory Hot-replace:** While the system is in operation, you can remove a failed memory board, provided it is in a RAID or Mirror configuration, and replace it with a board of the same memory capacity. The system will test, initialize, and rebuild the data on the memory board and then include this board in the system memory configuration. The activity is transparent to the operating system,
  - **Memory Hot-add:** You can increase the memory capacity of the system while the operating system is active. In a RAID configuration, you can remove one memory board at a time to upgrade the memory or replace the memory board. In a Mirror configuration, you can add an addition two mirrored memory boards. In a Maximum Compatibility configuration, a new memory board can be added to an empty slot. When the initialization is complete, the operating system is informed of the new memory.

NOTE

Memory Hot-add must be supported by the operating system in order to perform this function. Check for any operating system restrictions.

Power Subsystem

The power subsystem consists of the following:

- Power supply modules
- Plug-in VRM converters
- The power distribution board

The power subsystem can be configured with two power supply modules installed for 1+1 redundancy at 220 VAC.

Power Supply Modules

The output rating of the power supply is 1470W when operated between 170VAC and 264VAC. It is a current-sharing power supply with auto-ranging input. The power supply is approximately 7.75-inches wide by 13.5-inches deep by 1.4-inches high. The power supply modules have universal AC input with Power Factor Correction (PFC) Distributed Power Supplies (DPS). The AC input receptacle is an IEC-320 C14.

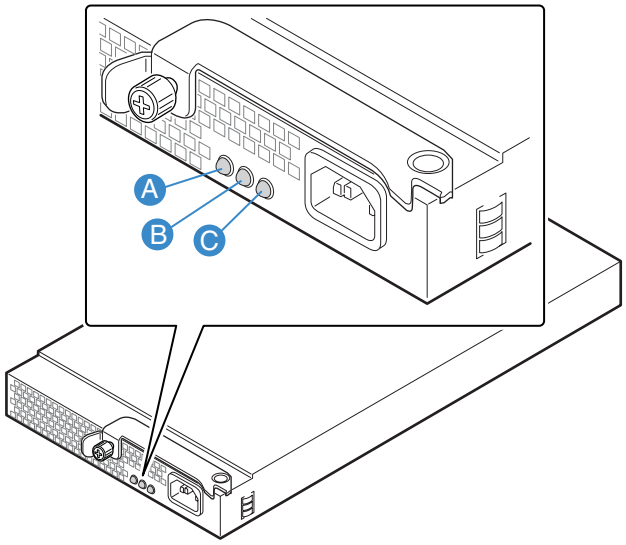
The power supply has two DC outputs: 12V and 3.3VSB. The 12V main power is distributed through the server and is converted locally at the point-of-load using either embedded or plug-in VRM converters. The power supply is capable of power-safe monitoring.

In an N+1 configuration, the 12VDC outputs have active (forced) current sharing. The two externally enabled outputs have the following maximum ratings:

- +12VDC: 121A
- +3.3VDCSB: 5A

Each power supply module requires one power cord to supply AC power to the system. When two power supply modules and two power cords are installed, the system supports (1+1) power cord redundancy. This feature allows the system to be powered by two separate AC sources. In the 1+1 configuration, the system continues to operate, without interruption, if one of the AC sources fails.

Each power supply module has three status LEDs. These are located next to the input connector, as shown by the following figure.



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Location	Purpose	Description
A (left)	Power Good LED (green)	This green LED is driven by internal circuitry and is lit whenever the power is turned on.
B (center)	Fault LED (amber)	This amber LED is driven by internal circuitry and is lit when a power rail has failed. The LED is lit even if the power supply is in a latched state. The only time (during a fault) when it is not lit is if the +3.3VSB is lost. The LED is not lit when the power supply is turned off by powering down the platform.
C (right)	AC OK LED (green)	This green LED is driven by internal circuitry and is lit whenever the AC power cord is plugged in to an active AC power source.

Figure 6. Power Supply Indicators

NOTE

Proper system cooling requires that a power supply be installed in each power supply bay at all times.

Cooling Subsystem

CAUTION

The chassis top cover must be installed for proper system cooling. Cooling components must be hot-swapped within two minutes. This time period applies only to the time that the cooling component is physically removed, not from the time of failure.

The cooling subsystem consists of hot-swap, redundant (2+2) fans. In the event of a cooling component failure, system cooling is maintained and the system continues to operate while the component is being hot-swapped. Each fan module has a single LED to indicate its status. The LED will be off when both fans are operating normally. The LED will illuminate amber if one or both of the fans fail. Failed fans can be hot-swapped from the front of the chassis.

For proper processor cooling, the processor duct must always be in place. Systems not fully-configured with four processors and four memory boards should have the processor heat sink and memory board fillers installed to maintain proper cooling.

Hot-swap PCI Slots

The five Hot-plug PCI slots have power and attention LEDs. The attention button is used to invoke a Hot-plug sequence to remove or add an adapter without having to use the software interface. They are identified by the green arrow on the PCI divider label. The status of the LEDs is shown in Table 2 and

Table 3.

Table 2. Power Indicator

Green Power LED State	Definition
Off	Power off: Power has been removed from the slot. A card can be inserted or removed.
On	Power on: The slot is powered on. A card cannot be inserted or removed.
Blinking	Power transition: The slot is in the process of powering up or down. A card cannot be inserted or removed.

Table 3. Attention Indicator

Amber Attention LED State	Definition
Off	Normal: Normal operation
On	Attention: Power fault or operational problem has occurred with this slot
Blinking	Locate: The slot is being identified at the user's request.

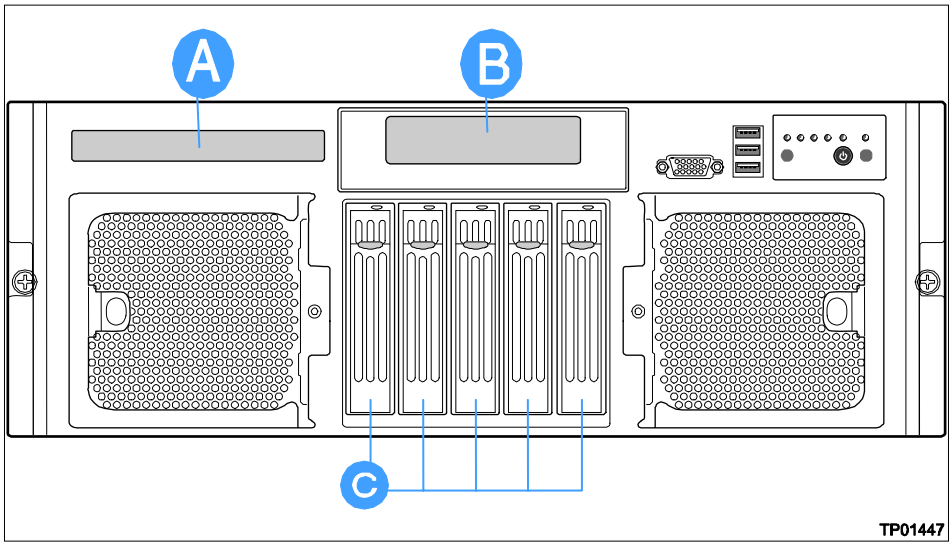
NOTE

If you hot-remove a PCI card without following the proper procedure, power will automatically be turned off to the slot.

Peripherals

The Intel® Server Platform SR4850HW4 and SR4850HW4/M supports the following peripheral devices:

- Up to five hot-swap 1-inch Ultra320* SCSI hard drives
- One ½-inch IDE DVD-ROM/CD-ROM drive
- One 5 ¼-inch tape back-up device



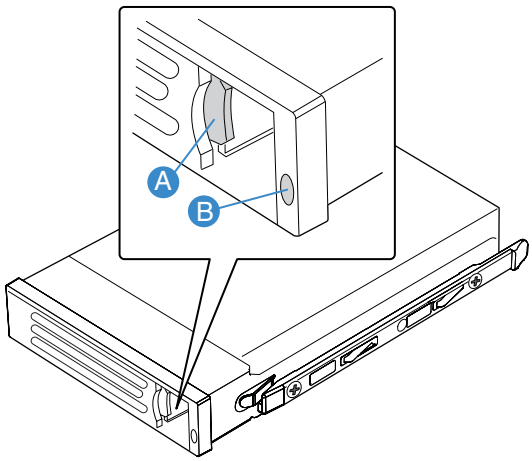
Item	Description
A	DVD-ROM / CD-ROM drive.
B	SCSI DLT drive (optional).
C	Hard drives (five).

Figure 7. Front View of Intel® Server Platform SR4850HW4 and SR4850HW4/M

Hot-swap SCSI Hard Disk Drive Support

The hot-swap hard disk drive carrier accommodates 15,000-RPM or slower Ultra320* SCSI SCA-type hard disk drives.

The SCSI backplane board supports Low Voltage Differential (LVD) SCSI disk drives only. Single-Ended (SE) SCSI devices are not supported internally. SE drives are only supported on the external SCSI connector.



Item	Description
A	Latch
B	Dual-color activity LED: ▪ Green flashing: Indicates hard drive is active. ▪ Amber and green alternating flashing: Indicates hard drive is powered on and is rebuilding RAID, or it is powered on and has a fault condition. ▪ Amber flashing: Indicates hard drive is not powered on and has a fault condition. ▪ Unlit: Indicates no hard drive is installed in that location or a drive is installed, but no drive activity is taking place.

Figure 8. Hard Disk Drive Carrier

Removable Media Drive Bay Support

The DVD-ROM/CD-ROM drive is installed in a sheetmetal carrier and is inserted from the front of the chassis. The tape back-up drive is also installed from the front of the chassis. You must power down the platform and remove the top cover to remove or install these devices.

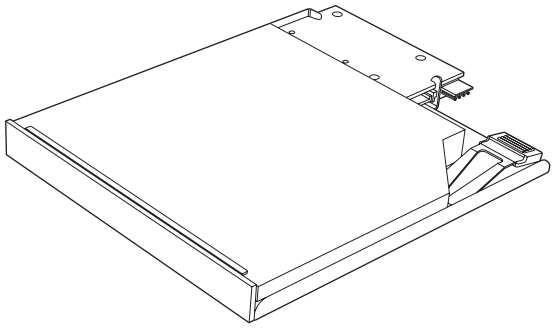


Figure 9. DVD/CD-ROM Drive Carrier

5 ¼-inch Half-height Drive Bay

The system supports a single 5 ¼" half height device mounted in the front of the chassis. A SCSI tape backup device could be used and cabled to the SCSI Channel B on the main board.

Platform Board Set

The board set consists of the following boards:

- One main board
- One to four memory boards

In addition, the server contains the following system boards:

- Front panel board
- SCSI backplane board
- Power distribution board
- SATA-to-IDE adapter board

Figure 10 displays a block diagram of the system, and the board set within the system.

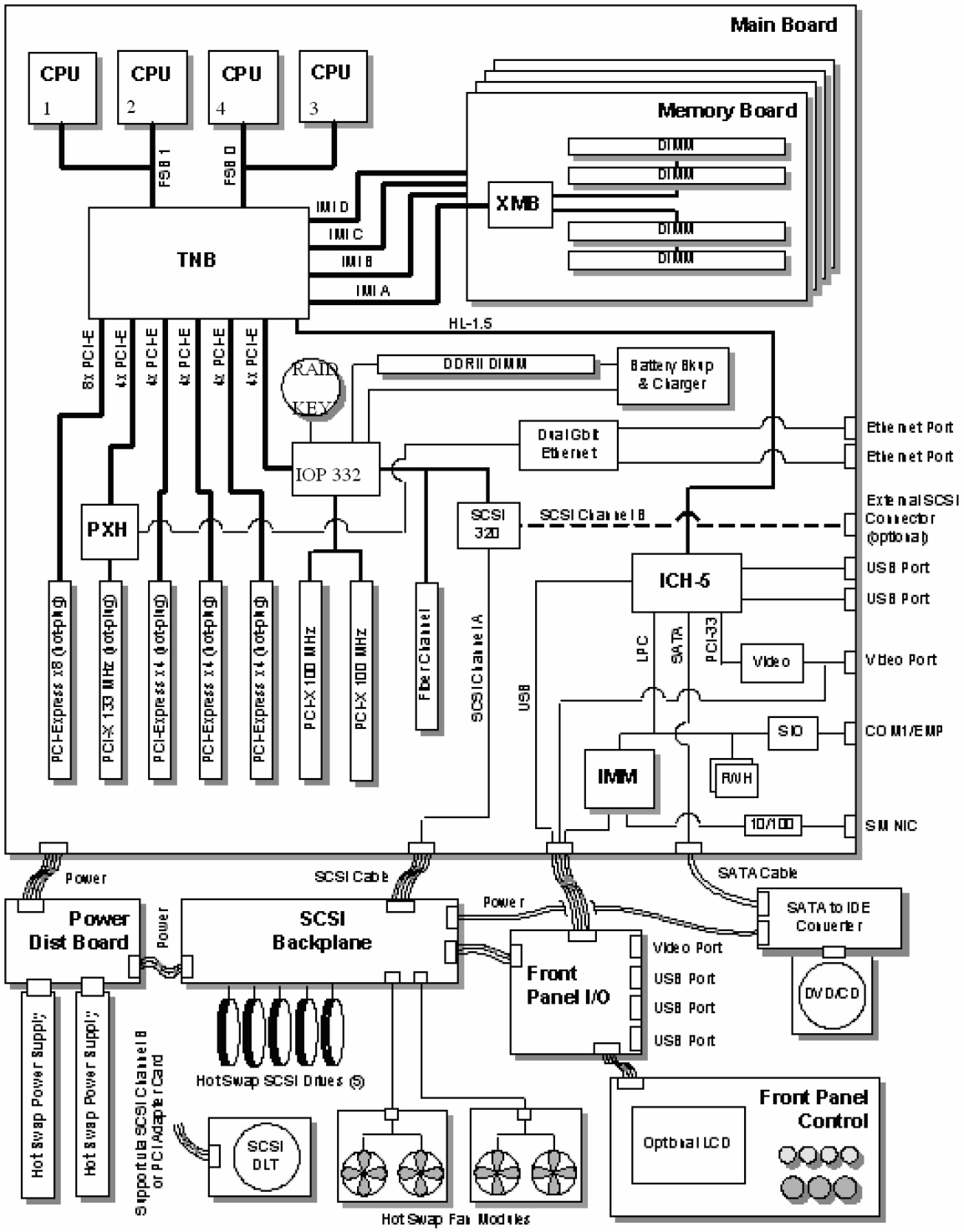
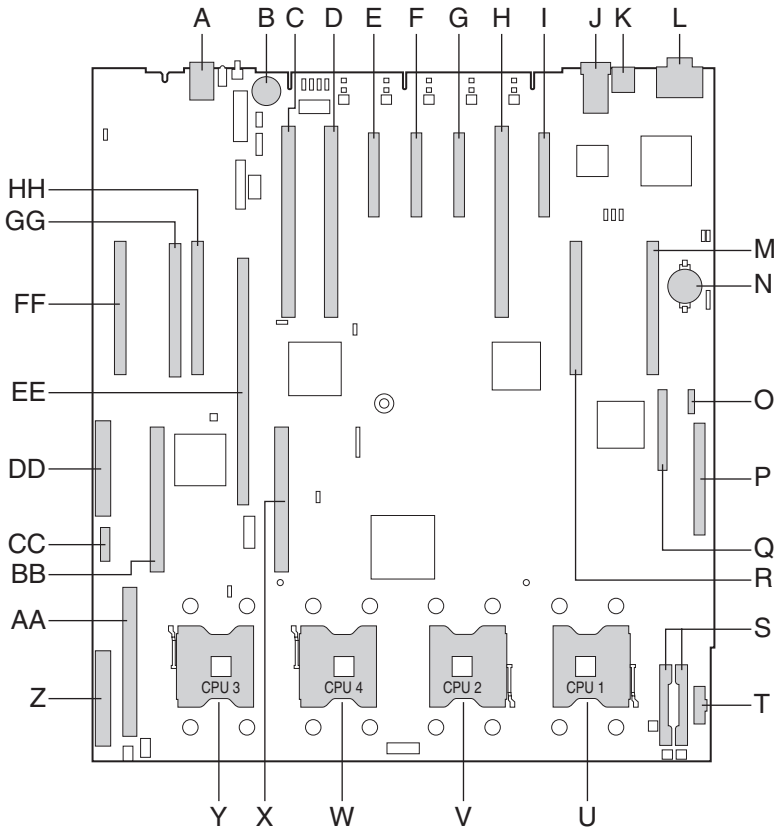


Figure 10. Intel® Server Platform Block Diagram

Main Board

The main board consists of the Intel® E8500 chipset or Intel®® E8501 chipset, four memory board connectors, and slots for PCI Express* and PCI-X* adapters. The board also has support for the Intel® Management Module – Professional Edition or Intel® Management Module –Advanced Edition, a dedicated Fibre Channel module connector, on-board video, gigabit Ethernet, USB2.0, Serial-ATA, Ultra320* SCSI, dual flash memory components for BIOS, and RAID On Motherboard (ROMB).



Item	Description	Item	Description
A	Generic Communication Module (GCM)	R	Memory board Slot B
B	Intel® RAID Activation Key	S	DC power connectors
C	PCI-X* 100MHz (Slot 7)	T	Power distribution board (PDB) signal connector
D	PCI-X* 100MHz (Slot 6)	U	Processor socket 1
E	PCI Express* x4 – Hot-plug (Slot 5)	V	Processor socket 2
F	PCI Express* x4 – Hot-plug Plug (Slot 4)	W	Processor socket 4
G	PCI Express* x4 – Hot-plug (Slot 3)	X	VRM 10.2 connector (CPU 4)
H	PCI-X* 133MHz – Hot-plug (Slot 2)	Y	Processor socket 3
I	PCI Express* x8 – Hot-plug (Slot 1)	Z	SCSI Connector channel A (internal)
J	Ethernet LAN 1 (top), LAN 2 (bottom)	AA	VRM 9.1 Connector (processor cache)

Item	Description	Item	Description
K	Dual USB ports	BB	VRM 10.2 Connector (Processor 4)
L	Serial / EMP (top), video connector (bottom)	CC	On board Intel® RAID Battery Backup Unit connector
M	Memory board Slot A	DD	SCSI Connector Channel B (external)
N	Real-time clock battery	EE	On board RAID Cache Memory (DDR-2) connector
O	SATA connector	FF	Memory board Slot D
P	Front Panel connector	GG	Fibre Channel Module connector
Q	Intel® Management Module (IMM)	HH	Memory board Slot C

Figure 11. Main Board Component Locations

The main board supports the following:

- Up to four 64-bit Intel® Xeon® processor MP with 1MB L2 Cache, 64-bit Intel® Xeon® processor MP with 8MB L3 Cache, or Dual-Core Intel® Xeon® processor 7000 sequence.
- Intel® E8500 chipset or Intel® E8501 chipset
  - North Bridge (NB): has two shared 64-bit FSB interfaces configured for symmetric multiprocessing.
  - Intel® E8501 chipset eXtended Memory Bridge: provides support for DDR2 memory.
  - Intel® 6700PXH 64-bit PCI Hub: PCI-X* bridge provides support for PCI-X*
  - The Intel® IOP332 Storage I/O Processor with Intel XScale® Microarchitecture: provides support for PCI-X* and contains Intel XScale® technology to support ROMB.
  - Intel® 82801EB I/O Controller Hub 5: Southbridge support for system BIOS, USB2.0, and SATA.
- Advanced I/O Architecture
  - One Hot-plug x8 PCI Express* slot
  - Three Hot-plug x4 PCI Express* slots
  - One Hot-plug 133MHz, 64-bit PCI-X* slot
  - Two 100MHz, 64-bit PCI-X* slots (Not Hot-plug)
- LSI Logic* 53C1030 LVD SCSI Controller
  - Dual independent U320 SCSI interfaces
  - 64-bit PCI-X* 100Mhz interface
- Integrated ATI Technologies Inc* Radeon* 7000 with 16MB embedded SDRAM
- Intel® Fibre Channel Module with a 64-bit PCI-X* 100Mhz interface
- Broadcom* BCM5704C Gigabit Ethernet Controller with dual-ports
- Server Management LAN Port (RJ45)
- USB 2.0 Support
  - Two ports at the rear of the chassis
  - Three ports at the front of the chassis

SCSI Controller

A single LSI 53C1030 Ultra320* LVDS controller provides the integrated SCSI interfaces. The controller resides on PCI Bus Segment A (PX1A) off the Intel® IOP332 I/O Processor with Intel XScale® Microarchitecture. It communicates as a 64-bit PCI-X* device for optimum performance. The controller's PCI-X* interface operates at a bus speed of 100 MHz. The configuration registers define PCI-related parameters for the LSI 53C1030 device. The LSI 53C1030 supports all mandatory registers in the PCI configuration space header including the Vendor ID, Device ID, Class Code, Revision ID, Header Type, and Command and Status fields.

The LSI 53C1030 supports two Ultra-320 LVDS channels. One is for control of internal drives, and the other is for a high-speed connection to an external SCSI device. SCSI port A of the LSI 53C1030 controls the internal SCSI channel. The internal channel is routed to the Intel® Server Platform SR4850HW4 and SR4850HW4/M SCSI backplane board via a SCSI U320 cable. The internal channel has been validated only for LVDS operation. SCSI port B may be used for the tape drive, external SCSI port, or an add-in adapter.

SATA Drive Support

Intel® Server Board SE8501HW4 main board has a 7-pin vertical connector supporting one SATA (Serial ATA) port, which is integrated in the ICH-5 component. The port can support a serial data transfer rate up to 1.5 Gb/second.

RAID Support

The Intel® Server Board SE8501HW4 supports on-board RAID through the Intel® IOP332 I/O Processor with Intel XScale® Microarchitecture in conjunction with the LSI* 53C1030 SCSI controller. The server platform supports RAID 0, 1, 5, 10, and 50 configurations. A 2MB flash component and a non-volatile SRAM store the LSI code and hardware configuration information.

To activate this feature Intel® RAID Activation Key must be installed into the holder on the main board and a DDR-2 DIMM must be installed into the RAID DIMM socket. This DIMM serves as memory for the Intel® IOP332 Storage I/O Processor with Intel XScale® Microarchitecture, and as a disk cache to store write data to the drives.

There is also an option to install the Intel® RAID Smart Battery. With the Smart Battery, if power to the Intel® IOP332 Storage I/O Processor with Intel XScale® Microarchitecture drops below specifications, the Intel® RAID Smart Battery maintains the contents of the DIMM. It keeps the DIMM in self-refresh mode until power is restored. After power is restored, the data is safely written to drives, maintaining the integrity of the disk array.

Video Support

The Intel® Server Board SE8500HW4 main board and Intel® Server Board SE8500HW4 main board both feature the ATI* Radeon* 7000 Embedded Video Controller with 16MB of video RAM. The Radeon* 7000 provides the following features:

- 2D/3D/video accelerator
- Dual DAC for integrated, cost-effective multi-panel support
- DVI compliant integrated 165MHz TMDS transmitter
- Resolutions from VGA up to UXGA (1600x1200)
- 32-bit PCI host interface

The Intel® Server Board SE8500HW4 Main Board has a standard DB15 video connector.

Fibre Channel Module Support

The Intel® Fibre Channel Module has a dedicated slot on the main board. The card is based on the Qlogic* ISP2322 FC-PCI-X controller.

The following features are available on the Fibre Channel Module:

- Two independent 2 Gbps serial Fibre Channel ports
- Support for Fibre Channel virtual interface (VI) protocol
- Support for 2 Gbps Fibre Channel using internal or external transceivers
- Automatically negotiates Fibre Channel bit rate (1 Gbps or 2 Gbps)
- Supports up to 400 MBps sustained Fibre Channel data transfer rate
- Data and code parity protection
- Complete SCSI, IP, or VI operations without host intervention
- Optical FC interface

Ethernet Support

The Intel® Server Board SE8500HW4 and Intel® Server Board SE8501HW4 have 1000/100/10 Ethernet capability as supported by the embedded Broadcom* BCM5704C Gigabit Ethernet Controller. The BCM5704C is a fully integrated dual-port, 10/100/1000BASE-T Gigabit Ethernet media access control and physical layer transceiver solution for high-performance network applications.

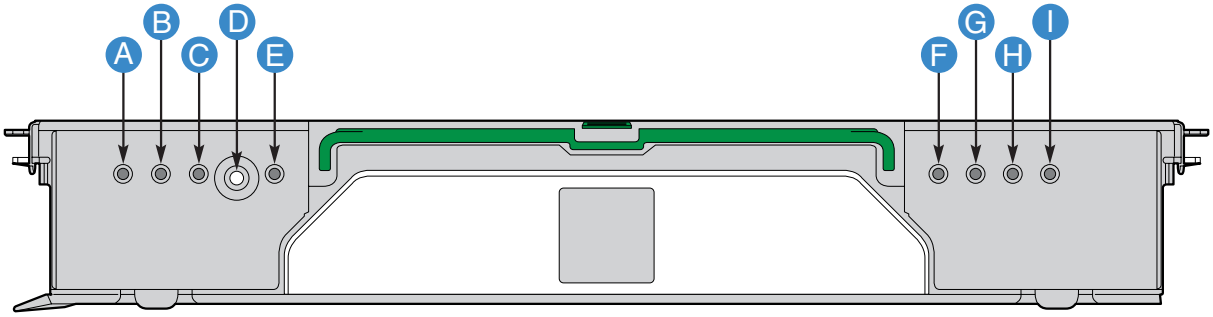
The BCM5704C is an integrated solution combining two triple-speed, IEEE 802.3-compliant media access control (MAC), PCI, and PCI-X* bus interfaces, an on-chip buffer memory, and an integrated physical layer transceiver in a single device. The BCM5704C includes two 10/100/1000-Mbps Ethernet MACs with full/half-duplex capability at all speeds and two 10/100/1000 copper PHYs. Support for the following 802.3 functions is featured in the MAC: VLAN tagging, layer two priority encoding, link aggregation, and full-duplex flow control.

Memory Board

Up to four memory boards can be installed. Each memory board has four DIMM sockets that support two DDR2 channels with two DIMMs per channel. The memory boards support both single-rank and double-rank registered DIMMs. Unbuffered DIMMs are not supported. The memory boards connect to the main board through x16 PCI-Express* connectors.

The Independent Memory Interface (IMI) bus connects the Intel® E8501 eXtended Memory Bridge on the memory board and the Intel® E8501 chipset North Bridge on the main board. The I^2C bus also goes through the memory connector linking the FRU device on the memory board to the server management (SM) bus on the main board.

The Hot-plug memory boards have LEDs indicating the configuration and status of the DIMMs on the Hot-plug memory board. See the following diagram.



TP01412

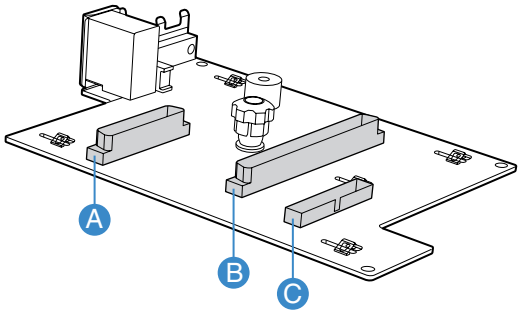
Item	Feature	Description
A	Mirror Configuration (green)	LED on: The server is in Memory Mirror configuration. This memory board mirrors another memory board in the system. LED off: The server is not configured for Memory Mirror
B	RAID Configuration (green)	LED on: The server is in RAID Memory configuration. LED off: server is not in a RAID configuration.
C	Hot-plug Attention LED (amber)	LED off: Normal operation. LED on: Memory Hot-plug plug transition event.
D	Attention Button	Press this button to perform a hot-insertion or hot-removal of a memory board.
E	Power LED (green)	LED on: Power is detected. The memory board is powered on. LED off: Power is not detected on all boards. LED flashing: The memory board is in a Hot-plug event.
F	DIMM 1B Status LED (amber)	LED on: Error LED for DIMM slot 1B (J3A1). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.
G	DIMM 1A Status LED (amber)	LED on: Error LED for DIMM slot 1A (J3A2). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.
H	DIMM 2B Status LED (amber)	LED on: Error LED for DIMM slot 2B (J3B1). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.

Item	Feature	Description
I	DIMM 2A Status LED (amber)	LED on: Error LED for DIMM slot 2A (J3B2). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.

Figure 12. Hot-plug Memory Board LEDs and Buttons

Front Panel I/O Board

The Intel® Server Platform SR4850HW4 and SR4850HW4/M Front Panel I/O Board provides access to the system video and USB interfaces. It also interfaces to the Standard Control Panel or Intel® Local Control Panel module. The control modules contain the front panel buttons and LEDs.



Item	Description
A	Control Panel connector
B	Main board connector
C	SCSI backplane board connector

Figure 13. Front Panel Board Component Locations

The front panel I/O board provides the following functions:

- Main board to SCSI backplane board signal interconnects
- Fan control
- USB hub, external front panel connector for three USB 2.0 ports and high-speed hub controller to support the USB ports
- Video output and external front panel 15-pin VGA connector
- Speaker, audible beep-code and alarm speaker and speaker drive circuitry
- NMI button

SCSI Backplane Board

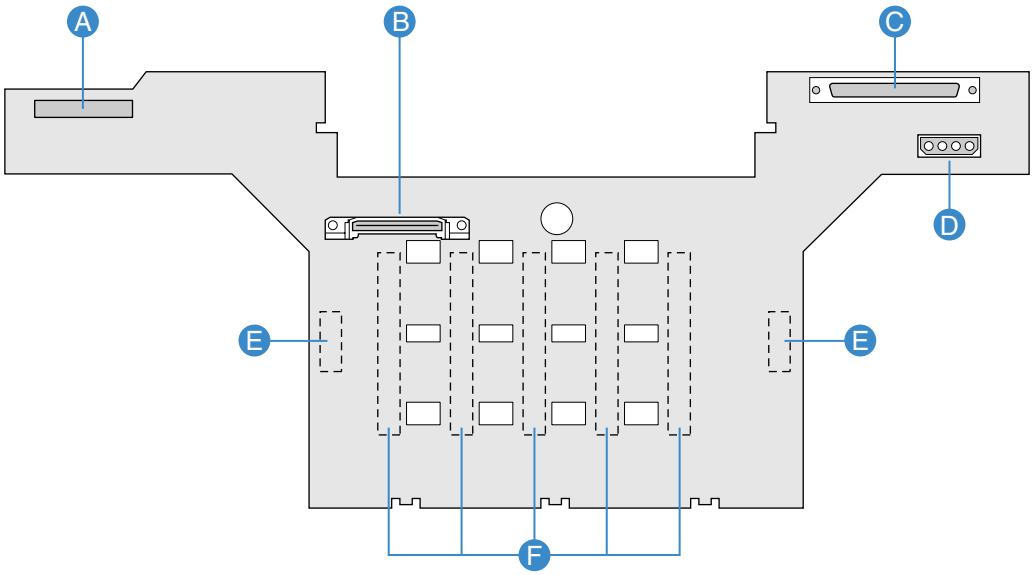
The SCSI backplane board performs the tasks associated with hot-swapping the hard disk drives and enclosure monitoring and management. It provides the following functions for the system.

- Ultra320* LVD SCSI bus passes SCSI signals between the SCSI drives and the main board
- A standard 68-pin SCSI connector provides the SCSI connection to the main board.

- Five 80-pin SCA-2 blind-mate connectors to mate with SCSI drives
- Fault Tolerant Enclosure Management (SAF-TE)
- SCSI power control
- System fan control

NOTE

Because hard disk drives have different cooling, power and vibration characteristics, Intel validates specific hard disk drive types in the Intel® Server Platform SR4850HW4 and SR4850HW4/M. See the *Intel® Server Board SE8500HW4 Tested Hardware and Operating System List* for a list of the supported drives.



Item	Description	Item	Description
A	Front panel board connector	D	Power cable connector to CD-ROM/DVD-ROM drive and 5 ¼" peripheral
B	Power distribution board connector	E	Hot-swap cooling fan connector on reverse side of board (two)
C	SCSI cable connector	F	Hot-swap hard drive connectors on reverse side of board (five)

Figure 14. SCSI Backplane Board Component Locations

Power Distribution Board

The power distribution board provides docking connectors for the hot-swappable power supply modules and it distributes power to the main board and to the SCSI backplane board. The board also contains EEPROM FRU information storage.

Server Management

The Baseboard Management Controller (BMC) monitors system platform management events and logs their occurrences in the non-volatile System Event Log (SEL). This includes events such as over-temperature and over-voltage conditions, and fan failures. The BMC can also provide the interface to the monitored information so system management software can poll and retrieve the present status of the platform.

The BMC also provides the interface to the non-volatile Sensor Data Record (SDR) Repository. Sensor Data Records provide a set of information that system management software can use to automatically configure itself for the number and type of IPMI sensors (such as temperature and voltage sensors) in the system.

The following is a list of the major functions of the BMC:

- System power control (including providing Sleep/Wake push-button interfaces for ACPI
- Platform Event Paging (PEP) / Platform Event Filtering (PEF)
- Monitoring:
  - Power distribution board monitoring
  - Temperature and voltage monitoring
  - Fan failure monitoring
  - Processor presence monitoring (no processors installed) and processor temperature monitoring
  - Interlock monitoring
- Processor core ratio speed setting
- Speaker beep capability on standby and when system is powered up
- Hot-plug PCI slot status reporting
- Chassis control:
  - General fault light control
  - Chassis cooling failure light control
  - Chassis power fault light control
  - Chassis power light control
  - Chassis ID LEDs control
- System Event Log (SEL) interface
- Sensor Data Record (SDR) repository interface
- SDR/SEL timestamp clock
- Board set FRU information interface
- Fault resilient booting
- System management watchdog timer
- Front panel system diagnostic-interrupt handling
- Platform Management Interruption (PMI) / System Diagnostic Interrupt (SDI) status monitor
- Event receiver
- System interface to the IPMB (via system interface ports)
- IPMI Management Controller Initialization Agent (MCIA)
- Emergency Management Port (EMP) interface
- Serial/modem and LAN alerting

In this platform, the BMC is also the chassis bridge controller, providing integrated ICMB support. ICMB transports server management information between chassis in a cluster configuration that can contain multiple servers and peripherals.

2 Starting Up and Shutting Down the Server

Plugging the Server into AC Power

When the server is plugged into the AC power the server will power cycle after a 30-second delay. This is required to initialize the Out Of Band functionality of the BMC. Once the server completed the power cycle, the server can be powered on using the power button on the front control panel.

NOTE

When installing a new Intel® Management Module remember to update the BMC with the correct server firmware. The firmware is updated after the server is powered on. Using incorrect BMC firmware may affect operation of the front control panel's power button.

Powering On the Server

To power on the server, press the power button on the front control panel. Pressing this button causes the server fans to start and POST to begin running.

NOTE

It may take three minutes or longer for video to be displayed, depending on the amount of memory installed in the system.

At the BIOS splash screen, the System Options Menu can be accessed by pressing a key on the keyboard. In the System Options Menu, the BIOS version, copyright information and the following options are displayed:

- Continue Booting (Selected by default, and occurs automatically if a pre-set timeout expires)
- Boot Manager: Select this to boot from one of the available boot options
- Boot Maintenance Manager: A menu of items that allows you configure boot options and other boot environment variables
- BIOS Setup Utility: Select this to configure the systems BIOS settings
- POST Error Manager: Select this to view POST errors detected by the system

From the boot manager, the system will boot from the available boot devices. It will attempt to boot from the first device on the list of available devices. If this device is not available, it will move to the second device. It will continue to move down the list until it reaches the first available device.

Shutting Down the Server

1. Exit the operating system (if applicable)
2. Press and hold the power button until the server shuts down.

CAUTION

Powering down the server with the power button does not remove all power from the system. The +3.3V standby power is still available to the system even when it is not running. To remove standby power from the system, unplug all power cords from the system.

3 Intel® Server Deployment Toolkit

The *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* is a CD that provides the following contents:

- Utilities:
  - SEL Viewer Utility
  - FRU Viewer Utility
  - System Configuration Wizard (SCW)
  - System Configuration Utility (Syscfg)
- *The Intel® Server Platform SR4850HW4 and SR4850HW4/M User Guide* (this document)
- Adobe* Acrobat Reader

The *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* comes with an HTML user interface that can be used to:

- Access the drivers for the on-board components for the various operating systems.
- Run the Platform Confidence Tests.
- Run the Server Configuration Wizard to setup the server for out-of-band functionality.
- Put the utilities onto a CD-ROM disk or USB flash memory device.

NOTES

For information on creating a DOS bootable USB flash memory device, see “Creating a DOS bootable USB flash device”.

To create a DOS-bootable CD ROM see the instructions that came with your CD ROM burning software.

Running Software Utilities from the CD

The following procedure allows you to run the software utilities directly from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.

1. Insert the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD into the server’s CD-ROM drive.
2. Turn on the system. Allow the system to boot to the CD.
3. Exit the SCW utility.
4. At the DOS prompt, type `dir`
5. Select the directory for the utility you would like to run. Type `cd directoryname <Enter>`, to change directories.
6. Type `filename.exe <Enter>`, to run the utility, where filename.exe is the executable program for the utility.

4 Server Platform Utilities

BIOS Setup Utility

The BIOS Setup Utility is a text-based utility that allows you to configure the system and view and change device settings and view environmental information for the platform. The BIOS Setup Utility interface consists of several screens, called pages. Each page contains information or links to other pages. The first page in Setup displays links for general categories. These links lead to pages containing specific configuration settings.

The BIOS Setup Utility includes the following features:

- Localization: The BIOS Setup Utility uses the Unicode standard and is capable of displaying the Setup Utility in all languages that are currently included in the Unicode standard.
- Console Redirection: The BIOS Setup Utility is functional through console redirection over various terminal emulation standards. This may limit some functionality due to compatibility. For example, colors, some keys or key sequences use and support for pointing devices may be limited.

The BIOS Setup Utility is accessed from the System Options Menu. To access the Systems Options Menu, boot the server. During POST, you will see a note telling you the key to press to accesses the System Options Menu. Press the key when you see the message.

BIOS Setup Utility Page Layout

The BIOS Setup Utility page layout is sectioned into functional areas. The following table lists and describes the functional areas and their position on the screen.

Table 4. BIOS Setup Utility Page Layout

Functional Area	Description
Menu Selection Bar	The Menu Selection Bar is located at the top of the screen. It displays the major menu selections available.
Current Menu	The current menu is located below the Menu Selection Bar. It displays the title of the menu the user is currently viewing.
Setup Item List	The Setup Item List is a set of configurable and informational items. The left column shows the setup item. The right column shows the corresponding option. The option contains an informational value or possible settings for the setup item.
Item Specific Help Area	The Item Specific Help area is located on the right side of the screen and contains help text for the highlighted Setup Item. Help information includes the meaning and usage of the item, allowable values, and the affects of the options.
Keyboard Command Area	The Keyboard Command Bar is located at the bottom of the screen and displays help for keyboard special keys and navigation keys. The keyboard command bar is context-sensitive. It displays keys relevant to the current page and mode.
Status Bar	The Status Bar is on the bottom line of the screen. The status value “NV” indicates you have made changes to Setup that have not been saved.

Keyboard Commands

The bottom right portion of the Setup screen provides a list of commands that are used to navigate through the BIOS Setup Utility. These commands are context sensitive.

The Keyboard Command Bar supports the following key presses:

Table 5. BIOS Setup: Keyboard Commands

Key	Option	Description
<Enter>	Execute Command	The <Enter> key is used to activate sub-menus when the selected feature is a sub-menu, or to display a pick list if a selected option has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the <Enter> key will select the currently highlighted item, undo the pick list, and return the focus to the parent menu.
<Esc>	Exit	The <Esc> key provides a mechanism for backing out of any field. This key will undo the pressing of the <Enter> key. When the <Esc> key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the <Esc> key is pressed in any sub-menu, the parent menu is re-entered. When the <Esc> key is pressed in any major menu, the exit confirmation window is displayed and you are asked whether changes can be discarded. If “No” is selected and the <Enter> key is pressed, or if the <Esc> key is pressed, you are returned to where you were before <Esc> was pressed without affecting any existing any settings. If “Yes” is selected and the <Enter> key is pressed, setup is exited and the BIOS continues with POST.
Up Arrow	Select Item	The up arrow is used to select the previous value in a pick list, or the previous option in a menu item's option list. The selected item must then be activated by pressing the <Enter> key.
Down arrow	Select Item	The down arrow is used to select the next value in a menu item’s option list, or a value field’s pick list. The selected item must then be activated by pressing the <Enter> key.
Left and Right Arrow	Select Menu	The left and right arrow keys are used to move between the major menu pages. The keys have no affect if a sub-menu or pick list is displayed.
<Tab>	Select Field	The <Tab> key is used to move between fields. For example, <Tab> can be used to move from hours to minutes in the time item in the main menu.
<->	Change Value	The minus key on the keypad is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list. This key only works for date and time.
<+>	Change Value	The plus key on the keypad is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but will have the same effect. This key only works for date and time.

Key	Option	Description
<F9>	Setup Defaults	Pressing <F9> causes the following to appear: Load default configuration now? (Y/N) If the “Y” key is pressed, all Setup fields are set to their default values. If the “N” key is pressed, or if the <Esc> key is pressed, you are returned to where you were before <F9> was pressed without affecting any existing field values
<F10>	Save and Exit	Pressing <F10> causes the following message to appear: Save Configuration changes and exit now? (Y/N) If the “Y” key is pressed, all changes are saved and Setup is exited. If the “N” key is pressed, or the <Esc> key is pressed, you are returned to where you were before <F10> was pressed without affecting any existing values.

Each Setup Utility menu page contains a number of features. Some features are used for informative purposes only, and other features are associated with a value field that you can configure. Depending on the security option chosen and in effect, a menu feature’s value may be changeable. If a value cannot be changed, the feature’s value field is inaccessible.

Configuring Memory Options

Memory Sparing

A rank on each memory board can be reserved as a spare and can be used as a backup for another rank on the same memory board. The memory rank that is configured as spare is held in reserve and cannot be used by the operating system. Hot-removal cannot be done when in a Memory Sparing configuration.

To configure Memory Sparing and set the error threshold:

1. Boot the system to the System Options Menu.
2. Select *BIOS Setup Utility*.
3. Select *Memory*.
4. Select *Configure System RAS and Performance.*
5. Set the *Desired Memory Configuration* to either “Max Performance” or “Maximum Compatibility”.
6. Select *View Configuration Details*.
7. Make sure *Configuration Possible* displays “Yes”. If the option displays “No”, you may need to install more memory to meet the requirements for this configuration.
8. Verify *Sparing* displays “Yes”.
9. Go back to the Memory menu option and enter a sparing threshold, between 1 and 15.
10. Select *View and Configure Memory Board X* option, where *X* is the memory board that is to be enabled as the spare.

11. Verify *Board Status* displays “Healthy”.
12. Set the *Reserve Rank for Spare* to “Enabled”.
13. Press <F10> to save changes and exit.
14. Press “Y” at the prompt to save the changes. The server reboots to activate the changes.

Memory RAID

If the server contains four memory boards with equal memory capacity, the system can be configured for Memory RAID. With Memory RAID, data is written to three of the memory boards and the fourth is held in reserve for redundant parity information. This reduces the total overall available memory by one-fourth. The RAID LED on the memory board will indicate that the memory board is in a RAID configuration. Hot-removal of a memory board is supported when Memory RAID is configured.

To configure Memory RAID:

1. Boot the system to the System Options Menu.
2. Select *BIOS Setup Utility*.
3. Select *Memory*.
4. Select *Configure System RAS and Performance*
5. Set the *Desired Memory Configuration* to “RAID”.
6. Select *View Configuration Details*.
7. Make sure *Configuration Possible* displays “Yes”. If the option displays “No”, you may need to install more memory to meet the requirements for this configuration.
8. Press <F10> to save changes and exit.
9. Press “Y” at the prompt to save the changes. The server reboots to activate the changes.

Memory Mirroring

The memory-mirroring feature uses two or four memory boards. When configured for Memory Mirroring, memory on one memory board is mirrored to the memory on a second memory board. This reduces the overall available memory by half. When a memory board hardware or DIMM error is detected on the primary memory board(s), the secondary board(s) becomes the primary board and remains so until the failing board is replaced. Memory Mirroring uses board-level redundancy allowing for hot-replace.

To configure Memory Mirroring:

1. Boot the system to the System Options Menu.
2. Select *BIOS Setup Utility*.
3. Select *Memory*.
4. Select *Configure System RAS and Performance*
5. Set the *Desired Memory Configuration* to “Mirror”.
6. Select *View Configuration Details*.
7. Make sure *Configuration Possible* is “Yes”. If the option displays “No”, you may need to install more memory to meet the requirements for this configuration.
8. Press <F10> to save changes and exit.
9. Press “Y” at the prompt to save the changes. The server reboots to activate the changes.

System Configuration Reset

Three mechanisms are available for returning the system configuration to the default values. When a request to load the default system configuration is detected, the BIOS loads the default values during the next POST.

- The first method to return the system to the default system configuration settings is through the BIOS Setup Utility. Use the following instructions:
  1. Boot the system to the System Options Menu.
  2. Select *BIOS Setup Utility*.
  3. From the Menu Bar, select *Save, Restore and Exit*.
  4. Select *Restore Defaults*.
  5. Press <F10> to save changes and exit.
  6. Press "Y" at the prompt to save the changes. The server reboots to activate the changes.

- A second method to send a reset system configuration request to the server is to use the NVRAM_CLR jumper at location J4A4 on the main board. See letter "A" in Figure 15 to locate the jumper block and follow the instructions below the diagram.

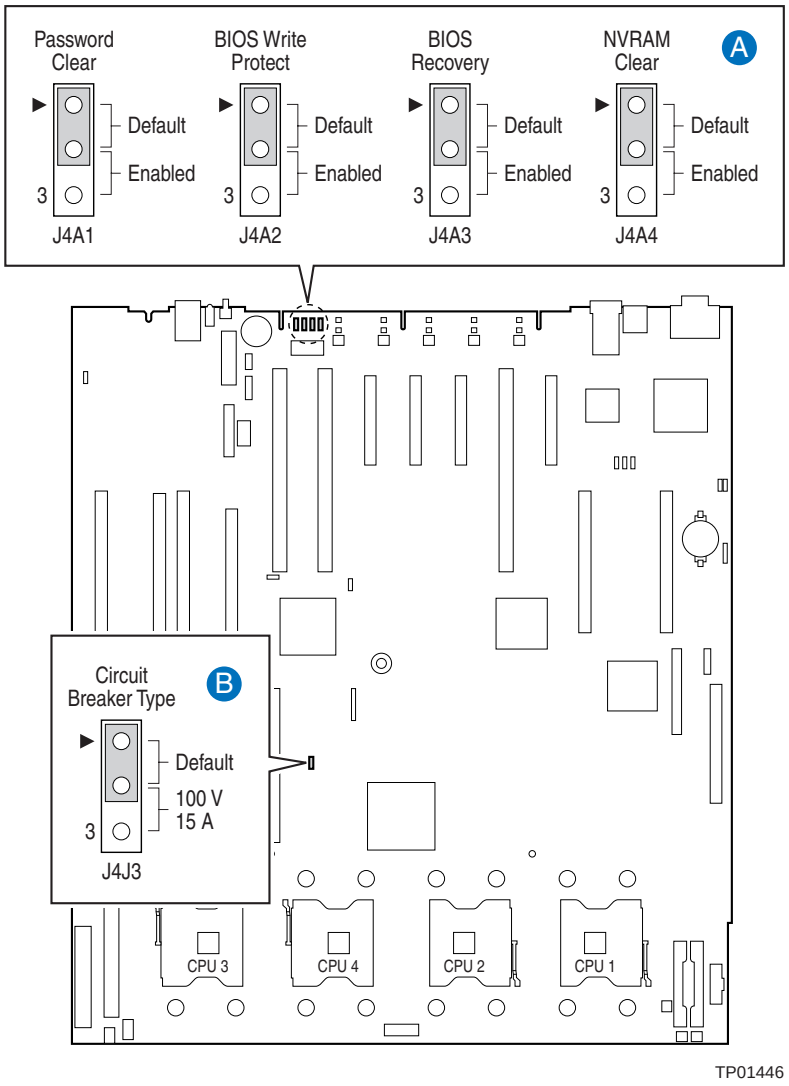


Figure 15. Jumper Locations

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Move the NVRAM Clear jumper at location J4A4 on the main board to cover pins 2 and 3.
6. Install the top cover. For instructions, see "Installing the Top Cover".
7. Plug in the power cords.
8. Power on the system.
9. Wait for the system to boot into the Error Manager and report the NVRAM has been cleared.
10. Power down the system and unplug both AC power cords.
11. Remove the top cover. For instructions, see "Removing the Top Cover".
12. Move the NVRAM Clear jumper at location JAA4 on the main board to cover pins 1 and 2.
13. Install the top cover. For instructions, see "Installing the Top Cover".

- A third method to generate a request to reset the system configuration request is by using front control panel buttons. Use the following steps:
  1. Power off the server, but leave it plugged in to the AC power source.
  2. Make sure the NVRAM clear jumper at location J4A4 is in the ‘not clear’ position. See letter “A” in Figure 15 to locate the jumper block.
  3. Hold down the reset button for at least 4 seconds. Continue to hold the reset button down while completing the next step.
  4. While still holding down the reset button, press the power button.
  5. Release the On/Off button and the reset button simultaneously.

  Upon completion of these steps, the BMC asserts the clear configuration signal to emulate the movement of the NVRAM Clear jumper. The BIOS clears the system configuration as if the clear configuration jumper had been moved. The system configuration is cleared only once per front panel button sequence.

  The option to return the system to the defaults using the front panel configuration reset function can be disabled by removing the clear configuration jumper from the main board. If the jumper is removed, to prevent this reset, it should be retained.

BIOS Upgrades and Recovery

The BIOS is implemented as firmware that resides in the flash ROMs. Use the DOS based utility iflash32.exe to upgrade the BIOS.

NOTE

See http://www.intel.com/support/motherboards/server/SR4850HW4/ for the latest BIOS release.

BIOS Upgrades with iflash32

NOTE

A BIOS upgrade procedure can also be done with the latest available System Update Package (SUP) for the Intel® Server Platform SR4850HW4 and SR4850HW4/M. This package is available at http://www.intel.com/support/motherboards/server/SR4850HW4/.

Use the iflash32 utility to upgrade the BIOS by following these steps:

1. Boot to DOS.
2. Copy the `iflash32.exe` and the binary input file to a USB flash memory device.
3. Run the iflash32 utility through the command-line interface:
   - Run the utility by entering the command `iflash32 [Filename] [Options].` See Table 6 for the available options.
   - To view command-line help, type `iflash32 /h` or `iflash32 /?`
   - To update the system BIOS from the command-line interface, type: iflash32 [Filename] /u
   - To verify system BIOS from the command-line interface, type: iflash32 [File Name] /i
4. Turn off the system and follow the procedure to clear the CMOS.

Table 6. iflash32 Utility Command-line Options and Parameters

Parameter	Description
iflash32	The name of the utility.
[File_Name]	Name of the binary file used for the update. The file path can be specified with the file name. There is no default file name or file extension. Either the “/u” or the “/i” option must be used when specifying a file name.
/h or /?	Displays command-line help. When this option is used, any other options on the command-line are ignored.
/u	Update the system BIOS. A binary file name must be specified with this option.
/i	Display the current BIOS version of the system. If a binary file is specified with this option, this option displays the information contained in the file header. This option is not valid with any other options.
/ni	Non-Interactive update mode. The utility displays only progress and error messages and disables prompting you for input. This option is only supported in conjunction with the “/u” option.
/r	When this option is used, iflash32 will automatically reset the system after the update is successfully completed. This option is only supported in conjunction with the “/u” option. If an update is performed and this option is not specified, a message is displayed stating that you must perform a manual reset before the update will take effect.

BIOS Recovery

In the case of a corrupt image or an unsuccessful update of the system BIOS, the main board can boot in recovery mode. Recovery mode requires at least 64 MB of RAM and recovery media.

This is the mode of last resort, used only when the main system BIOS will not come up. During recovery mode, the recovery code will load working BIOS code from the media and use it to boot to DOS-bootable media. The minimal number of peripherals is initialized. At least one input and one output device is initialized.

NOTES

For information on creating a DOS bootable USB flash memory device, see "Create the DOS-bootable USB Flash Memory Device".

To create a DOS-bootable CD ROM see the instructions that came with your CD ROM burning software.

1. Read the release notes that came with the recovery BIOS.
2. Copy the BIOS recovery files to the root directory of your DOS bootable media.
3. Observe the safety precautions, warnings, and cautions described in "Safety Information".
4. Turn off all peripheral devices connected to the system.
5. Power down the system and unplug both AC power cords.
6. Remove the top cover. For instructions, see "Removing the Top Cover".
7. Move the BIOS Recovery jumper at location J4A3 on the main board to the Enabled position, covering pins 2 and 3. See Figure 15 to locate the jumper block.
8. Insert the DOS-bootable recovery media.
9. Power on the system. One beep indicates recovery media valid and that the flash update has started. The system BIOS will initialize the text console and display the progress. If the recovery media contains more than one Update Package, you will be prompted to select the Update Package to be used.
10. The flash update will take approximately 2 minutes. Completion is indicated by four beeps and a message on the screen. Wait for the beeps and the message.
11. Power off the system.
12. Move the BIOS Recovery jumper at location J4A3 on the main board to the Default position, covering pins 1 and 2. See Figure 15 to locate the jumper block.
13. Plug in the power cords and power on the system.
14. Verify that the BIOS version number matches the version of the entire BIOS that was chosen.

The BIOS may automatically invoke recovery after system reset. Automatic recovery is similar to forced recovery, with the exception that if recovery media is not found, the BIOS requests recovery media by repeating a low-tone beep.

Automatic recovery may be due to any of the following conditions:

- Flash integrity check failure: This includes corrupted header of the main BIOS or bad checksum.
- Incompatible versions of the recovery BIOS and the main BIOS.

Rolling BIOS

With the Rolling BIOS feature, two copies of the BIOS are stored on the main board. These are designated as the primary and secondary BIOS image. The primary image is the BIOS in use. The BIOS normally boots to this primary image.

BIOS updates are diverted to the secondary image. During the subsequent boot following the BIOS update, the system will continue to attempt to boot from the primary BIOS image. After determining that a BIOS update occurred, the system will attempt to boot the new BIOS. If the new BIOS fails to boot, specialized hardware switches the boot back to the known good BIOS image. The BIOS will log the boot failure event to the SEL and display a POST error message.

Console Redirection

The BIOS supports redirection of both video and keyboard through a serial link (COM port). When console redirection is enabled, local (host server) keyboard input and video output are passed both to the local keyboard and video connections and to the remote console via the serial link. Keyboard inputs from both sources are considered valid and video is displayed to both outputs. With console redirection, the system can be operated without a host keyboard or monitor attached to the system and run entirely via the remote console. Setup and any other text-based utilities can be accessed via console redirection.

Serial Configuration Settings

When redirecting through a modem (as opposed to a null modem cable), the modem needs to be configured with the following:

- Auto-answer (for example, ATS0=2, to answer after two rings).
- Modem reaction to DTR set to return to command state (e.g., AT&D1).

Failure to provide the second item will result in the modem either dropping the link when the server reboots (as in AT&D0) or becoming unresponsive to server baud rate changes (as in AT&D2).

The option for handshaking must be set to RTS/CTS + CD for optimum performance. The CD refers to carrier detect. If EMP is sharing the COM port with serial redirection, the handshaking must be set to Xon/Xoff + CD. In selecting this form of handshaking, the server is prevented from sending video updates to a modem that is not connected to a remote modem. If this is not selected, video update data being sent to the modem inhibits many modems from answering an incoming call. An EMP option utilizing CD should not be used if a modem is not used and the CD is not connected.

Both EMP and console redirection require N, 8, 1 mode (no parity, 8-bit data, 1 stop bit).

The BIOS does not require that the splash logo be turned off for console redirection to function. The BIOS supports multiple consoles, some of which are in graphics mode and some in text mode. The graphics consoles can display the logo while the text consoles receive the redirected text.

The console redirection ends at the beginning of the Legacy OS boot (INT 19h).

Keystroke Mappings

During console redirection, the remote terminal (which may be a dumb terminal or a system with a modem running a communication program) sends keystrokes to the local server. The local server passes video back over this same link. The keystroke mappings follow VT-UTF8 format with the following extensions.

Setup Alias Keys

The <Del> and <Ctrl>-<function key> combinations are synonyms for the <F2> or "Setup" key. These are not prompted for in screen messages. These hotkeys are defined only for Console Redirection support, and are not used on locally attached keyboards.

Standalone <Esc> Key for Headless Operation

To complete an escape sequence, the timeout must be two seconds for entering additional characters following an escape.

- <Esc> followed by a two-second pause is interpreted as a single escape.
- <Esc> followed within two seconds by one or more characters that are not forming a sequence described in this document are interpreted as <Esc> plus the character or characters, not an escape sequence.

All of the following escape sequences are input sequences, that is, they are sent to the BIOS from the remote terminal.

Table 7. Console Redirection Escape Sequences

Escape Sequence	Description
<Esc>R<Esc>r<Esc>R This will implement but will default to "disabled".	Remote Console Reset
<Esc>(	BMC Mux Switch escape sequence
<Esc>CDZt<terminal-type-number>	Dynamic Terminal Type Choice, where: 0 = PC-ANSI (the only current terminal type) 1 = VT100 (not implemented, but honored as VT100+) 2 = VT100+ 3 = VT-UTF8
<Esc>-CDZ0	Inhibit Console Redirection
<Esc>-CDZ1	Restart Console Redirection
<Esc>-CDZ2	"Soft" Inhibit Console Redirection, without serial port or modem reset

Limitations

BIOS Console redirection terminates after an EFI-aware operating system calls EFI Boot Service ExitBootServices. The operating system is responsible for continuing the Console Redirection after that point. BIOS console redirection is a text console and any graphical data such as a logo are not redirected.

Interface to Server Management

If BIOS determines that console redirection is enabled, it passes the baud rate through the Intelligent Platform Management Bus (IPMB) to the appropriate management controller.

Sample Setup for Console Redirection

Below is an example of how to configure the console/host and server for console redirection. In this example, the console is running under Windows. The console and server is directly connected through the serial ports of both systems using a serial null modem cable:

Server Configuration

1. Power on the server.
2. When prompted, press the <F2> key to enter BIOS Setup.
3. The BIOS Setup menu displays the Main menu. Use the arrow keys move to the Server Management menu.
4. At the Server Management menu, select *Console Redirection*.
5. Select *COM1 Console Redirection*.
6. Set *Console Redirect* to “Enabled”.
7. Set the *Bit Rate* to “115.2K”.
8. Set the *Flow Control* to “RTS/CTS”.
9. Set the *Terminal Type* to “PC-ANSI”.
10. Press the <F10> key.
11. At the prompt to save changes and exit BIOS Setup, select “Yes” and press the <Enter> key.
12. The server reboots and console redirection is enabled.
13. Power down the server and configure the console.

Console Configuration

1. Boot the console into the operating system.
2. Click the *Start* button in the task bar.
3. Select *Programs>Accessories>Communications* and click “Hyperterminal”.
4. At the *Connection Description* window, enter “guest” for the name and click “Ok”.
5. At the *Connect To* window, select the COM port of the console that the Null modem is connected. In this example, it is COM1.
6. At the *COM1 Properties* window, select “115200” in the *Bits per second (Baud rate)* box to match what was configured on the server.
7. Select “Hardware” for the *Flow Control* to match what was configured in the BIOS Setup (CTS/RTS is the hardware flow control).
8. Leave the default settings for the other boxes. Click “Ok” to accept the settings and enter the Hyperterminal screen.
9. Power on the server. The console starts displaying the redirection once the video synchronizes on the server.

LSI Logic* MPT SCSI Utility

The LSI Logic* MPT SCSI Utility provides a way to configure SCSI features. This configuration utility is accessed by pressing <Ctrl>-<C> during POST, right after the memory test but before entering the System Options Menu screen. The LSI Logic* MPT SCSI Utility main menu appears as shown in the figure below.

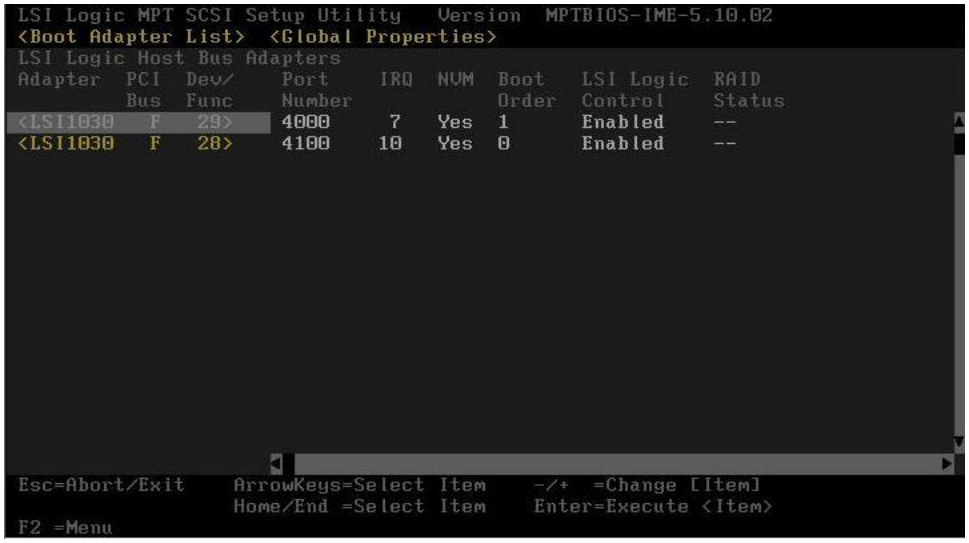


Figure 16. LSI SCSI Utility Main Menu

Press <F2> to select “Menu”. This provides access to the menu options “Boot Adapter List” and “Global Properties”.

The boot adapter list allows you to add or remove boot adapters. This screen is shown by the figure below.

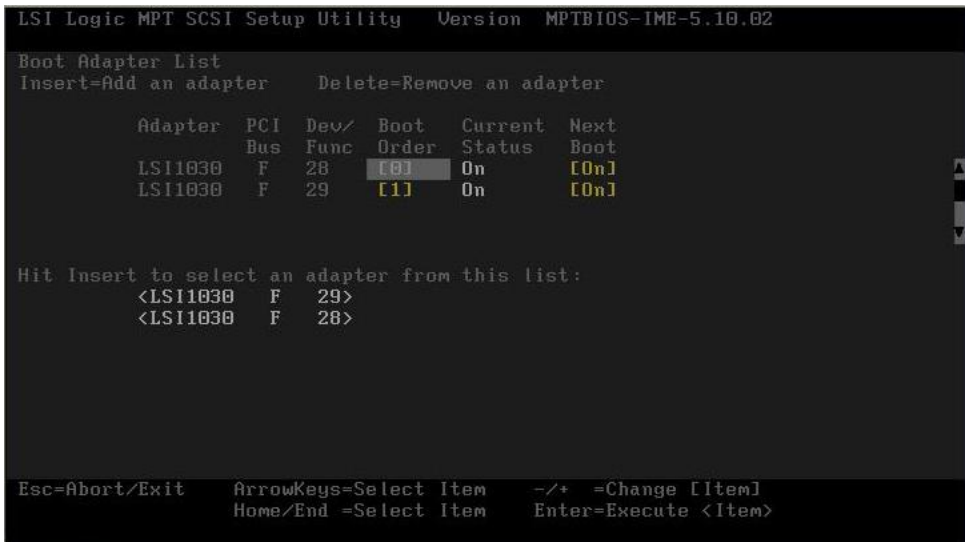


Figure 17. Boot Adapter List

The Global Properties List screen allows you to set the properties for all adapters being controlled. This screen is shown by the following figure.

Figure 18. Global Properties List

The following list shows the available options for each setting option.

- **Pause when Boot alert Displayed**: "[No]" or "[Yes]"
- **Boot Information Display Mode**: "[Verbose]" or "[Terse]"
- **Negotiate with Devices**: "[Supported]" or "[All]"
- **Video Mode**: "[Color]" or "[Monochrome]"
- **Disable Integrated RAID**: **"**[No]" or "[Yes]"
- **Support Interrupt**: "[Hook Interrupt, The Default]" or "[Bypass Interrupt Hook]"
- <**Restore Defaults**>: Restores the default configuration of the adapters

Press the <Escape> key to exit the Global Properties List and return to the Main menu.

To select the adapter to be configured, use the arrow keys to highlight the adapter then press <Enter>. The screen clears and the following message is displayed:

```
Scanning for devices.
```

NOTE

If the RAID on Motherboard (ROMB) feature is not enabled, the following message will be displayed:

```
Current Firmware does not support IME RAID type. Press
any key to continue.
```

Figure 19 shows the adapter properties and the configuration settings.

Figure 19. Adapter Properties

The following list shows the available options for each setting category.

- **<Device Properties>**: Takes you to the Device Properties menu shown in Figure 20 on the following page.
- **Host SCSI ID**: "[0]" to 15]"
- **SCSI Bus Scan Order**: "[Low to High (0..Max)]" or "[High to Low (Max..0)]"
- **Removable Media Support**: "[None]", "[Boot Drive Only]", or "[With Media Installed]"
- **CHS (Cylinder Head Sector) Mapping**: "[SCSI Plug and Play Mapping]" or "[Alternate CHS Mapping]"
- **Spin up delay (seconds)**: "[1]" to "[15]"
- **Secondary Cluster Server**: "[No]" or "[Yes]"
- **Termination**: "[Auto]"
- **<Restore Defaults>**: Allows you to restore the default configuration of the SCSI adapter.

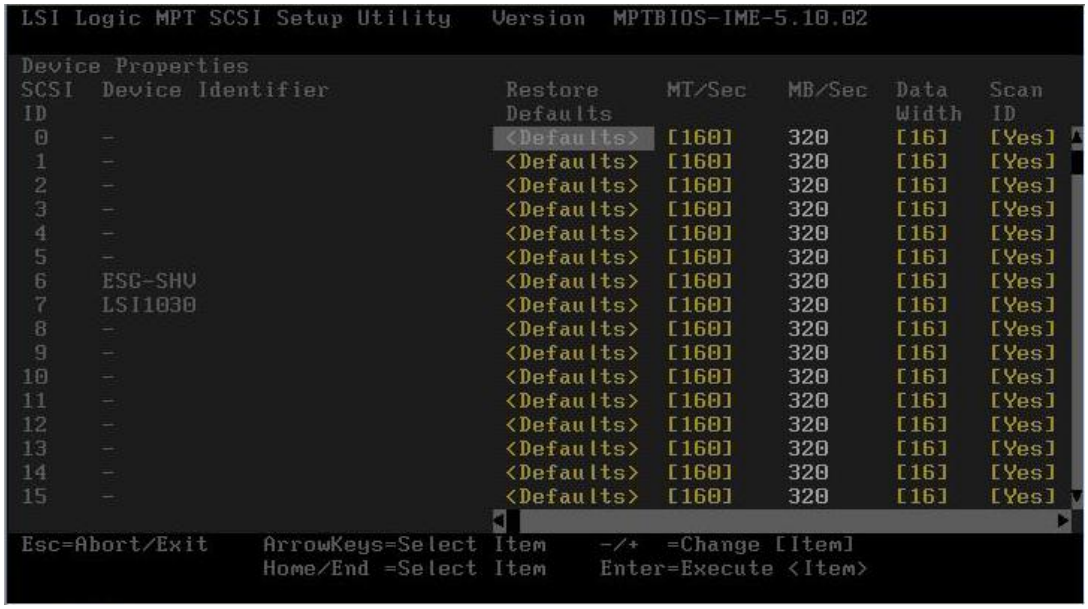


Figure 20. Device Properties

The Device Properties Menu shows options for devices attached to the adapter. It is a large menu and requires the use of the arrow keys to move fully to the left and fully down to see all configuration options. Slide bars (not shown above) at the right and on the bottom of the screen help define your location in the menu. The following list shows the available options for each setting category:

- **MB/Sec**: "[320]"
- **MT/Sec**: "[0]", "[5]", "[10]", "[20]", "[40]", "[80]" "[160]"
- **Data Width**: "[16]" or "[8]"
- **Scan ID**: "[Yes]" or "[No]"
- **Scan Luns >0**: "[Yes]" or "[No]"
- **Disconnect**: "[On]" or "[Off]"
- **SCSI Timeout**: "[<10>]"
- **Queue Tags**: "[On]" or "[Off]"
- **<Restore Defaults>**: Discards all changes. No warning message is provided before discarding the changes.

If you made changes before choosing to exit this menu, the Exit menu provides three options: “<Cancel Exit>”, “<Save Changes then exit this menu>”, and “<Discard changes then exit this menu>”. To exit the utility, select “<Exit the Configuration Utility>”. After exiting, the system will reboot.

Figure 21. Adapter and/or Device Properties Exit Menu

Platform Confidence Test

The Platform Confidence Test (PCT) diagnostic utility is included on the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD. The PCT checks the hardware configuration for incorrect assembly issues. Results are shown for field replaceable units (FRUs), such as the installed processor modules, the server board, disks, and memory. The Platform Confidence Test probes for the hardware present at the start of each test and reports the identified components. In this way, the Platform Confidence Test will indirectly identify many assembly and cabling errors (cables broken or improperly seated, etc.) when installed components are not reported.

Installing the Platform Confidence Test

Use the following steps to install the Platform Confidence test on your Intel® Server Platform SR4850HW4 and SR4850HW4/M:

1. Insert the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD into a Windows* based system.
2. Allow the autorun feature launch the graphical user interface. If auto run does not launch the GUI, launch it manually by double clicking on your CD-ROM drive.
3. Select the Utilities page.
4. Drop down the menu and choose “Platform Confidence Test”.
5. Click the “Create Diskette” icon.
6. When prompted, choose to save the file to a temporary folder on your hard drive.
7. Locate and run the ****PCT file you just saved on your hard drive, where ****PCT.exe is the code for a particular board program obtained from the CD. Running this program extracts the files for the Platform Confidence Test and a file called MKBOOT.BAT onto the floppy drive.
8. Reboot the server to the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.
9. Insert the floppy with the Platform Confidence Test files into the floppy drive.
10. Select “Quit” and then “Quit Now” to exit to DOS
11. At the DOS prompt, change to the floppy disk and execute the MKBOOT.BAT file. This makes your floppy disk bootable and copies the DOS components needed to create a RAMDRIVE onto which the Platform Confidence Test will be extracted.
12. Reboot your system to the floppy.
13. You will be asked to agree to a licensing agreement before the files expand. The agreement is in the file LEGAL.TXT.
14. A RAMDRIVE will be created and the diagnostic tests are copied onto it.
15. When the copy process is complete, you will be presented with a menu of three test options. These menu options are discussed in greater detail below.

Platform Confidence Test Options

Three Platform Confidence Tests are available: “Quick Test”, “Comprehensive Test”, and “Comprehensive Test with Continuous Looping”. The duration of each test depends upon the number of processors and the amount of memory installed. On completion of each test and after the test results are displayed, the program returns to the main menu.

- **Quick Test**: The Quick Test suite runs a subset of available tests. It identifies the processor type, speed, and the number of processors installed. The base and total memory sizes and the attached hard disks are also identified. For the quick test, you should verify that the configuration displayed at the conclusion of the test includes all the hard disks, memory and processors you have installed in the system. The test will identify drives attached to any SCSI controllers in the system, not just the onboard controller. This test will not identify other SCSI devices, such as a tape backup device. If the configuration does not identify all the processors, memory and hard disks you have installed, press <Ctrl>-<Break> to exit the test and review the troubleshooting section in the PCT manual.
- **Comprehensive Test**: The comprehensive test probes for the same items as the Quick Test, but in greater depth. In addition, it identifies the keyboard and mouse, the COM1 and COM2 ports, and the onboard video controller with its memory. The processor floating point unit (FPU) is tested and more extensive tests are run on the memory and cache. Extensive tests are also run on the onboard peripheral controllers, integrated components and the chipset.
- **Comprehensive Test with Continuous Looping**: This test is identical to the comprehensive test, but it continuously loops through the tests until you presses <Ctrl>-<Break> to stop the test. This helps to identify intermittent failures. The normal comprehensive test result summary is displayed, but the status reflects the sum of all tests. If a test failed one or more times during the run, it will be reported as a failing component. The number of times the test cycle was repeated is displayed in the result summary screen.

System Configuration Wizard (SCW)

The System Configuration Wizard (SCW) is a combination of software applications, batch files and helper applications that help you with the initial configuration of your Intel® server. The SCW supports IPMI 2.0, 1.5, and later compatible platforms. It performs the following activities:

- Set the system time and date in the BIOS.
- Loads Field Replaceable Units (FRUs), Sensor Data Records (SDRs).
- Sets the System Asset Tag.
- Configures the channels present on the server.
- Configures the users supported by the server.
- Sets Server Management settings, including an IP address and LAN/Alert settings.
- Configures the Advanced Features if supported on the server.
- Starts the execution of utility applications that can be used to manually configure the server.
- Creates startup or installation diskettes for hardware device drivers and server configuration utility applications.
- Launches the SELViewer Utility.
- Launches the FRUViewer Utility.
- Provides help.

The SCW does not perform the following functions:

- Install and / or update the BIOS.
- Install and / or update the firmware.

The SCW and Intel® Server Management (ISM) can each be used to configure the firmware on the server, but these items only need to be configured once. If you are installing the Intel® Server Management software on this server, you do not need to use the SCW to configure LAN channel 1, the serial channel, or users. The Intel® Server Management software will allow you to configure these items later, from the operating system. The SCW will ask you if you are using Intel® Server Management software and not prompt you to configure these items if you are using Intel® Server Management.

On some screens in the SCW application, you can choose multiple entries. These selection options have square check-boxes, not round radio selection buttons. When multiple selections are permitted, the SCW will configure each item you select.

Some options require other options to be selected. In these cases, the SCW automatically selects the options required for the options that you selected. The reverse is also true. If an option is unchecked, then all options dependent on that option are automatically unchecked.

Starting the System Configuration Wizard

To run the SCW, boot your server from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD. The Start screen provides a brief description of the Server Configuration Wizard.

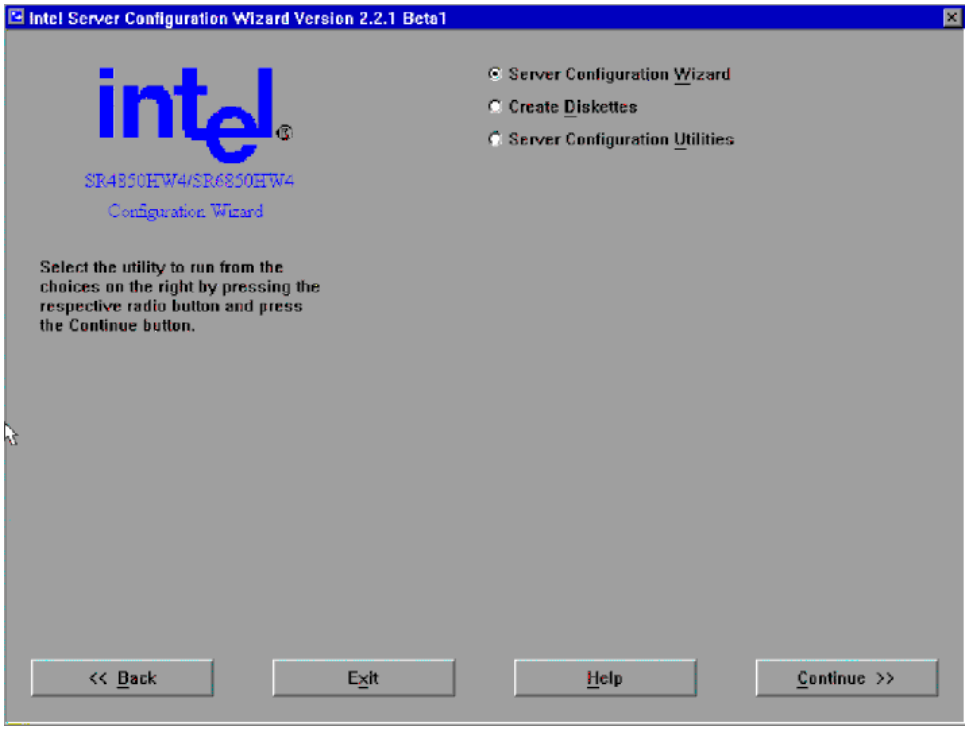


Figure 22. System Configuration Wizard Start Screen

This screen gives you the following options, from which you can choose one:

- **Server Configuration Wizard**: The Server Configuration Wizard presents a series of screens, allowing the setup of the server to be either almost hands-off for the beginner, or nearly as detailed as using the Server Platform Setup Utility for an expert user. The SCW can also run in a silent mode of operation, where you provide a previously saved server configuration file on a floppy diskette that the SCW uses to configure the server.
- **Create Diskettes**: Select the Create Diskettes option to create diskettes that are used to do utility installations and perform device driver installations.
- **Server Configuration Utilities**: The Server Configuration Utilities button allows you to manually set up the server configuration using specific software utilities that will set up the BMC parameters.

Select the appropriate action and click Continue. The following sections walk through the screens you will see following the selection of each of these options.

Using the Server Configuration Wizard Option

When the SCW starts, it checks the status of the server to determine what information it needs to ask. To do this, SCW probes the server for the following:

- Main board
- FRU devices
- SDRs
- Chassis type
- Firmware version
- BIOS version
- Channels
- Users
- Advanced Feature Support

After the probe is complete, the SCW leads you through screens that ask for information about the server. When all of the information has been gathered, the SCW asks for the permission to complete the server configuration. It stores the configuration information in non-volatile memory and it configures the BIOS and the BMC.

The SCW asks first if Intel® Server Management is installed on this server. If you select Yes, the SCW does not ask you about configuring LAN channel 1, the serial channel, or users. If you select No, you are given the option to configure these items through the SCW. The SCW continues by asking you to choose to configure the FRUs, SDRs, the System Asset Tag, remote management and advanced features (if the Intel® Management Module –Advanced Edition is installed). See the following figure.

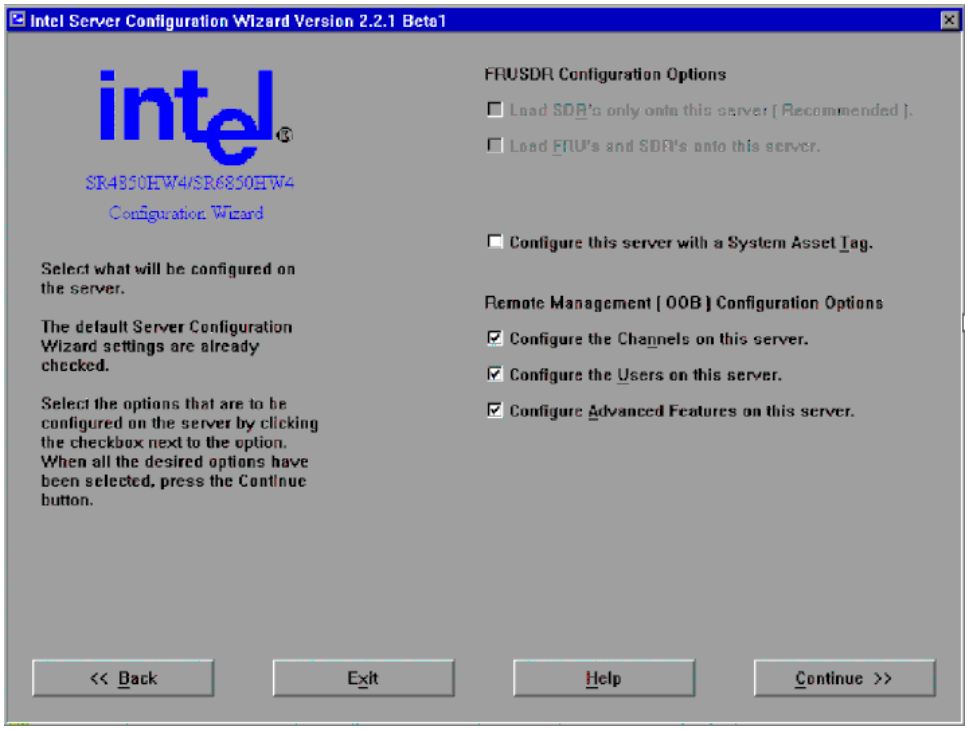


Figure 23. Configuration Options

- **Load SDRs only onto this server**: When this box is checked, the SCW will ask you questions about the SDRs and will load them based on how you answer those questions.
- **Load FRUs and SDRs onto this server**: The FRUs and SDRs are loaded based on the master.cfg file found in the \FRUSDR folder in the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.
- **Configure this server with a System Asset Tag**: When this box is checked, the SCW will ask you questions about the system asset tag to assign to the system.
- **Configure the Channels on this server**: The Configure Channels checkbox allows you to configure the various channels available on the server.
- **Configure the Users on this server**: The Configure Users checkbox allows you to configure the users supported on this server.
- **Configure Advanced Features on this server**: The Configure Advanced Features checkbox allows you to configure the Advanced Features of an Intel® Management Module –Advanced Edition system configuration. This option is available only on a system that uses the Intel® Management Module –Advanced Edition.

If your server has the Intel® Management Module – Professional Edition installed, the following options are included by default:

- Load FRUs and SDRs onto this server
- Configure Channels on this server
- Configure Users on this server

If your server has the Intel® Management Module –Advanced Edition installed, the following options are included by default:

- Load FRUs and SDRs onto this server
- Configure Channels on this server
- Configure Users on this server
- Configure Advanced Features on this server

After you decide which of the options to program and press the Continue button, the SCW will exit from the graphical user interface mode and begin programming the options. If you do not select any options, the SCW will exit.

Selecting or deselecting options on this screen does not affect the existing state of the options on the server. If you check an option, it only implies that you intend to configure it. If you do not select an option, it only implies that you do not want to make any changes to that option while using SCW; it does not disable the option on the server.

After you press Continue, you are brought to a screen on which you need to set the date and time on the server. The date and time are saved as soon as you press Continue. This screen also shows you the versions of the HSC, firmware, and BIOS that are installed on the server.

Configuring SDRs and FRUs

Sensor Data Records (SDRs)

Before the Sensor Data Records can be loaded, you must provide information about your server. This information is gathered through a series of screens. The actual questions differ depending on the configuration of the server. You might be asked for the type of main board, the chassis, and the type and number of fans that are in the platform.

Field Replaceable Units (FRUs)

Each server comes with the FRUs pre-programmed, but you may want to refresh them from a current *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD. The SCW supports loading ASCII FRU data from a file similar to the FRUSDR Load Utility's MASTER.CFG file. This file is called SCW_<platform>.CFG. The file is modified to remove many of the prompt text entries of the MASTER.CFG file so that the SCW can go directly to the pertinent hardware-specific questions you will need to answer. The SCW will refresh the FRUs when the option "Load FRUs and SDRs onto this server" is selected.

Configuring Channels

The Channels configuration screen provides a way for you to configure the various channels in the system. If your server has the Intel® Management Module – Professional Edition, one LAN channel and one serial modem channel are supported. If your server has the Intel® Management Module –Advanced Edition, your server supports one LAN channel, one serial modem channel, and one advanced LAN channel.

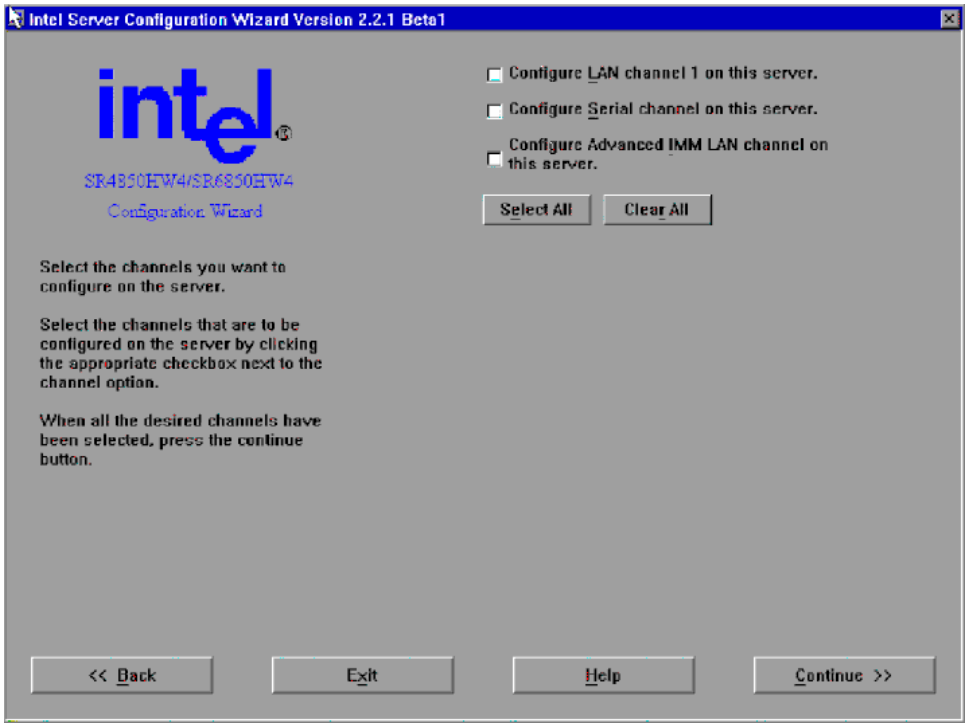


Figure 24. Channels Configuration Screen

The LAN Channel configuration provides a way to configure the individual LAN channel(s) on the system. The configuration of each LAN channel is spread across several configuration screens.

- **Configure LAN Channel 1 on this server**: The Configure LAN Channel 1 checkbox allows you to configure LAN Channel 1. LAN channel 1 is available regardless of the version of the Intel® Management Module that is installed.
- **Configure Serial/Modem Channel on this server**: The Configure Serial/Modem Channel checkbox allows you to configure Serial/Modem Channel.
- **Configure Advanced Intel® Management Module LAN Channel on this server**: The Intel® Management Module - Advanced Edition LAN Channel checkbox allows user to configure the Intel® Management Module LAN channel. This option is available only on the Intel® Management Module –Advanced Edition.

LAN Channel Configuration Screen 1 – LAN IP Setup

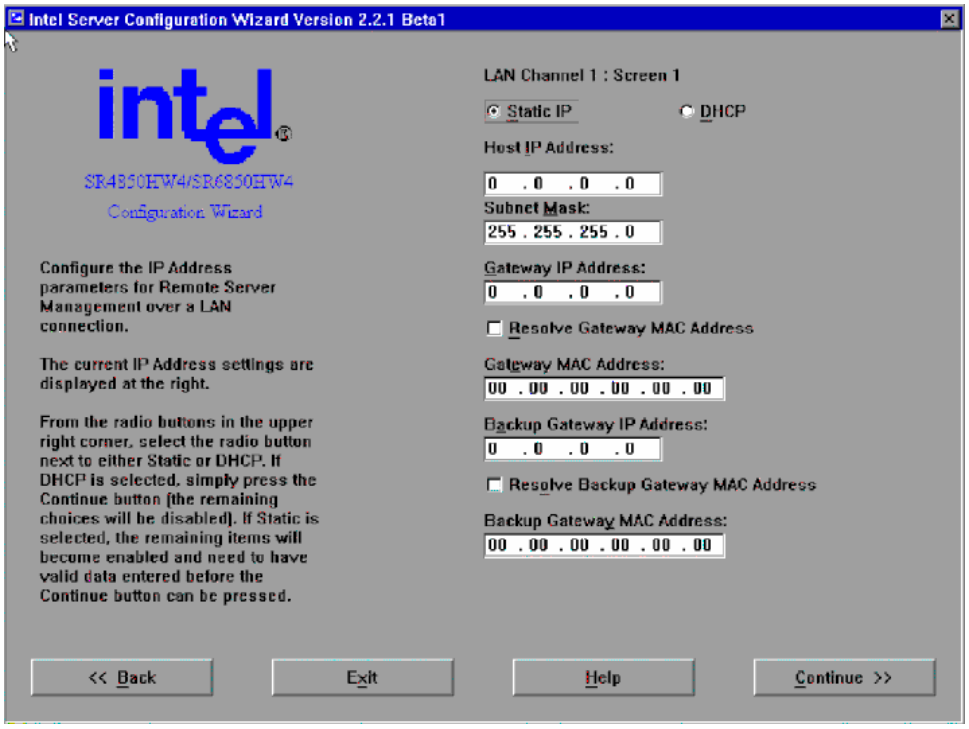


Figure 25. LAN Channel Setup Screen 1

When this screen is displayed, the settings shown are the current settings for this LAN channel on the server. Unless otherwise noted, all fields on this screen must have valid data entered into them. The Continue button is disabled/grayed out until all of the edit boxes on the screen are filled in.

- **Static IP**: The Static IP radio button allows you to manually set the Host IP Address, the Subnet Mask, the Gateway IP Address and the Backup Gateway IP Address. The Backup Gateway IP Address field can be left blank.
- **DHCP IP**: The DHCP radio button enables the dynamic host configuration protocol to allow the server to automatically assign the host IP address, router IP address and subnet mask. If the DHCP radio button is selected, the Host IP Address, Subnet Mask, Gateway IP Address, and Backup Gateway IP Address edit boxes are disabled. These values are assigned by the DHCP server.
- **Host IP Address**: The Host IP Address edit box allows you to enter the host IP address for this LAN channel. The Host IP Address is the Logical or Internet Address of the server. The Host IP Address accepts is entered as a dotted decimal IP address, such as 192.168.0.2. This option is available only if Static IP is selected.
- **Subnet Mask**: The Subnet Mask edit box allows you to enter the subnet mask for this LAN channel. The Subnet Mask is the logical or Internet address of the host's subnet. The server uses this to decide if the alert destination is in the local subnet or in another subnet relative to the server. The Subnet Mask IP address is entered as a dotted decimal IP address, such as 255.255.255.0. This option is available only if Static IP is selected.

- **Gateway IP Address**: The Gateway IP Address edit box allows you to enter the Gateway IP address for this LAN channel. The Gateway IP Address is the logical or Internet address of the router. The Gateway IP Address is entered as a dotted decimal IP address, such as 10.0.0.254. This option is available only if Static IP is selected.
- **Resolve Gateway MAC Address**: The Resolve Gateway MAC Address checkbox, when checked, instructs the SCW to attempt to automatically resolve the MAC address for the server's IP address. You can enter an address here only if Static IP is selected.

If the Gateway MAC address cannot be resolved by the server's IP Address that you entered, the SCW displays the following dialog, which allows you to enter a MAC address.

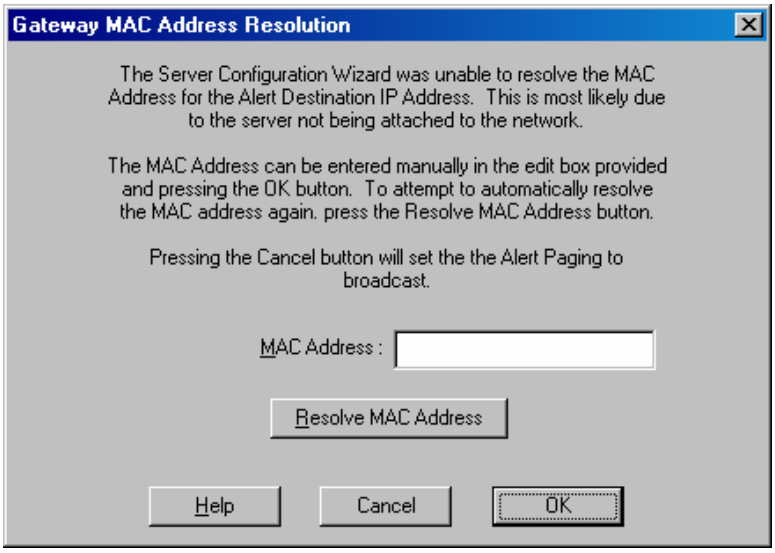


Figure 26. Gateway MAC Address Resolution

- **MAC Address**: Use the MAC Address edit box to enter the Gateway MAC address for the server's IP address, if it is known. As an alternative, you can select Resolve MAC Address. If neither of these options is right for your circumstances, you can disregard both and click OK, in which case, alerts are broadcast.
- **Resolve MAC Address:** Resolve MAC Address is used to attempt to resolve the MAC address for the server's IP address. Press this button if the resolution attempt failed because the server was not connected to the network.

You will see the same dialog box when resolving the Backup Gateway MAC Address.

LAN Channel Configuration Screen 2 –Server Management and Serial Over LAN Setup

This screen allows you to continue to enter the necessary settings to configure the specified LAN channel.

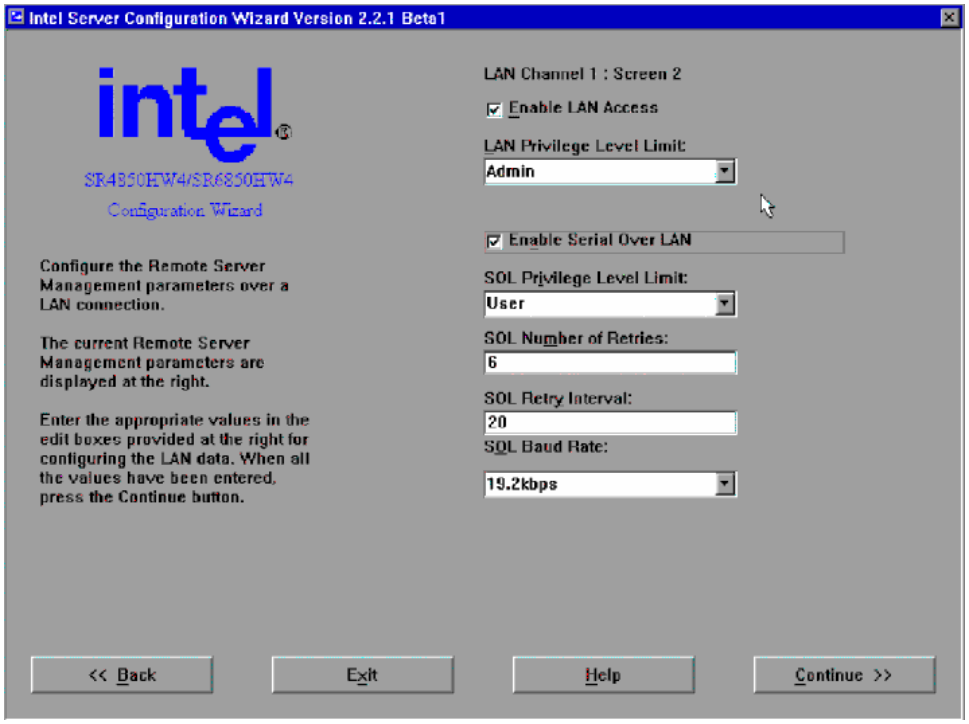


Figure 27. LAN Channel Setup Screen 2

When this screen is displayed, the settings shown are the current settings for this LAN channel on the server. The continue button is enabled at all times on this screen.

- **Enable LAN Access**: Enable LAN Access allows you to enable or disable the LAN access for the server. When checked, all of the LAN access parameters are enabled and you can set them to the appropriate values. When not checked, all of the LAN access parameters on this page are disabled. The state of this option also determines whether Serial Over LAN (SOL) can be set up. If this option is disabled, SOL cannot be configured and the Enable Serial Over LAN checkbox is disabled.
- **LAN Privilege Level Limit**: Privilege Level Limit dropdown list allows you to select a privilege limit for the channel that is being configured. This privilege level takes precedence over the user privilege limit. If a channel privilege level is set at User level, for example, then users can only execute user-level commands, even if the user privilege level is set higher than User. The meanings of the different privilege level limits are explained below.

- **User**: Only “benign” commands are allowed. These are primarily commands that read data structures and retrieve status. Commands that can be used to alter BMC configuration, write data to the BMC or other management controllers, or perform system actions such as resets, power on/off, and watchdog activation are disallowed.
- **Operator**: All BMC commands are allowed, except for configuration commands that can change the behavior of the out-of-band interfaces. For example, Operator privilege does not allow the capability to disable individual channels, or change user access privileges.
- **Administrator**: All BMC commands are allowed, including configuration commands. An administrator can even execute configuration commands that would disable the channel that the Administrator is communicating over.
- **Enable Serial Over LAN**: Allows you to enable or disable the SOL access for the server. When checked, all of the SOL access parameters are enabled and you can set them to the appropriate values. When not checked, all of the SOL access parameters on this page are disabled.
- **Serial Over LAN Privilege Level Limit**: The SOL Privilege Level Limit dropdown list allows you to set the SOL privilege level that is required to be able to activate SOL mode using the Activate SOL command. This privilege level takes precedence over the user privilege limit. If the privilege level is set at User level, for example, then users can only execute user-level commands, even if the user privilege level is set higher than User. The possible privilege level choices are the same as the LAN Privilege levels.
- **SOL Number of Retries**: The SOL Number of Retries edit box allows you to enter the number of retries permitted while attempting access in SOL mode. The valid range is from one to seven.
- **SOL Retry Interval**: The SOL Retry Interval edit box allows you to enter a number for specifying the interval between two retries while attempting access in SOL Mode. The valid range is from one to 255.
- **SOL Baud Rate**: The SOL Baud Rate dropdown list allows you to set SOL baud rate desired. The valid choices are 9600bps, 19.2kbps, 38.4kbps, 57.6kbps or 115.2kbps.

LAN Channel Configuration Screen 3 – LAN Alerting Setup

This screen allows you to continue to enter the necessary settings to configure the specified LAN channel.

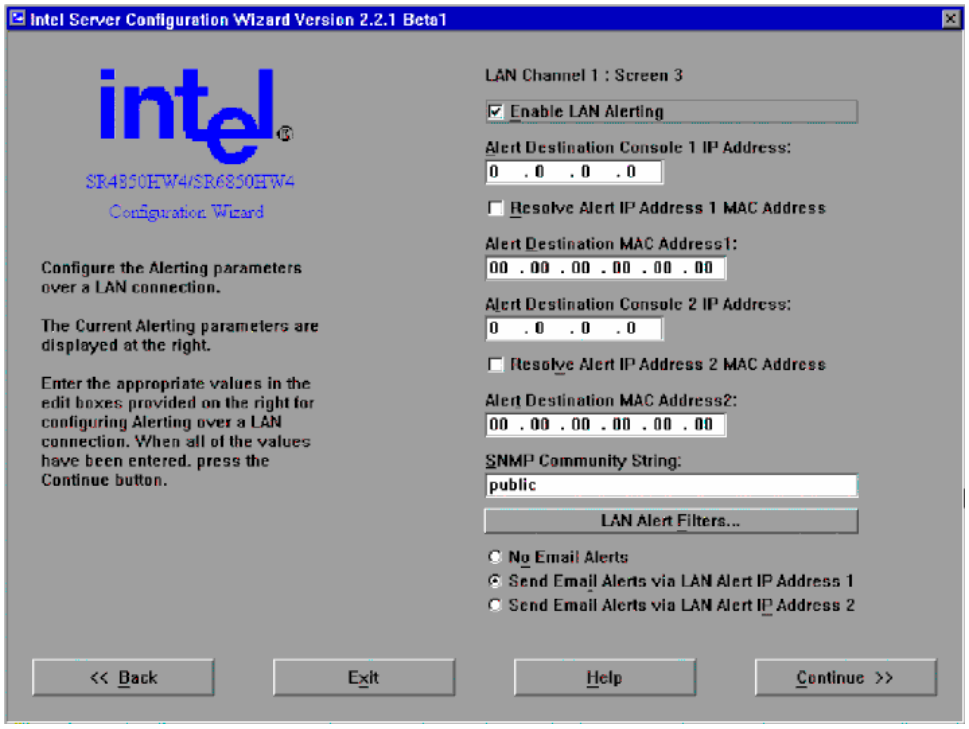


Figure 28. LAN Channel Setup Screen 3

- **Enable LAN Alerting**: Allows you to configure the LAN alert settings for this LAN channel on the server. The availability of all settings on this display depends on the setting of this checkbox.
- **Alert Destination Console 1 IP Address:** Allows you to enter the first alert destination IP address for this LAN channel. The Alert IP Address is the logical or Internet address of the Alert-Destination. In case of single node destination this is the unicast or specific IP address. This is the IP Subnet address if the alert needs to be broadcast within a particular subnet. The IP is entered as a dotted decimal IP, such as 192.168.0.2.
- **Resolve Alert Destination 1 MAC Address**: Instructs the SCW to resolve the MAC address of the first alert destination IP address. If the Alert Destination MAC address cannot be resolved, then the SCW will display a dialog which allows you to enter in a MAC address. A final option would be to just continue, which would result in alerts being sent via broadcast.
- **Alert Destination 1 MAC Address**: The Alert Destination MAC Address is the physical or the Ethernet address of the Alert Destination. It corresponds to the Alert Destination IP Address. The MAC address is entered as six dotted hexadecimal bytes, such as 3e.4d.ab.12.c3.23.

- **Alert Destination Console 2 IP Address**: The Alert Destination Console 2 IP Address edit box allows you to enter the IP address for the second alert destination for this LAN channel. In case of single node destination this is the unicast or specific IP address. This is the IP Subnet address if the alert needs to be broadcast within a particular subnet.
- **Resolve Alert Destination 2 MAC Address**: The Resolve Alert Destination 2 MAC Address checkbox, if enabled, instructs the SCW to attempt to automatically resolve the MAC for this LAN channel. If the Alert Destination 2 MAC address cannot be resolved, then the SCW will display a dialog, which allows you to enter a MAC address. A final option would be to just continue, which would result in alerts being sent via broadcast.
- **Alert Destination 2 MAC Address**: The Alert Destination 2 MAC Address edit box allows you to enter the MAC address for the second alert destination on this LAN channel. The Alert Destination MAC Address is the physical or the Ethernet address of the Alert Destination. It corresponds to the Alert Destination IP Address. The MAC address is entered as six dotted hexadecimal bytes, such as 3e.4d.ab.12.c3.23.
- **SNMP Community String**: The SNMP Community String edit box allows you to enter the community field in the Header section of the SNMP trap sent for a LAN alert. If a string is not set on the server, then the SCW will display and set the string as public. The string must be from 5 – 18 characters long.
- **LAN Alert Filters**: If you press the LAN Alert Filters button, the SCW will display the following screen with which you can check the filters that are to be used when sending out alerts.
- **No Email Alerts**: The No Email Alerts Radio Button allows you to specify that none of the alerts that may be configured are to go to any configured email addresses. This is the default setting in Intel® Management Module – Professional Edition system configurations, and cannot be changed on these system configurations.
- **Send Email Alerts via LAN Alert IP Address 1**: The Send Email Alerts via LAN Alert IP Address 1 radio button allows you to specify that all LAN alerts configured to go the first alert IP address are instead to be sent as emails. This option is available only on the Intel® Management Module –Advanced Edition system configuration.
- **Send Email Alerts via LAN Alert IP Address 2**: The Send Email Alerts via LAN Alert IP Address 2 radio button allows you to specify that all LAN alerts configured to go the second alert IP address are instead to be sent as email messages. This option is available only on the Intel® Management Module –Advanced Edition system configuration.

The next screen displayed allows you to select the type of alert to receive:

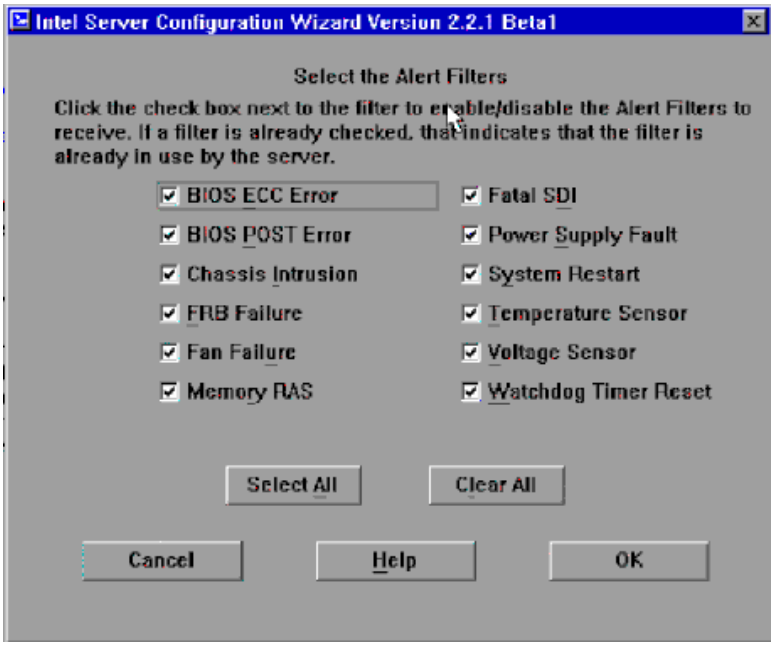


Figure 29. Configuring LAN Alert Filters

- **Select All Button**: This button will select all of the filter checkboxes on the dialog.
- **Clear All**: This button will clear all of the filter checkboxes on the dialog.

Configuring the Serial/Modem Channel

The Serial/Modem channel option is available on both the Intel® Management Module – Professional Edition and Intel® Management Module –Advanced Edition system configurations.

The Serial/Modem Connection configuration section provides the mechanism to configure the serial/modem channel that is present on the system. The configuration of the serial/modem channel is spread across several configuration screens. The first screen sets data specific to configuring the modem. The second screen sets data specific to the access modes. The last screen sets data specific to paging, if paging is desired on the server.

Serial/Modem Configuration Screen 1 – Modem Setup

When the screen comes up, the settings displayed are the current setting on for the serial/modem channel on the server. All fields on this screen are required to have valid data entered. The Continue button is disabled/grayed out until all of the edit boxes on the screen above have data entered.

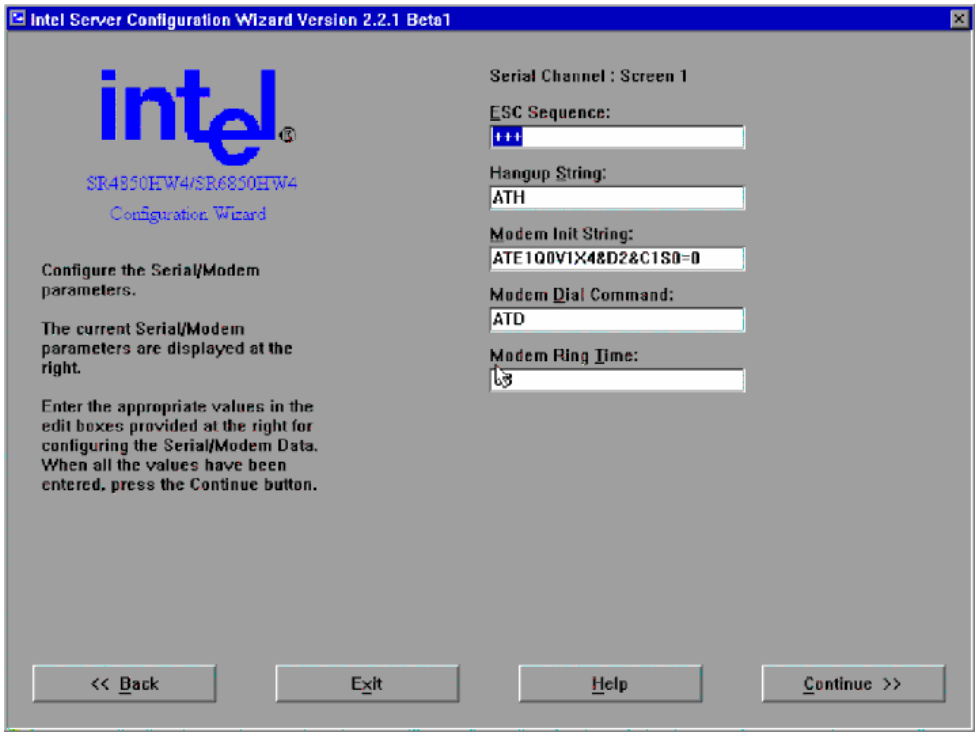


Figure 30. Modem Configuration

- **ESC Sequence**: The ESC Sequence edit box allows you to enter the escape sequence string for the modem. The string is sent to the modem before sending a command string to the modem. The edit control will limit the number of characters that can be entered for the ESC Sequence string to five.
- **Hang-up String**: The Hang-up Line edit box allows you to enter the hang-up ling string. This string is sent to the modem whenever the EMP wants to terminate the session. The EMP automatically sends an <Enter> character after this string. The edit control will limit the number of characters that can be entered for the Hang-up String to eight.
- **Modem Init String**: The Modem Init String edit box allows you to enter the modem initialization string. This string is transmitted every time a serial/modem connection is initialized. The string length of the Modem Init String is determined at run time and the edit control will limit the number of characters that can be entered to that value.
- **Modem Dial Command**: The Modem Dial Command edit box allows you to enter the modem dial command string. This string is transmitted every time a Platform Event Page is sent. This string is sent before the paging string to indicate to the modem how to dial.

Serial/Modem Configuration Screen 2 - Configuring Remote Server Management Options for a Serial / Modem Connection

This screen allows you to continue to enter the necessary settings to configure the serial/modem channel.

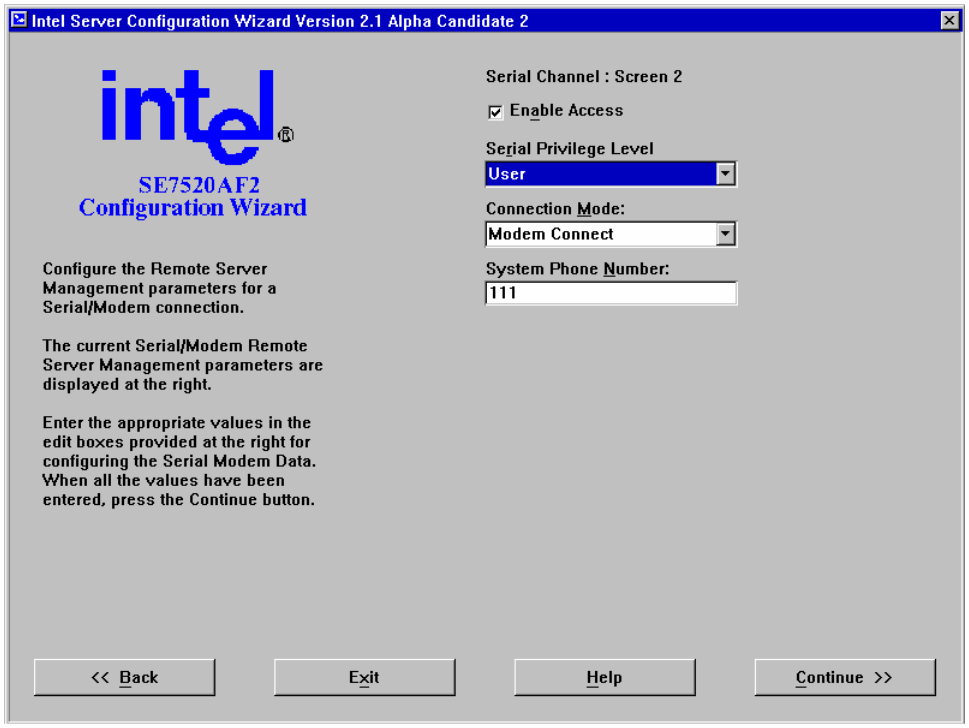


Figure 31. Remaining Serial/Modem Configuration Parameters

- **Enable Access**: The Enable Access checkbox allows you to enable or disable Serial/Modem connectivity. When checked, all of the Serial/Modem parameters are enabled and you can set them to the appropriate values. When not checked, all of the Serial/Modem parameters on this page are disabled.
- **Serial Privilege Level**: The Serial Privilege Level dropdown list allows you to select a privilege limit for the serial channel. This privilege level takes precedence over the user privilege limit. If the privilege level is set at User level, for example, then users can only execute user-level commands, even if the user privilege level is set higher than User. The possible privilege level choices are the same as the LAN Privilege levels.
- **Connection Mode**: The Connection Mode combo allows you to configure the method to connect to the Serial/Modem connectivity. The valid choices are:
  - **Direct Connect**: For applications that connect to the serial/modem port directly to another computer system.
  - **Modem Mode**: For applications where the serial/modem port is connected to an external modem.

- **System Phone Number**: The System Phone Number edit box allows you to enter the phone number used to connect to this system. The length of the phone number allowed is determined at run time. The SCW will limit the number of characters that can be entered at runtime.

Serial/Modem Configuration Screen 3 - Configuring Alerting over a Serial/Modem Connection

This screen allows you to continue to enter the necessary settings to configure the serial/modem channel. The Continue button is disabled/grayed out until all edit boxes on the screen have data entered.

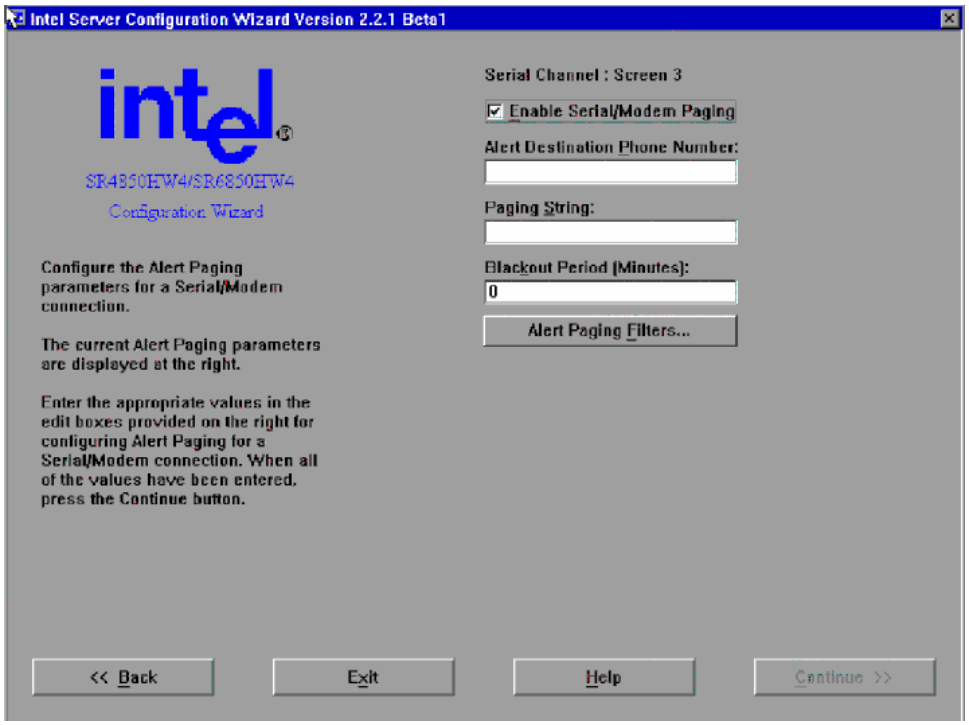


Figure 32. Configuring Serial Alerts

- **Enable Serial/Modem Paging Checkbox**: The Enable Serial/Modem Paging checkbox allows you to enable Serial/Modem paging. When checked, the remaining controls on this screen are also enabled so that Serial/Modem paging can be configured. If this checkbox is cleared, all controls are disabled and Serial/Modem paging shall be disabled on the server.
- **Alert Destination Phone Number Edit Box**: The Alert Destination Phone Number edit box allows you to enter the phone number of the system that is to receive Alerts through a serial/modem connection.
- **Paging String Edit Box**: The Paging String edit box allows you to enter the paging string that contains the characters that are sent once the connection has been made. The length of the Paging String is determined at run time. The paging string is concatenated with the Alert Destination Phone Number entered on this screen. Therefore, it is not necessary to enter the Alert Destination Phone Number with the Paging String.

- **Blackout Period Edit Box**: The Blackout Period edit box allows you to enter the time, in minutes, between successive pages. The valid range is [0 – 255] where 0 disables the blackout period.
- **Alert Paging Filters**: If you press the Alert Paging Filters button, the SCW will display the following screen with which you can check the filters that are to be used when sending out alerts.

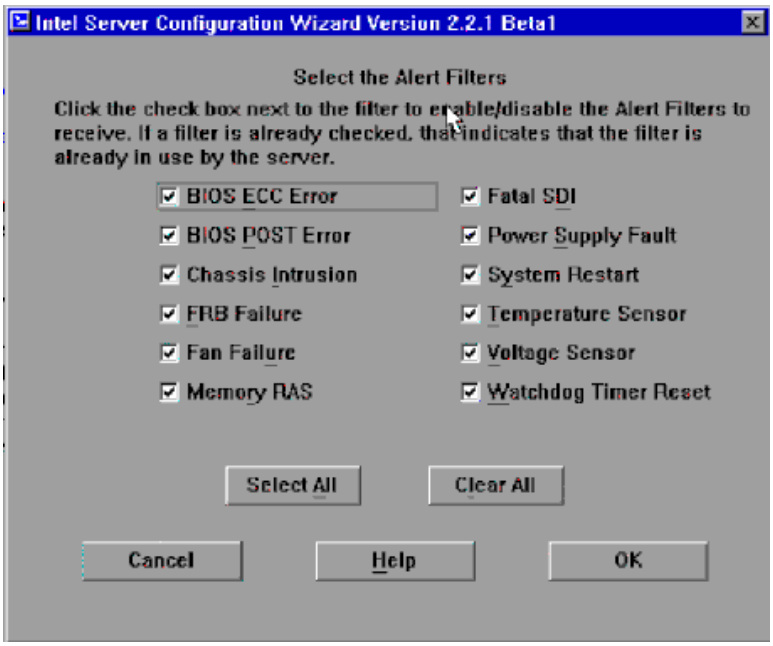


Figure 33. Configuring Serial Alert Filters

See "LAN Channel Configuration Screen 3 – LAN Alerting Setup" for information about this screen.

Select Users to Configure Screen

The Configure Users Screen provides a mechanism for configuring user access to LAN and Serial/Modem channels. A maximum of four users are supported by the Intel® Server Platform SR4850HW4 and SR4850HW4/M. The screens allow configuration of user settings like username, password and the per-channel configuration for each user. These options are available on both the Intel® Management Module – Professional Edition and the Intel® Management Module –Advanced Edition system configurations.

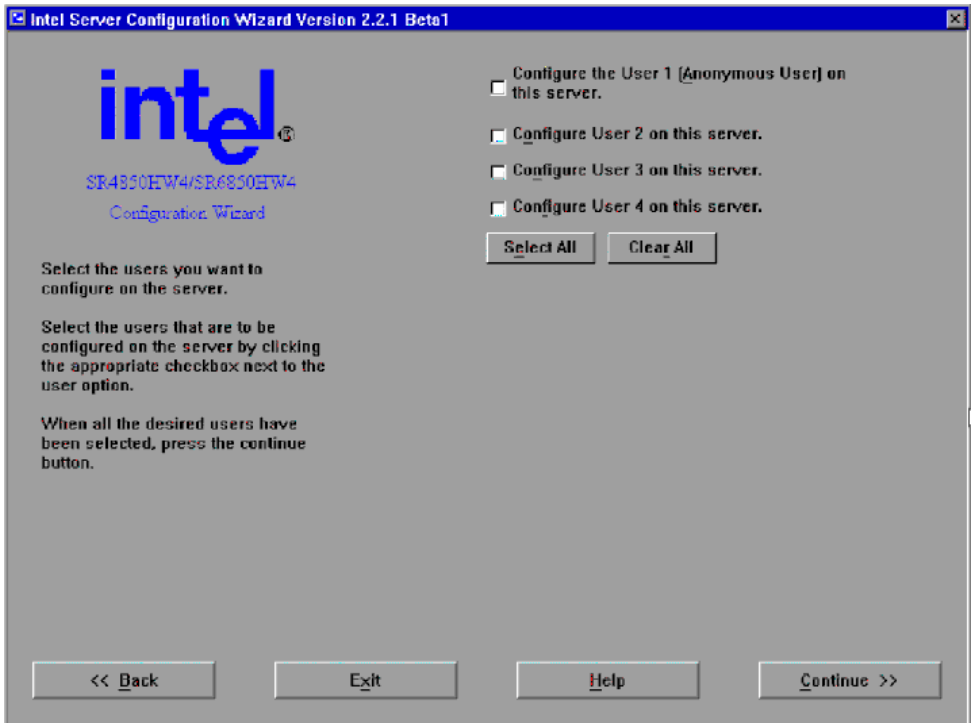


Figure 34. User Configuration Selection Screen

- **Configuring the User 1 [Anonymous User] on this server**: If you select this box, you will be presented screens to configure the anonymous user.
- **Configuring User 2 on this server**: If you select this box, you will be presented screens to configure the second user.
- **Configuring User 3 on this server**: If you select this box, you will be presented screens to configure the third user.
- **Configuring User 4 on this server**: If you select this box, you will be presented screens to configure the fourth user.
- **Select All**: If you click this button, all of the above options are selected. Use this if you want to configure all four users. This button is available only if all of the users are configurable.
- **Clear All**: If you click this button, all of the above options are de-selected. This button is available only if all of the users are configurable.

Configure Users Screen

The Configure Users Screen provides a mechanism for configuring user access to LAN and Serial/Modem channels. The maximum number of users that can be configured for a system depends on that system. The screens allow configuration of user settings like username, password, and the per-channel configuration for each user.

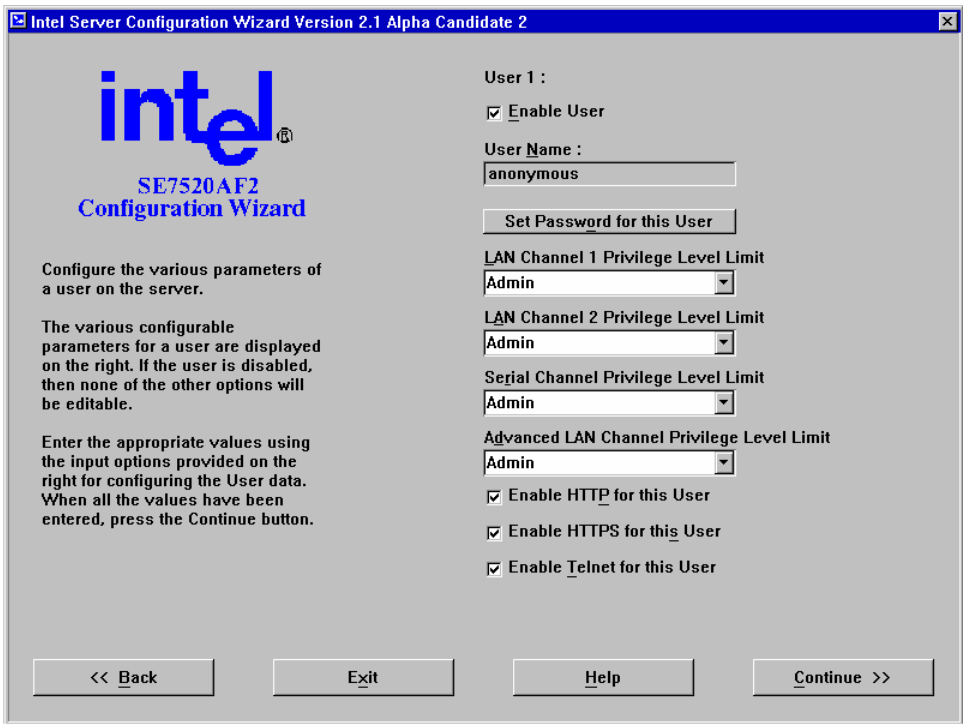


Figure 35. User Configuration Screen

- **Enable User**: The Enable User checkbox allows you to enable or disable this user. When the checkbox is enabled, all other configuration items for this user become enabled.
- **Username**: The Username edit box is used to allow a custom name to be assigned to a user configuration. For User 1, the name must be set to Anonymous. Therefore, this option is disabled for User1.
- **Set Password for this User**: The Set Password button displays a dialog box that allows a password to be set for the selected user.
- **LAN Channel 1 Privilege Level Limit**: The LAN Channel 1 Privilege Level Limit list allows you to select the privilege level for the user being configured. The global privilege level set for LAN channel access takes precedence over the user privilege level. For example, if the LAN channel is configured for user access only, then users are limited to user operations regardless of the user privilege level.
- **LAN Channel 2 Privilege Level Limit**: The LAN Channel 2 Privilege Level Limit dropdown list allows you to select the privilege level the user being configured.

- **Serial Channel Privilege Level Limit**: The Serial Channel Privilege Level dropdown list allows you to select the privilege level for the serial/modem channel access of the user being configured.
- **Advanced LAN Channel Privilege Level Limit**: The Advanced LAN Channel Privilege Level dropdown list allows you to select the privilege level for the Intel® Management Module - Advanced Edition LAN channel access for the user being configured. This option is available only on the Intel® Management Module –Advanced Edition system configuration.
- **Enable HTTP for this User**: The Enable HTTP for this User checkbox is provided to Enable HTTP feature for this user on the Intel® Management Module - Advanced Edition LAN Channel. This option is available only on the platform configuration that uses the Intel® Management Module –Advanced Edition.
- **Enable HTTPS for this User**: The Enable HTTPS for this User checkbox is provided to Enable HTTPS feature for this user on the Intel® Management Module - Advanced Edition LAN Channel. This option is available only on the platform configuration that uses the Intel® Management Module –Advanced Edition.
- **Enable Telnet for this User**: The Enable Telnet for this User checkbox is provided to Enable Telnet feature for this user on the Intel® Management Module Advanced Edtion LAN Channel. This option is available only on the platform configuration that uses the Intel® Management Module –Advanced Edition.

Setting a System Asset Tag

The screen below allows you to enter the asset tag for the server. The asset tag is a string that is the identification number or serial number that has been assigned to the server. The asset tag can contain text as well as numbers. The maximum possible length of the asset tag is determined at runtime based on the FRUAREA, which is not known until the Asset Tag is saved to the server. It must have a minimum of two characters. The Continue button is disabled until a System Asset Tag has been entered.

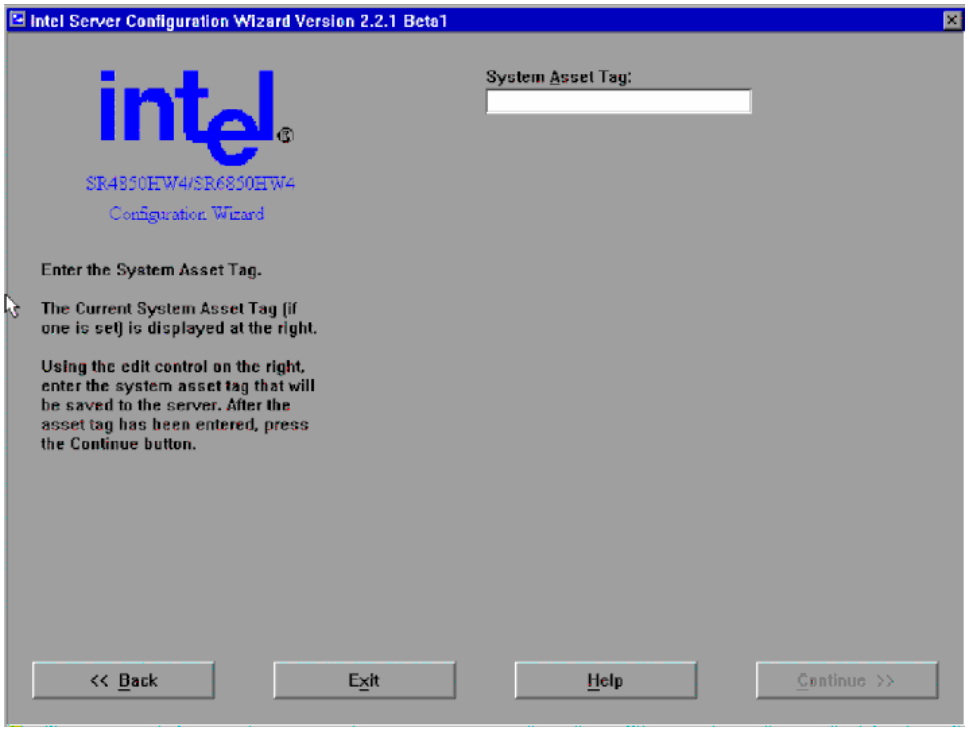


Figure 36. Setting the System Asset Tag

Configuring the Advanced Features

Advanced Features are configured through three main screens and several sub-screens. Each screen displays the configuration options for one or more of the advanced features. The Advanced Features are available only on the platform configuration that uses the Intel® Management Module –Advanced Edition.

Advanced Features Configuration Screen 1: SNMP, KVM, Telnet

The first Advanced Features Configuration screen allows you to enable and/or configure the SNMP (simple Network Management Protocol), KVM (Keyboard/Video/Mouse) and Telnet advanced features.

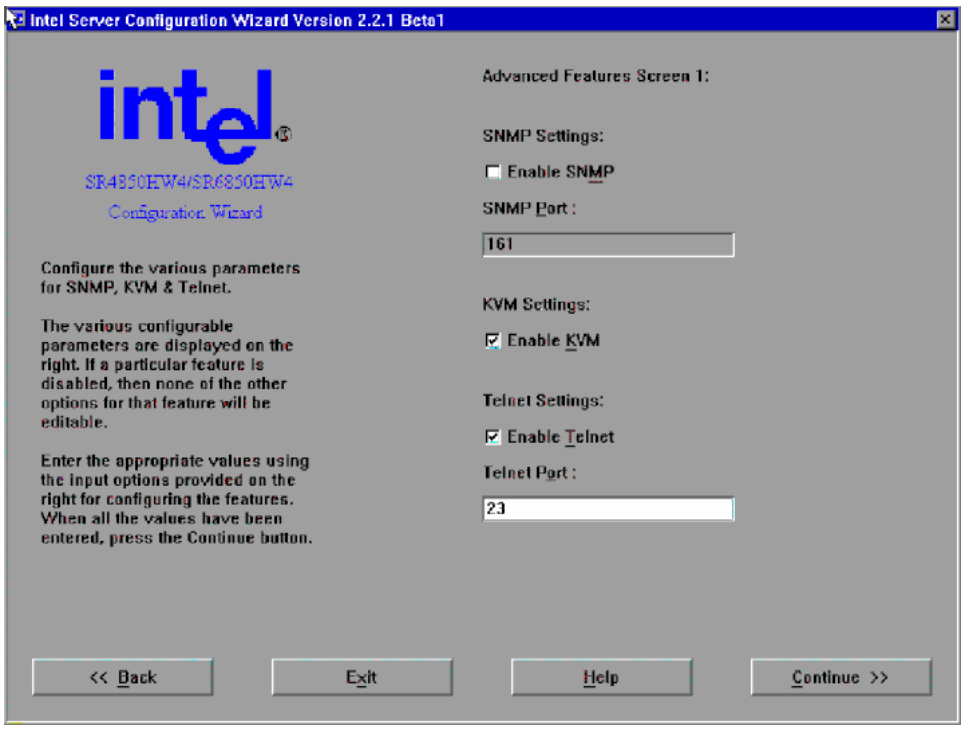


Figure 37. Advanced Features Configuration Screen 1

SNMP Settings

The BMC SNMP (Simple Network Management Protocol) feature provides a way for basic server management information access and control operations to be available Out Of Band (OOB). This allows server management without requiring any operating system agents and provides for Pre-OS and operating system hung operation.

The BMC provides support for SNMP v1, v2 and v3. As originally defined, SNMP is intended to allow a remote host to monitor network performance at various servers, gateways, routers and other assorted network appliances. The data monitored are typically things like number of packets per second, packet fragmentation, etc.

- **Enable SNMP**: The SNMP Enable checkbox, when checked, turns on the SNMP feature and also enables the remaining SNMP configurations items.
- **SNMP Port**: The SNMP Port is the port on which the SNMP agent is listening on the server. You can configure the SNMP port using this field. The default is 161. The valid range is 1 – 65535. This configuration item is available only when the SNMP Enable checkbox is checked.

KVM Settings

The Remote KVM (Keyboard, Video, and Mouse) feature provides a means to capture and redirect managed server video graphics to a remote console (running KVM software) over the network. Video memory from the managed server shall be compressed, encrypted and sent over the Internet using IP to a remote client. In addition, keyboard and mouse activity from the remote console can be received for input to the managed server. This feature is available only on the Intel® Management Module –Advanced Edition.

- **Enable KVM**: The KVM Enable checkbox, when checked, turns on the KVM feature for this server.

Telnet Settings

The Common CLI provides a common syntax for command-line interface commands across the channels and platforms to communicate with the BMC through scripting. The command syntax is different from the syntax specified by IPMI 1.5 for Terminal Mode text commands.

The Telnet protocol in the net stack always uses the Common CLI command syntax for its text commands. It creates an IPMI session with the input provided at the login/password prompts. Once the session is created, it allows executing the CCLI text commands. It closes the IPMI session when it receives “exit/logout” commands.

- **Enable Telnet**: The Telnet Enable checkbox, when checked, turns on the Telnet feature and also enables the remaining Telnet configurations items.
- **Telnet Port**: The Telnet Port edit box is where the port number for the Telnet feature can be entered. The Telnet port is the port on which the connection is made. The default is 25. The valid range is 1 – 65535.

Advanced Features Configuration Screen 2: HTTP Settings

This screen allows you to continue the configuration of the Advanced Features on this server, by configuring the HTTP and HTTPS settings.

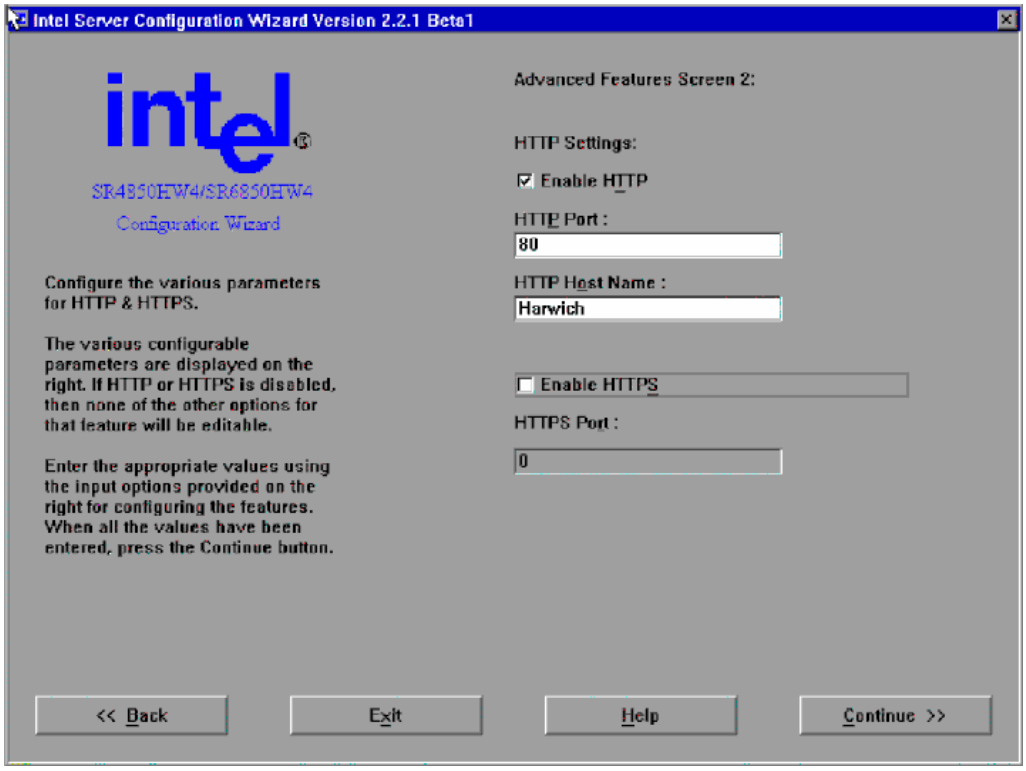


Figure 38. Advanced Features Configuration Screen 2

The HTTP module accepts requests via HTTP on a user-configurable port (default port is 80). Two interface styles are supported via the network interface:

- **Browser Interface**: The “browser interface” style presents web pages to the user, who may click buttons or enter text values in order to interact with the server.
- **Program Interface**: The “program interface” style accepts requests using a more traditional HTTP GET/POST mechanism for presenting requests. Responses are returned wrapped in XML and are designed for ease of parsing by software – not necessarily for ease of display.

The following options are available on this screen:

- **Enable HTTP**: When the HTTP server is disabled, it closes all open sockets so that the network stack will not accept incoming HTTP connections. It also suspends itself so that the HTTP thread will not run. When the HTTP server is enabled, it will wake up the HTTP thread, which will open its sockets. If this feature is disabled, none of the other fields is editable.
- **HTTP Port**: The HTTP Port edit box allows the HTTP port number for this server to be set. The HTTP port is the port on which the TCP/IP connection is made. The default is 80. The valid range is 1 – 65535.
- **HTTP Host Name**: The HTTP Host Name edit box allows the HTTP Host Name for this server to be set. The HTTP Host Name is the domain name of the system.

- **Enable HTTPS**: When the HTTPS server is disabled, it closes all open sockets so that the network stack will not accept incoming HTTPS connections. When the HTTPS server is enabled, it will wake up the HTTPS thread, which will open its sockets. If this feature is disabled, none of the other fields are editable.
- **HTTPS Port**: The HTTPS Port edit box allows the HTTPS Port number for this server to be set. The HTTPS port is the port on which the SSL connection is made. The default is 80. The valid range is 1 – 65535.

Advanced Features Configuration Screen 3: SMTP Alert Settings

This screen allows you to continue the configuration of the Advanced Features on this server by configuring the SMTP alert settings.

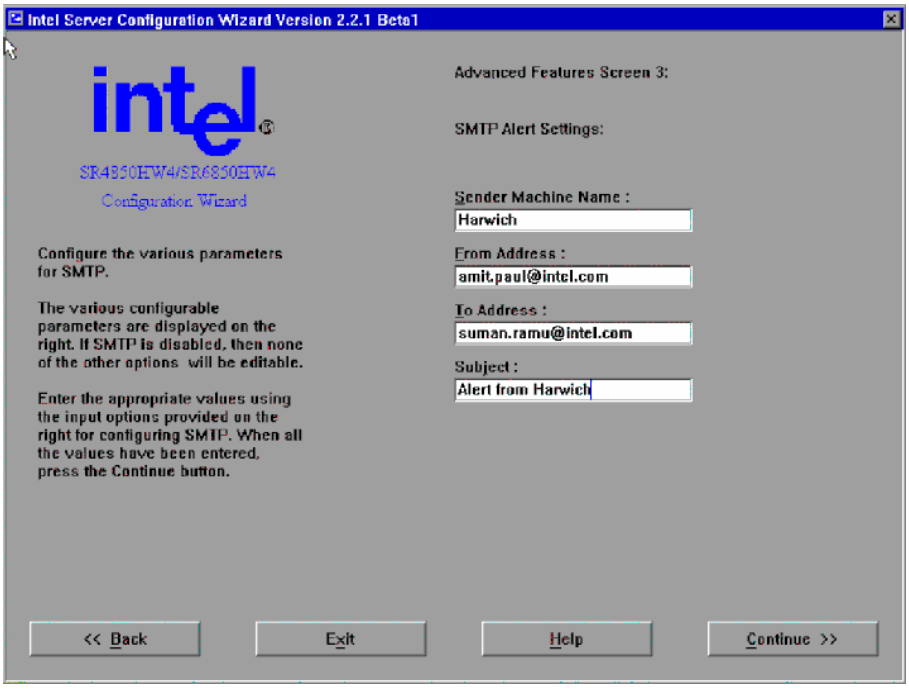


Figure 39. Advanced Features Configuration Screen 3

The BMC Email Alerting feature provides a way for IPMI alerts to be delivered via email as well as the IPMI standard alerting methods. This allows email alerting in an operating system-independent and operating system-absent fashion, such as before the operating system is loaded and in case the operating system hangs. The BMC provides support for sending mail via SMTP, the Simple Mail Transport Protocol.

- **Sender Machine Name**: The Sender Machine Name edit box is where the name of this server goes. This name is used in the email so that the recipient knows what machine the email is coming from.
- **From Address**: The From Address edit box is where the email address of where the emails are coming from, so that the recipient can tell whom the email is from.
- **To Address**: The To Address edit box is the email address of where the emails are being sent.
- **Subject**: The Mail Subject edit box is where the subject of the email can be entered.

Saving the Configuration to a Disk

When you have completed the data entry portion of the SCW, you are prompted to save the configuration to a CD-ROM drive or to a USB flash memory device. This allows future servers to be configured identically to this server, using the silent mode of the SCW. The figure below shows the Save Server Configuration screen.

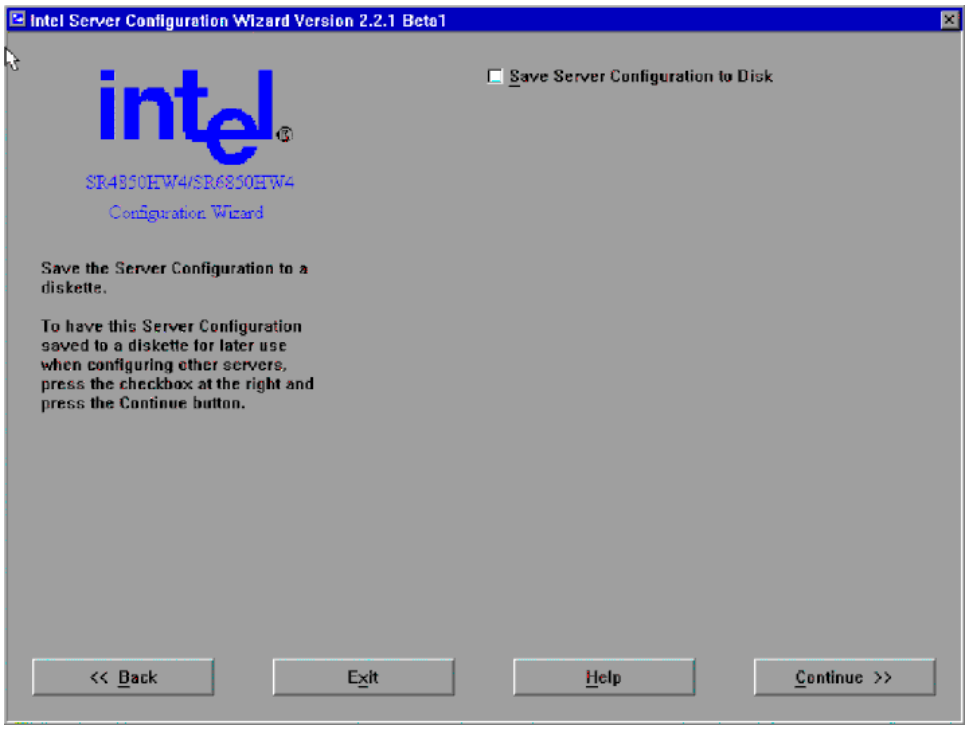


Figure 40. Save Server Configuration Screen

Save Server Configuration to Disk: The Save Server Configuration checkbox saves the configuration to a USB accessible device. This makes configuring a group of identical servers fast and easy. If you check the option to save the server's configuration, the SCW displays a file save dialog, allowing you to enter a location and file name where the configuration is to be saved.

The file/open dialog follows the standard Windows file/open dialog scheme.

Saving the Configuration to the Server

After each applicable screen has been displayed and you have entered and/or altered the settings, the SCW saves the data to the server. The SCW exits and the BMC Configuration Utility performs this save function.

Running Utilities from the SCW

If you selected Server Configuration Utilities from the Server Configuration Start Screen, shown below, you will be brought to an area of the utility from which you can run advanced server configuration utilities.

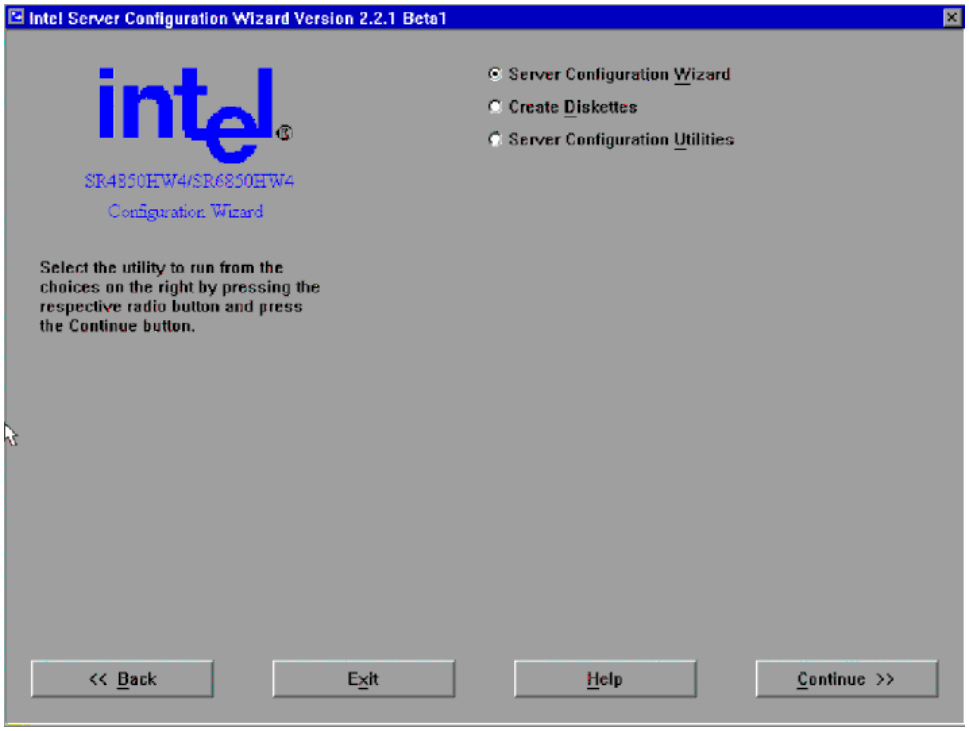


Figure 41. System Configuration Wizard Start Screen

These utilities allow you to manually set up and configure the server. Only an expert user who is familiar with the utilities should use this option. The figure below shows the Utilities main screen.

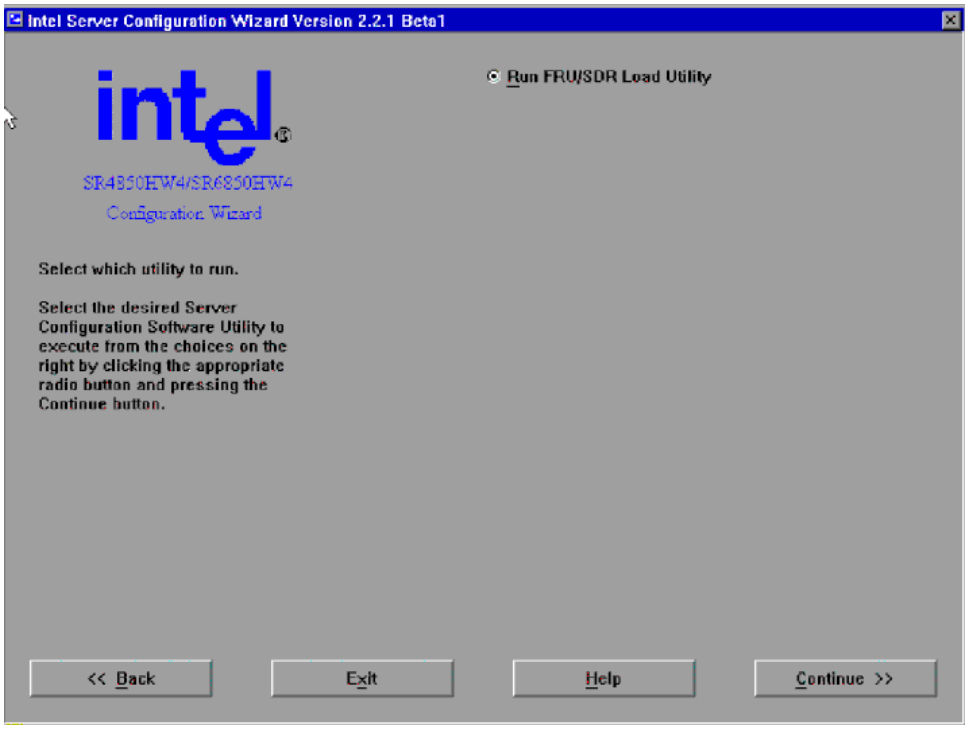


Figure 42. Selection Screen for Server Configuration Utilities

The choice of available utilities shown in this screen is only an example. Available utilities will vary by system configuration. The radio button options on the Utilities menu come from the MENU.CNF file on the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Server Deployment Toolkit* CD.

When the utility chosen to run has completed its execution, you are returned to the screen from where the utility was launched.

Creating Diskettes

If you selected Create Diskettes from the Server Configuration Start Screen, shown below, you will be brought to an area of the utility from which you can driver and utility diskettes.

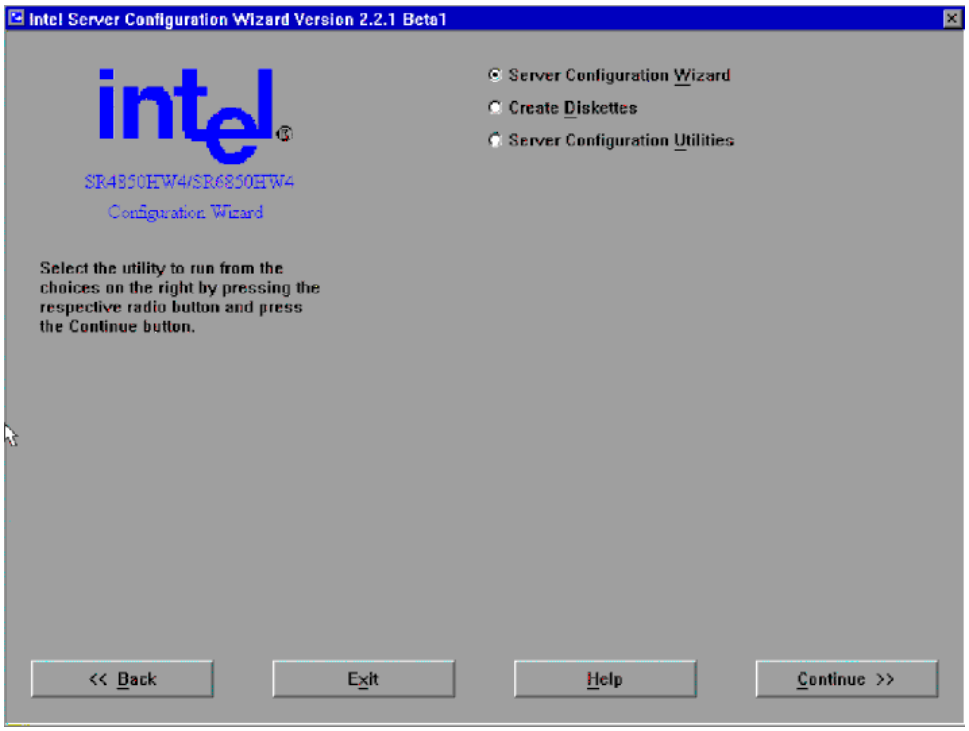


Figure 43. System Configuration Wizard Start Screen

Selecting the Create Diskettes button on the start screen displays the screen shown in the figure below.

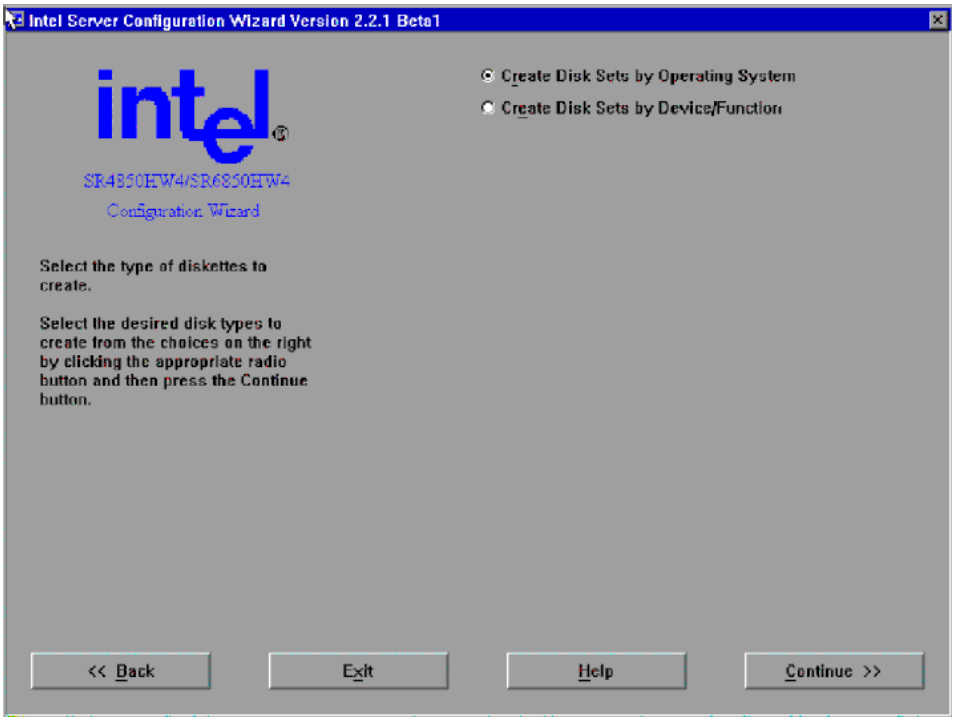


Figure 44. Choosing Diskette Type

Creating Disk Sets by Operating System

If you choose “Create Disk Sets by Operating System,” you will be brought to a screen on which you can select an operating system. Until you select an option, the Continue button is disabled /grayed out.

After you select the operating system and press the Continue button, the SCW will display a message stating how many diskettes are required. When you press the “OK” button on that dialog, the SCW will switch to a DOS screen where you are prompted to insert the appropriate disk as the set is being created.

After the diskette set has been created, you are returned to the “Create Operating System Diskettes” screen.

Device Driver Diskettes

If you choose “Create Disk Sets by Device/Function,” you will be brought to a screen on which you can select which device drivers or utility installation diskettes you want to create. Until you select an option, the Continue button is disabled /grayed out.

After you select the device driver or function and press the Continue button, the Server Configuration SCW will display a message stating how many diskettes are required. When you press the OK button on that dialog, the SCW will switch to a DOS screen where you are prompted to insert the appropriate disk as the set is being created.

After the diskette set has been created, you are returned to the “Create Disk Sets by Device/Function” screen.

Install an Operating System

At the end of the SCW execution, you have the option to start the installation of an operating system. To do this, you are instructed to insert bootable media that will start the operating system’s installation program when the system restarts.

If the server already has an operating system installed, bypass the option to install the operating system. However, you must still reboot the server after the configuration process completes.

FRUSDR Load Utility

The FRUSDR Load Utility is a DOS-based utility that is used to update or modify the server management subsystem’s product level Field Replacement Unit (FRU), Sensor Data Record (SDR) repository, or to display the System Management BIOS (SMBIOS) non-volatile storage components.

Once the FRU file has been initially programmed, which occurs in the factory, the FRUSDR utility may be used to update specific FRU areas and fields. You may not change the size of any FRU area from the size defined in the original FRU Header. Run the FRUSDR Load Utility each time you upgrade or replace the hardware in your server; excluding add-in boards, hard drives, fans, and RAM. The FRUSDR Load Utility programs the sensors the server uses to monitor server management.

With the FRUSDR Load Utility, you can do the following:

- Discover the product configuration based on instructions in a master configuration file.
- Display the FRU information.
- Update the non-volatile storage device associated with the Baseboard Management Controller (BMC) that holds the SDR and FRU information.
- Generically handle FRU devices that might not be associated with the BMC.
- Supply command lines and interactive input through the standard input device.
- View and direct results to the standard output device.

Running the FRUSDR Load Utility

NOTE

You can run the utility directly from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD or from USB flash memory devices. If you choose to run the FRUSDR Load Utility from a USB flash memory device, you must copy the utility from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD and follow the instructions in the README.TXT file. For the latest version of the FRUSDR package, see http://www.intel.com/support/motherboards/server/SR4850HW4/

The FRUSDR Load utility must be run from a system executing DOS. Running it in a Window's command-line provides incorrect results. Upon completing the programming of the FRU and SDR areas, the server must be rebooted.

Follow these steps to run the FRUSDR Load Utility from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD:

1. Boot the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.
2. Exit the SCW
3. Type `CD FRUSDR` to change to the FRUSDR folder.
4. Run the utility by entering a command based on the following syntax:
   `frusdr [option] [/p]`

NOTE

The frusdr command accepts single options only, except for allowing the `/p` option with another option. For descriptions of the FRUSDR Load Utility command-line options, see "FRUSDR Load Utility Command-line Options," below.

5. Manage the server management subsystem's product level FRU and SDR repository as necessary.
6. Reboot the system by powering off the server, waiting until you hear the fans stop, and then powering on the server. The reboot operation is necessary because the firmware must reload to properly initialize the sensors after programming. Until the server is rebooted, the changes do not take effect.

FRUSDR Load Utility Command-line Options

FRUSDR Load Utility command-line arguments can specified in any order. The first command identified is operated on, followed by the next command, and so on. This is known as “Command Line Precedence.”

If an argument is not specified and that argument has a default value, the default value is used. The FRUSDR Load Utility command-line format is:

```
frusdr [/?] [/h] [/p] [/d {smb, fru, sdr}] [/Cfg filename.cfg]
```

Where:

- **/? or /h**: Displays usage information.
- **/d {smb,fru,sdr}**: Displays FRU information from a device at the specified address.
- **/Cfg filename.cfg**: Uses the custom CFG file named by filename.cfg. The configuration file may be used to load multiple FRU and SDR files. In the configuration file, each FRU and SDR file name must be called out. In addition, each FRU area and field to be programmed must also be specified. The configuration file may be used to prompt the user for information, such as the FRU areas to program.
- **/p**: Pause between blocks of data. /P may be used with all other commands. It causes the data being displayed on the screen to pause after a pre-determined amount is written, so that the displayed data does not scroll off the screen. If there is not enough data being displayed to warrant a pause, then the pause command is ignored. The pause command affects only the execution path for the /?, /h, and /d commands.

Commands can be divided into two categories: Flag Commands and Action Commands. Pause (/P) is the only Flag Command. This flag is used by the Action Commands (/?, /h, /d, and /cfg).

No error is displayed if an Action Command does not use the Pause Flag Command. However, if more than one Action Command is listed on the command line, then an error is displayed and the utility exits.

FRUSDR Load Utility Help Screen

When the utility is invoked with the `/?` or `/h` command-line arguments, the following information is displayed:

```
FRU and SDR Load Utility Version 6.2

Usage:  FRUSDR
        /? or /h              Displays usage information.
        /d {smb,fru,sdr}      Only displays requested area.
        /cfg filename.cfg     Uses custom CFG file.
        /p                    Pause between blocks of data.

   Copyright (c) 1997-2004 Intel Corporation, All Rights Reserved
```

Displaying FRUSDR Areas

When the utility is invoked with `/d FRU`, `/d SDR,` or `/d SMB`, the indicated area is displayed. If the display function fails because of an inability to parse the data or because of a hardware failure, the utility displays an error message.

The SM BIOS area is displayed in ASCII format. Each SM BIOS area displayed is headed with the SM BIOS area designated name. Each field has a field name header followed by the field in ASCII or as a number. Each data field is tested for ASCII non-printable characters (ch < 32 || ch > 126). If one of these characters is found, then that field of information is left blank.

Example:

```
FRUSDR /d smb
 FRU and SDR Load Utility Version 6.2

 Displaying SM BIOS Area...

 System Information (Type 1, 25 bytes)
   Manufacturer   = Intel
   Product Name   = MP Server
   Version Number =
   Serial Number  = 67483821

 Board Information (Type 2, 15 bytes)
   Manufacturer   = Intel
   Product Name   = Main Board
   Version Number = c51891-550
   Serial Number  = ICHW44700087

 Chassis Information (Type 3, 17 bytes)
   Manufacturer   = Intel
   Type           = Rack Mount Chassis
   Version Number = 000264-000
   Serial Number  = 098765567890
   Asset Tag      =
```

The FRU area is displayed in ASCII format when the field is ASCII. The area is displayed as a number when the field is a number. Each FRU area displayed is headed with the FRU area designated name. Each FRU field has a field name header, followed by the field in ASCII or as a number.

The Internal Use area is displayed in hex format, with 16 bytes per line. The board, chassis and product FRU areas end with an END OF FIELDS CODE, which indicates there is no more data in this area.

Example:

```
FRUSDR   /d   fru
 FRU IMBDEVICE on bus FFh, Device ID 00h, IPMB address 20h, LUN 00
 Display Header Area
 Common Header Area             (Version 1, Length 8)
   Internal Area Offset     = 01h
   Chassis Area Offset = 02h
   Board Area Offset        = 06h
   Product Area Offset      = 0Eh
   MultiRecord Offset  = 00h
   Pad                      = 00h
   Checksum                 = E8h

 Display Internal Use Area
 Internal Information Area (Version 1, Length 8)
   01 00 00 00 00 00 00 02

 Display Chassis Area
 Chassis Information Area (Version 1, Length 32)
   Chassis Type                   = 17h
   Part Number       (ASCII)      = 080264-000
   Serial Number     (ASCII)      = 098765567890
   Additional Field  (ASCII)      =
 END OF FIELDS CODE

 Display Board Area
 Board Information Area (Version 1, Length 64)
   Unicode Country Base           = 00h
   Manufacturing Time (mins)      = 4686915
   Manufacturer Name (ASCII)      = Intel
   Product Name      (ASCII)      = Main Board
   Serial Number     (ASCII)      = ICHW44700087
   Part Number       (ASCII)      = c51891-550
   Mftr FRU File ID  (ASCII)      =
   Additional Field  (ASCII)      =
 END OF FIELDS CODE

 Display Product Area
 Product Information Area (Version 1, Length 80)
   Unicode Country Base           = 00h
   Manufacturer Name (ASCII)      = Intel
   Product Name      (ASCII)      = MP Server
   Part Number       (ASCII)      = ..........
   Product Version   (ASCII)      =
   Serial Number     (ASCII)      = .........
   Asset Tag         (ASCII)      =
   Mftr FRU File ID  (ASCII)      =
```

```
   Additional Field  (ASCII)       =
 END OF FIELDS CODE
```

The SDR non-volatile storage area is displayed in hex format. A Sensor Record Number X header separates the data, where X is the number of that sensor record in the SDR area. The line following the header is the sensor record data in hex format and delineated by spaces. Each line contains up to 16 bytes. The data on each line is followed by the same data in ASCII format. A '.' Is used as a substitute for non-printable characters (ch < 32 || ch > 126).

Example:

```
FRUSDR /d sdr
 FRU and SDR Load Utility Version 6.2

 Reading SDR Repository
 Displaying SDR area

 Reading SDR Record #1
  01 00 51 02 2A 20 00 01 13 01 65 40 09 6F 70 00 Q.*.....e@.op.
  00 00 70 00 C0 00 00 01 00 00 00 00 00 00 00 CF p.............
  50 77 72 20 55 6E 69 74 20 53 74 61 74 75 73 Pwr.Unit.Status

 Reading SDR Record #2
  02 00 51 02 2A 20 00 02 13 01 07 40 09 0B 03 00 .Q.*......@....
  00 00 03 00 C0 00 00 01 00 00 00 00 00 00 00 CF  ..............
  50 77 72 20 55 6E 69 74 20 52 65 64 75 6E 64     Pwr.Unit.Redund
```

Using a FRUSDR Load Utility Configuration File

The FRUSDR Load Utility can be run with the command-line parameter of:

```
/CFG ["filename"]
```

Where "filename" is any accepted character filename string. This feature loads the indicated configuration file. The utility uses the entries in the configuration file to probe the hardware and to select the proper Sensor Data Records or Field Replaceable Units to be programmed into non-volatile storage. If the argument /CFG is used without a filename, then the default file MASTER.CFG is used, if this file exists.

The configuration file allows you to override values contained in an associated FRU file, but it cannot be used to add areas to a FRU file. The FRU in the non-volatile storage device should be thought of as a repository for default values. If you decide not to program specific FRU areas or fields, then the information already contained in those areas or fields on the server remains intact.

The configuration file is ASCII text and editable. The file is parsed and pertinent information is stored internally by the utility. Information in the configuration file is used to direct the execution path of the FRUSDR Load Utility and to establish a configuration for the product. Some of the commands are user interactive and require you to input a choice when you run the FRUSDR Load Utility.

After the FRUSDR Load Utility is run with the configuration file and updates are successful, a single message is displayed and the utility exits. If the FRUSDR Load Utility fails, it exits with an error message and an exit code.

Loading Specified FRU or SDR Files

The normal method of loading one or more FRU or SDR files is through the use of a configuration file. In the configuration file, each FRU file name is specified using the FRUNAME configuration command. Each SDR filename is specified after the SDRNAME configuration command.

Through the use of a configuration file, each area of the FRU or SDR may selectively be programmed. The FRU information written to the non-volatile storage device is verified after programming and an appropriate message is displayed. Typically, all possible Sensor Data Records exist in one master SDR file. Through the configuration file, tags can be used to selectively choose the SDR records that are to be programmed.

Comparing the FRU or SDR File

For the FRU, the configuration file command "COMPARE" validates information against that which is in the non-volatile storage device. For the SDR, the configuration file command "COMPARE" compares SDR information against that which is in the SDR Repository. "COMPARE" does not program information. "COMPARE" is placed on the same line after the FRU or SDR name to be compared.

The compare command performs a byte-by-byte comparison of the non-volatile storage device data against that which is to be programmed. For FRUs, the internal use area is never compared; this utility considers all bytes of the internal use area as dynamic and subject to change by the firmware. In the board area, the manufacturing date and time, and the board area checksum are also not compared, although the rest of the board area bytes are compared.

For SDRs, the first two bytes of each Sensor Data Record are ignored, because when the repository was programmed, the first two SDR bytes were modified by the BMC and a pointer inserted. No checksum is issued.

Checking the FRU Data Integrity

The FRUSDR Load Utility requires the FRU Common Header offsets to be correct. The Utility checks the Common Header Area in each non-volatile storage device against the FRU file, and it runs a checksum on it. If the Common Header Area in the FRU file is correct and matches that which is in the non-volatile storage device, then the information is programmed. An incorrect Common Header means the FRU area is corrupted or has not been initialized.

If the Internal Use Area of the BMC is loaded from the FRU file, then the BMC is cold reset to force the BMC to re-initialize its internal copy of the Internal Use area from the FRU. This clears both the SDR table and the System Event Log. All information in both areas is lost and the SDRs must be reprogrammed.

Updating the FRU and SDR Non-Volatile Storage Area

- **FRU Update**: After the system configuration is determined, a typical configuration file updates the FRU non-volatile storage area. It first verifies the Common Header area and checksum from the specified FRU file with that which is programmed in the FRU non-volatile storage device. If specified, the Internal Use Area is then read from the specified FRU file and is programmed

into the non-volatile storage device. Following this, the chassis, board, and product areas are read from the specified FRU file and programmed into the non-volatile storage device. Lastly, the Multi-Record Area is read out of the specified FRU file, and then the area is programmed into the FRU non-volatile storage device.

- **SDR Update**: After the utility validates the header area of the supplied SDR file, it updates the SDR repository area. Before programming begins, the utility clears the SDR repository area. When loading an SDR file from a configuration file, the utility filters all tagged Sensor Data Records using a list of tags determined by you, which represent the product's configuration. Non-tagged Sensor Data Records are automatically programmed.

SEL Viewer Utility

The SEL Viewer is a DOS utility that provides a way to view system event records that are stored on the server management storage device. The utility also allows you to save SEL entries to a file and load SEL entries from a file. You can also reload SEL entries from a server and see the properties of SEL entries. The SEL entries can be viewed in two modes: interpreted text mode and hex mode.

The SEL Viewer provides a way to do the following:

- Examine all SEL entries stored in the non-volatile storage area of the server.
- Examine previously stored SEL entries from a file.
- Save the SEL entries to a file.
- Clear the SEL entries from the non-volatile storage area.
- Sort the SEL records by various fields such as timestamp, sensor type number, event description, and generator ID.

You can run this utility either directly from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD or from a DOS device. To run the utility from a DOS device, copy the following files to a USB flash memory device or to a CD-ROM disk:

- SELView.exe
- SELENUS.str
- SELENUS.hlp
- SEL.INI
- SELVIEW.TXT

Using the SELViewer Utility

Follow these steps to run the SELViewer Utility:

1. Boot to the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.
2. Exit the SCW.
3. Type `CD SELVIEW` to change to the SELViewer folder.
4. Read the `selview.txt` file. This is the release notes for the SELViewer Utility. These release notes may contain special instructions for running the utility.
5. Type `Selview` and press <Enter>
6. Use the <Tab> key to switch between the pull down menu and the display pane.
7. Use the <F5> and <F6> keys to tab across the columns in the text mode display.

NOTE

Additional instructions are available through the SEL Viewer Utility Help menu.

When you start the SEL Viewer Utility from the graphical user interface (GUI), you will see a splash screen if the splash screen file is available and in the SEL Viewer Utility search path. No error message is displayed if the splash screen file is not located.

The splash screen is automatically dismissed after five seconds, or if you press a key.

Graphical User Interface

When the utility is first started, it loads the SEL records from the server. A status box is displayed to indicate that the SEL Viewer is loading SEL records from the server.

If no SEL entries are found, an information message is provided. Otherwise, after the SEL records are read from the server, all SEL record information is displayed with one system event on each line, headed by the Event Description column that contains an interpretation of the event, event type, and event data.

The SEL Viewer Utility main window is displayed after the splash screen is removed. The data displays in columns as follows:

- A count of the system events being displayed. Starting with number 1, and increasing by one for each event.
- Timestamp.
- Sensor type and number.
- Event description.
- Generator ID.

The SEL Viewer Utility main window supports the arrow keys, <PgDn>, <PgUp>, <Home>, and <End> to pan across the display window. It also supports the <F5> key to move forward to the next column and <F6> to move back to the previous column.

The main window is shown in the following diagram.

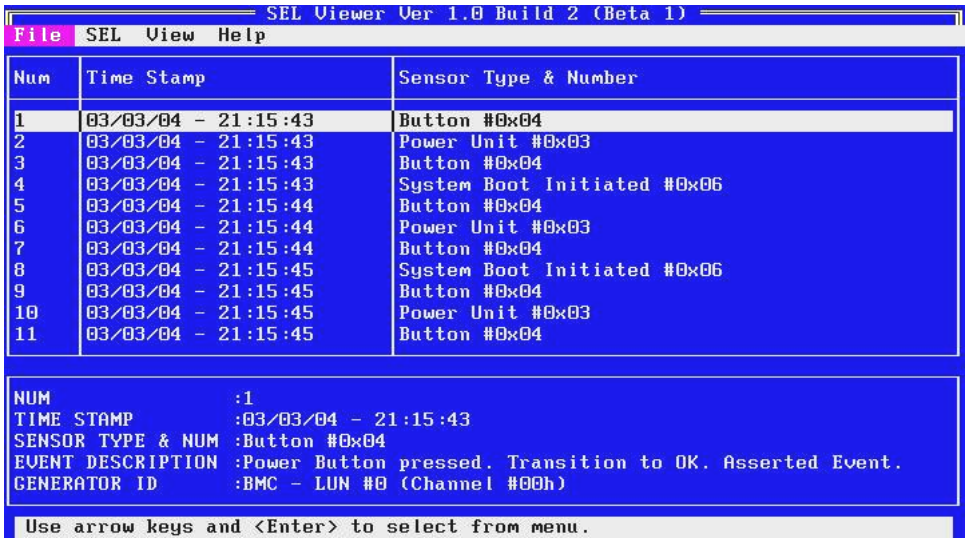


Figure 45. SEL Viewer Utility Main Window

The SEL Viewer Utility displays the event logs in either an interpreted, textual form or in raw hexadecimal format as read from the server. You can choose your display format. In the figure below, the hexadecimal format is displayed.

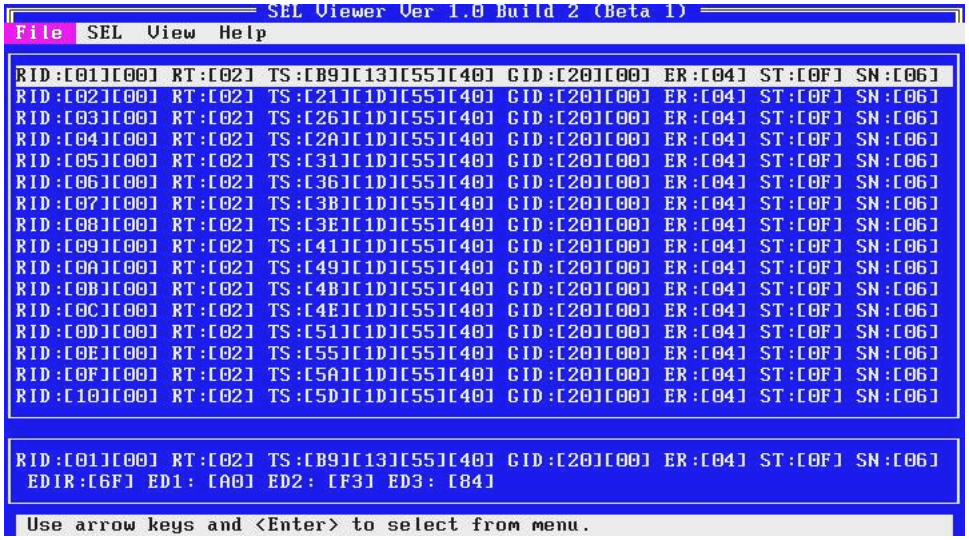


Figure 46. SEL Records in HEX Format

Table 4 provides the abbreviations that are used in the hexadecimal mode display.

Table 4. Abbreviations Used in Hexidecimal Mode Display

Abbreviation	Description
RID	Record ID
RT	Record Type
TS	Time Stamp
GID	Generator ID
ER	Event Message Format Revision
ST	Sensor Type
SN	Sensor Number
EDIR	Event Dir and Event Type
ED1	Event Data 1
ED2	Event Data 2
ED3	Event Data 3
MID	Manufacturers ID (used when displaying OEM SEL records type C0h-DFh)
OEM	OEM defined (used when displaying OEM SEL records type C0h-DFh and E0h-FFh)

SEL Viewer Utility Pull-Down Menu

The SEL Viewer Utility main window provides a pull-down menu that is used to select functions. Use the <F10> key to move between the display window and the pull-down menu area. From the menu area, use the arrow keys to move between the menu items, and use <Enter> to select a menu item. A brief help message about the option selected from the menu is displayed at the bottom of the SEL Viewer Utility main window. The pull-down menu provides the options outlined below.

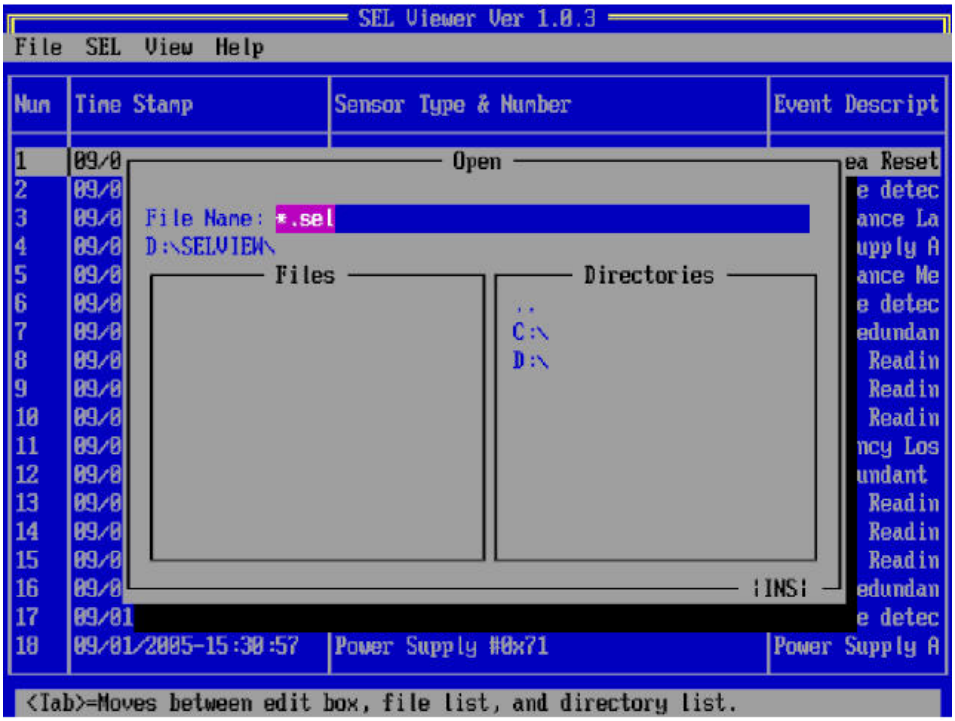


Figure 47. File Open Window

- **File**: The File pull-down menu includes options for opening and saving system event records from, and to data files, respectively. These options are further described in the sections below.
  - **Open**: Under the File pull-down menu, Open allows you to open an existing SEL data file for viewing. This option prompts you to specify a filename with a file extension of "`.sel`". The SEL file is displayed in the mode in which the data was originally displayed, whether that was in hexadecimal or interpreted format.

  The Open dialog box allows you to browse drives and directories for existing files, as shown in Figure 47. If the selected file cannot be opened, an error message is displayed.

  - **Save As**: From the File pull-down menu, the Save As option allows you to save the SEL data to a file, with a file extension of "`.sel`". This file is saved in the format in which it is displayed: in interpreted text format or in raw hexadecimal format.

  The interpreted text format files contain the SEL properties in the first lines followed by a blank line and the column headings. The SEL file format is specified as an ASCII-readable

file, with each field delimited to a tab stop and with each system event ending with a carriage return/line feed. The file can be opened by programs like Microsoft* Excel*.

- **Exit**: From the File pull-down menu, chose Exit to exit the SDR Viewer Utility.

- **SEL**: The SEL pull-down menu includes options for reloading SEL entries from the server, clearing the SEL entries, viewing SEL properties, and sorting the entries by different column fields. These options are described below.
  - **Reload**: Under the SEL pull-down menu, Reload allows you to reload the SEL entries from the server. This operation is similar to the operation performed when you opened the SEL Viewer Utility. The records are displayed either in the hex format or in the interpreted format, depending on the display mode you choose. A status box is displayed to indicate that the SEL Viewer is loading SEL records from the server, and a message is displayed if no SEL records are found.
  - **Properties**: Under the SEL pull-down menu, Properties allows you to view the SEL properties as shown below. A message is displayed if the SEL is full. Otherwise, the "Number of Entries" and "Free Space Remaining" are displayed as numeric values.

Figure 48. SEL Properties

  - **Clear SEL**: Under the SEL pull-down menu, Clear SEL deletes all SEL entries from the non-volatile storage area of the server and it removes all entries from the main window table. The confirmation message shown below prompts you to confirm the deletion.

Figure 49. Confirmation for Clearing SEL

  - **Sort By**: Under the SEL pull-down menu, use Sort By to sort the SEL data fields. This option provides a list of fields by which the entries can be sorted.

- **View**: The View pull-down menu includes options for viewing / hiding the SEL information window, Display in Hex/Text, and the screen Resolution. These options are described below.
  - **Display In Hex / Display In Text**: Under the SEL pull-down menu, you can toggle between the raw hexadecimal mode display and the interpreted mode display. In the hex mode display, all of the SEL records are displayed in raw hex format. In interpreted mode display, all of the SEL records are decoded and displayed in text format. When the display mode is changed, the SEL Viewer Utility loads or re-loads the SEL entries from the server and displays the data in the chosen display mode.

  The display mode is automatically selected if you read the SEL entries from a file. When reading SEL entries from a file, the entries are displayed in the mode in which the entries were saved.
  - **Resolution Mode**: Two video modes are available. You can toggle between low resolution at 24 rows by 80 columns and high resolution at 48 rows by 132 columns. High resolution provides the ability to see more information on a single screen.

- **Help**: The Help menu provides options for General Help and About, as described below.
  - **General Help**: From the Help pull-down menu, General Help provides information about how to use the SEL Viewer. The General Help window is divided into two panes. The top pane lists the main help topics and the bottom pane displays information about the selected topic. Use the arrow keys to select between topics and use the <F10> or <Tab> keys to move between panes. To dismiss the help window, press <Esc> key. See the figure below for the General Help screen.

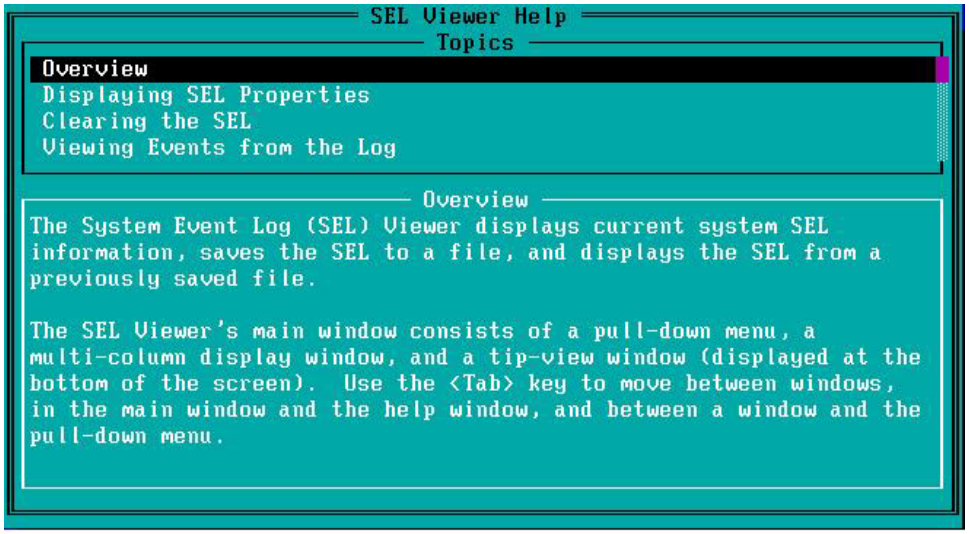


Figure 50. General Help Window

- **About**: From the Help pull-down menu, use the About option to display the version of the SEL Viewer Utility, the IPMI version, and copyright information. See the figure below.

Figure 51. About Window

FRU Viewer Utility

The FRU Viewer Utility provides a way for you view the server management subsystem's product level Field Replaceable Unit information. The main board, chassis, and product areas are shown by the utility after reading subsystem's product level FRU. The utility allows you to save FRU data to a file and load FRU data from a file. You can also reload system FRU data and see the properties of FRU data.

The FRU Viewer Utility provides a way for you to do the following:

- View the current system FRU properties.
- Save the FRU data to a file and view the FRU data from a file.

The FRU Viewer Utility conforms to the IPMI 1.5 and IPMI 2.0 specifications. The FRU Viewer Utility requires associated .STR and .HLP files for the current language and locale. The Utility parses the .STR file to get the appropriate string messages that are displayed in the program. Since the .STR file is a Unicode file, it allows internationalization of the FRU Viewer Utility.

You can run this utility either directly from the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD or from a DOS device. To run the utility from a DOS device, copy the following files to a USB flash memory device or to a CD-ROM disk:

- FRUView.exe
- SDRENUS.str
- SDRENUS.hlp
- FRU.INI

Using the FRU Viewer Utility

Follow these steps to use the FRU Viewer Utility:

1. Boot to the *Intel® Server Platforms SR4850HW4 and SR6850HW4 Deployment Toolkit* CD.
2. Exit the SCW.
3. Type `CD FRUVIEW` to change to the FRU Viewer folder.
4. Run the utility by typing the command `FRUview`

When you start the FRU Viewer Utility from the graphical user interface (GUI), you will see a splash screen if the splash screen file is available and in the FRU Viewer Utility search path. No error message is displayed if the splash screen file is not located.

The splash screen is automatically dismissed after five seconds, or if you press a key.

Graphical User Interface (GUI)

When the utility is first started, it loads the FRU records from the server. A status box is displayed to indicate that the FRU Viewer Utility is loading FRU records from the server.

The FRU Viewer Utility main window is displayed after the splash screen is removed. The FRU Viewer Utility uses a menu-driven main window. This main window lets you select from four areas:

- **Title Bar:** The title bar is located at the top of the screen and shows the name and version of the utility
- **Menu Area:** Provides access to all utility functions and options through three menus: File, FRU, and Help
- **Client Area:** Displays the FRU information of the selected record in a textual format
- **Help Tip Area:** Displays a brief help message about the selected option

The main window is shown in the following figure.

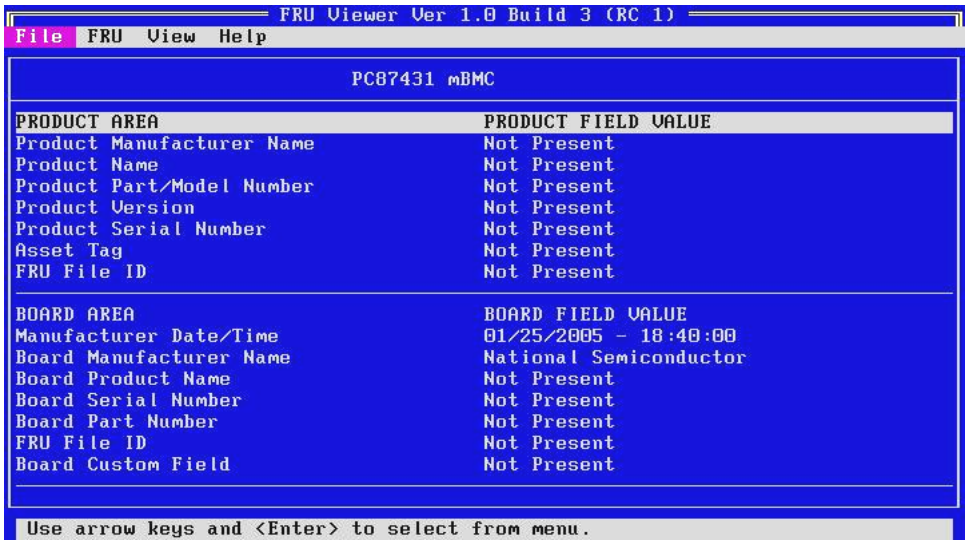


Figure 52. FRU Viewer Utility Main Window

The Client area of the screen consists of two windows. The first window is the FRU information window. This window displays the following FRU data in a multi-column format:

- Byte number: The bits for the byte are enclosed by the parentheses. For example, bit 5 and bit 4 of byte 7 is represented by 7(5:4)
- Field Name
- Value

The second window displays the description of attribute names or values you select in the first window.

The FRU Viewer Utility main window supports the arrow keys, <PgDn>, and <PgUp> to move around in the display window. It also supports the <F5> key to move forward to the next column and <F6> to move back to the previous column. Use the <Tab> key to move to the next window in the client area or to move to the menu. Use <F10> key to move between the client area and the menu.

FRU Viewer Utility Pull-Down Menu

The FRU Viewer Utility main window provides a pull-down menu that is used to select functions. Use the <F10> key to move between the display window and the pull-down menu area. From the menu area, use the arrow keys to move between the menu items, and use <Enter> to select a menu item. A brief help message about the option selected from the menu is displayed at the bottom of the SEL Viewer Utility main window. The pull-down menu provides the options outlined below.

- **File**: The File pull-down menu includes menu items for opening and saving data files. These options are further described in the sections below.
  - **Open**: Under the File pull-down menu, Open allows you to load a previously saved FRU file. Upon selecting this option, all currently loaded FRUs are removed from the screen and the FRU loaded from file is displayed.

  If the file selected is not a valid FRU file, the following message is displayed: “Invalid FRU file”. If there is an error while reading the FRU from the file, the following message is displayed: “Error reading FRU from file”.

  Opening a FRU file does not affect the FRU properties. The options for Save As… and the System FRUs are disabled when FRU data is loaded from a file.

  The Open dialog box gives you the ability to browse drives and directories for existing files as shown by Figure 53. The File Name edit box supports full editing capabilities with the following keys: <Home>, <End>, Left/Right arrows and <Ins>. The <Ins> key toggles insert and overwrite editing while in the edit box and this is noted with “INS” or “OVR”, displayed in the lower-right corner of the dialog box.

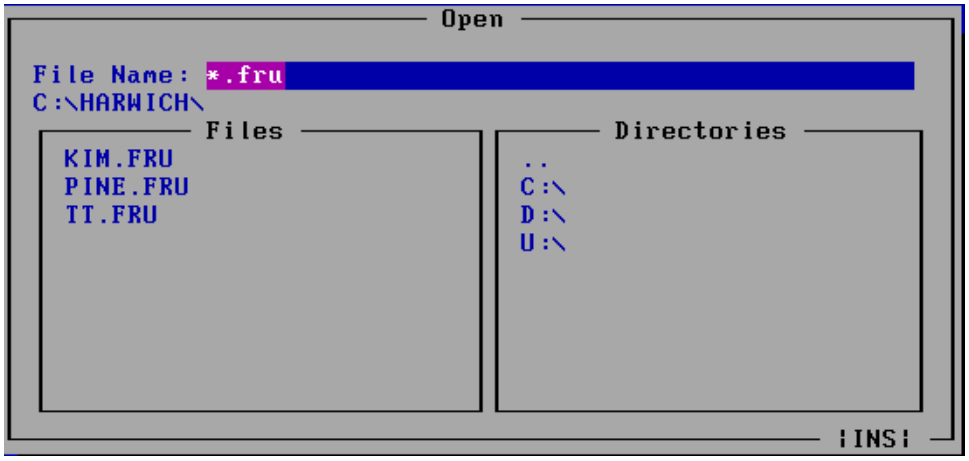


Figure 53. File Open Dialog Box

- **Save As**: Under the File pull-down menu, Save As provides a way for you to save the currently displayed FRU to a file. If the save fails because the file cannot be created, the following message is displayed: “Unable to create save file”. If an error occurs while writing information to the file, the following message is displayed: “Error saving the FRU data to the file”.

  The Save As dialog box lets you browse drives and directories for existing files, as shown in Figure 53. The File Name edit box supports full editing capabilities with the following keys: <Home>, <End>, Left/Right arrows and <Ins>. The <Ins> key toggles insert and overwrite editing while in the edit box and this is noted with “INS” or “OVR”, displayed in the lower-right corner of the dialog box.

- **Exit**: From the File pull-down menu, chose Exit to exit the SDR Viewer Utility.

- **FRU**: The FRU pull-down menu includes options for selecting a FRU, viewing FRU properties, and reloading the FRUs from system. These options are further described below.
  - **System FRUs**: Under the FRU pull-down menu, System FRUs provides a way to select a specific FRU entry from the server. This is shown in Figure 54. After you choose a FRU, the display pane is updated with the selected FRU. By default the first FRU entry is shown in the display pane when the FRU Viewer Utility is started.

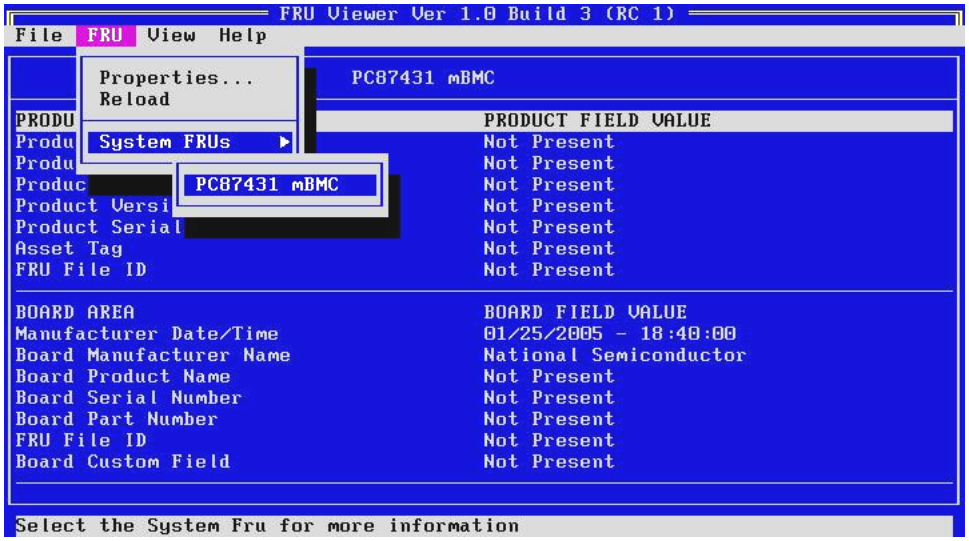


Figure 54. FRU Menu

- **Properties...**: Under the FRU pull-down menu, Properties, displays the system FRU properties. This is shown by Figure 55. Included in the properties are: the IPMI version, the number of FRUs in the system, and the number of IPMI-formatted FRUs.

Figure 55. FRU Properties

- **Reload**: Under the FRU pull-down menu, Reload clears the loaded FRUs and refresh the screen with FRUs from the system. This load procedure is identical to the load procedure that is used when you open the FRU Viewer Utility.

- **View**: The View menu lets you change the screen resolution within the FRU Viewer Utility.
  - **Resolution**: Under the View pull-down menu, Resolution provides a way for you to toggle between high and low resolution modes. When the resolution mode is changed, FRU data is read again from the server and displayed. When High resolution mode is selected, the utility displays FRU data as shown in Figure 56 .

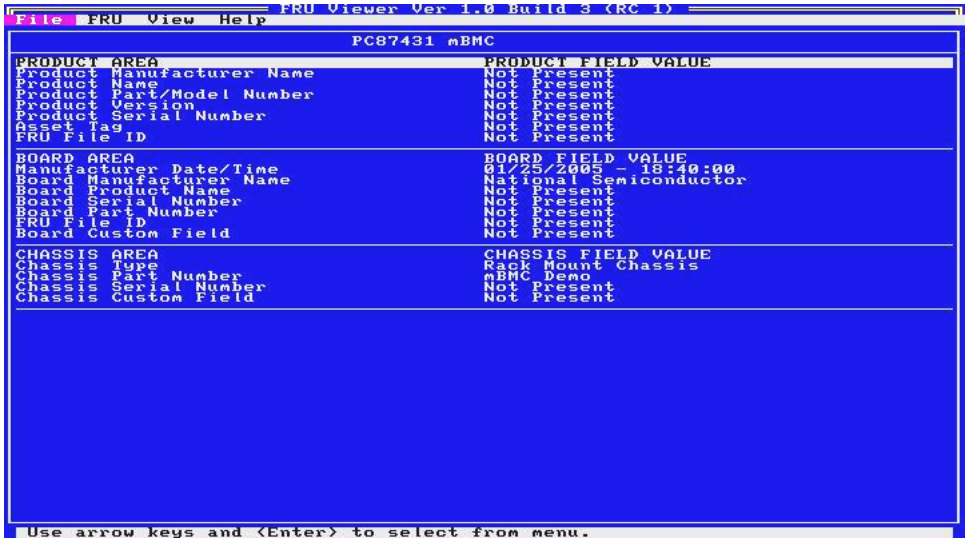


Figure 56. High Resolution Mode

- **Help**: The Help menu provides options for General Help and About, as described below.
  - **General Help**: From the Help pull-down menu, General Help provides information about how to use the FRU Viewer. The General Help window is divided into two panes. The top pane lists the main help topics and the bottom pane displays information about the selected topic. Use the arrow keys to select between topics and use the <F10> or <Tab> keys to move between panes. To dismiss the help window, press <Esc> key. See the figure below for the General Help screen.

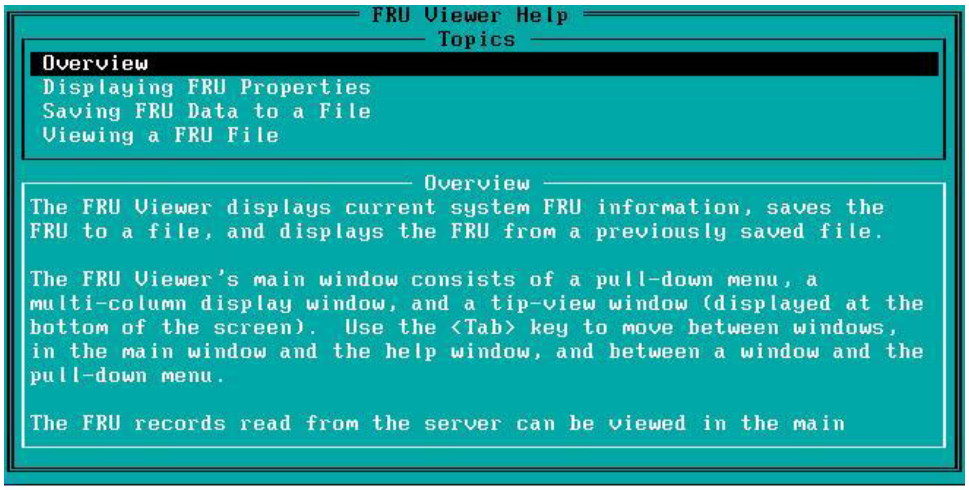


Figure 57. Help Window

  - **About**: From the Help pull-down menu, use the About option to display the version of the FRU Viewer Utility, the IPMI version, and copyright information. See the figure below.

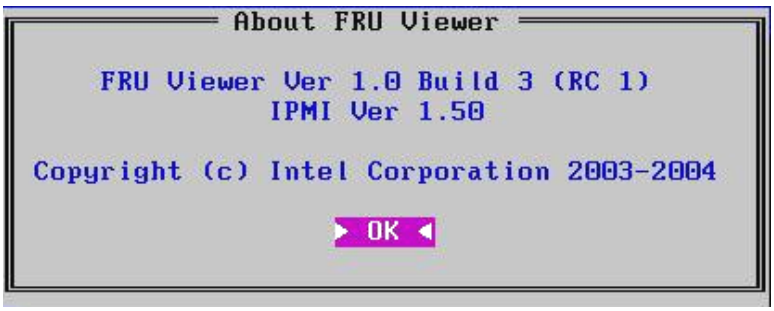


Figure 58. About Window

Save and Restore System Configuration (SYSCFG)

This command-line utility is used to:

- Save a subset of BIOS and firmware settings to a file
- Write BIOS and firmware settings from a file to a server
- Configure selected firmware settings
- Configure selected BIOS CMOS settings
- Change BIOS boot order
- Display selected firmware settings
- Display selected BIOS settings

Upgrading the Firmware

Use the Firmware Update Utility to upgrade the firmware. This utility is a DOS application program that updates the following server management controllers:

- Baseboard Management Controller (BMC)
- Hot-swap Controller (HSC)

You can run the utility interactively by providing commands through DOS, or you can run it in non-interactive mode by supplying the command with any options. For information on the command-line options, see Table 8.

Download the latest firmware release from
http://www.intel.com/support/motherboards/server/SR4850HW4/

Running the Firmware Update Utility

The following procedure shows how to use the interactive method to upgrade the firmware with the Firmware Update Utility.

1. Copy the following files to a USB flash memory device or CD-ROM. The current files are available from http://www.intel.com/support/motherboards/server/SR4850HW4/.
   - FWPIAUPD.exe
   - <name>.hex, where <name> is the hex image for the controller being updated. For example, the files lnbmc11.hex and lnbmc11.txt represent the firmware and release note files, respectively for BMC release 11. Write down the name of the HEX file. You will need it later.
   - Firmwareupdate.txt
   - <name>.txt
2. Boot to DOS.

3. Run the Firmware Update Utility through the Command-line Interface:
   - Invoke the utility by entering the command: `fwpiaupd [HEX File Name] [Options]`
   - To view the command-line help, type: `fwpiaupd /h` or `fwpiaupd /?`
   - To update the boot block, the operational block, and the pia area of the firmware from the command-line interface type `fwpiaupd [HEX File Name] /u /b /p`
   - To update the operational block only from the command-line interface type `fwpiaupd [HEX File Name] /op`
   - To update the hot-swap controller from the command-line interface, type: `fwpiaupd /dirhsc  /u /op /p name.hex`

NOTES

A jumper at location J1B1 on the Intel® Management Module must cover pins 1 and 2 to update the boot block. Cover pins 2 and 3 on this jumper to write-protect the BMC boot block.

Check the release notes for the firmware release that you are trying to update. It may require updating both boot code and operational code.

The utility also supports a command-line option to perform a direct update of the HSC runtime firmware and configuration over the SMBUS interface. For this, you needs to give the /dirhsc option to the utility. Boot block update is not supported.

4. Power down the system by pressing and holding the power button on the front control panel.
5. Disconnect the AC power cords from the system and wait 60 seconds.
6. Connect the AC power cords and power up the system by pressing the power button.

Firmware Update Utility Command-line Options

Table 8. FWPIAUPD Command-line Arguments for Sahalee BMC System

Parameter	Description
FWPIAUPD	The name of the utility.
<hexfile>	The name of the hex file for the operation. The path can be specified with the filename, e.g. c:\mydir\updatfil.hex. There is no default filename or extension.
/? Or /**h**elp	Displays the command-line help.
/ni	Forces non-interactive mode. If the specified operation requires user input or if the operation is not specified completely the utility will exit with an error.
/nodownrev	Prevents the utility from uploading a lower revision of firmware than present in the system.
/**u**pload	Uploads and verifies the firmware.
/**v**erify	Verifies the firmware.
/**b**oot	Applies the specified operation to the boot area. The operational and PIA (if present in the file) areas are also updated/verified.
/**o**p	Applies the specified operation to the operational area. The PIA area (if present in the file) is also updated/verified.
/pia	Applies the specified operation to the PIA area only. This will only affect the BMC at address 20.
/efs	Applies the specified operation to the EFS area only. This will only affect the BMC at address 20.
/**p**rimary	Selects the primary controller to update/verify with the specified file.
/**s**econdary	Selects the secondary controller to update/verify with the specified file.
/**i**nventory	Shows the firmware versions from the specified hex file. If no hex file is specified the -address option, or the default 20 is used. Shows the BMC, Firmware, and PIA versions from a file; and BMC and Firmware versions from the controller.
/address=XX	Specifies the optional address to use for the inventory command. The address is specified in Hexadecimal. The default address is 20.
/errlog=file	Set a file that the error stack should be written to in the event an error occurs. When there are no errors “successful termination” is written to the file. The command will overwrite an existing file. This file is useful for support to troubleshoot any problems that may occur.
Hidden Options	
/devinfo=file	Shows the device info block information from the specified hex file. If no hex file is specified the -address option, or the default 20 is used.
/noverify	Skips the verify stage after an update. This is only valid with the update operation.
/nopc	Overrides platform checking by disabling the compare of the current flash images device info block with that contained in the hex file.
/restartboot	Restarts the boot code by exiting fw transfer mode and re-entering fw transfer mode after programming the boot code.
/noexit	The utility will not exit fw transfer mode after entering it, except when the restartboot option is specified.

Table 9. FWPIAUPD Command-line Arguments for Direct HSC Update

Parameter	Description
FWPIAUPD	The name of the utility.
<hexfile>	The name of the hex file for the operation. The path can be specified with the filename, e.g. c:\mydir\updatfil.hex. There is no default filename or extension.
/? Or /**h**elp	Displays the command-line help.
/ni	Forces non-interactive mode. If the specified operation requires user input or if the operation is not specified completely the utility will exit with an error.
/nodownrev	Prevents the utility from uploading a lower revision of firmware than present in the system.
/**u**pload	Uploads and verifies the firmware.
/**v**erify	Verifies the firmware.
/**o**p	Applies the specified operation to the operational area.
/**p**rimary	Selects the primary controller to update/verify with the specified file.
/**s**econdary	Selects the secondary controller to update/verify with the specified file.
/**i**nventory	Shows the firmware versions from the specified hex file. If no hex file is specified the -address option, or the default C0 is used. Shows the HSC Firmware version from a file and from the controller.
/address=XX	Specifies the optional address to use for the inventory command. The address is specified in Hexadecimal. The default address is C0.
/errlog=file	Set a file that the error stack should be written to in the event an error occurs. When there are no errors “successful termination” is written to the file. The command will overwrite an existing file. This file is useful for support to troubleshoot any problems that may occur.
Hidden Options	
/devinfo=file	Shows the device info block information from the specified hex file. If no hex file is specified the -address option, or the default C0 is used.
/noverify	Skips the verify stage after an update. This is only valid with the update operation.
/nopc	Overrides platform checking by disabling the compare of the current flash images device info block with that contained in the hex file.
/noexit	The utility will not exit fw transfer mode after entering it.

Extensible Firmware Interface (EFI) Shell

The EFI Shell is an EFI application that allows other EFI applications to be launched, EFI device drivers to be loaded, and operating systems to be booted. The combination of the EFI firmware and the EFI Shell provides an environment that can be modified and adapted to many hardware configurations.

The EFI shell provides a set of basic commands used to manage files and EFI NVRAM shell and boot variables. A list of these basic commands is shown in Table 10. Extensive information is available on the EFI website at http://developer.intel.com/technology/efi.

For detailed information about the EFI Shell, its commands, and the ability to develop within the environment, see the *EFI Developer's Guide* at the EFI website. Other items that may be a great deal of help include the sample implementation and the EFI Application Toolkit. To obtain the sample implementation, click the "Tools" hyperlink at the left side of the EFI website screen. Click "Sample Implementation" to download the files to your hard drive.

In addition to the standard shell commands available in the EFI Shell, the EFI environment allows you to create your own shell commands and EFI applications. To develop your own shell commands, download the EFI Application Toolkit from the "Tools" hyperlink on the EFI website.

Table 10. EFI Shell Commands

Command	Description
<drive_name>:	Changes drives. For example, entering fs0: and pressing the <Enter> key changes the drive to the LS-240 drive
alias [-bdv] [*sname*] [*value*]	Sets or gets alias settings
attrib [-b] [+/- rhs] [*file*]	Views or sets file attributes
bcfg -?	Configures boot driver and load options in EFI NVRAM
botmaint	Launches Boot Maintenance Manager
break	Executes a breakpoint
cd [*path*]	Changes the current directory
cls [*background color*]	Clears the screen
comp *file1 file2*	Compares two files
connect [-r] [-c] Handle# ½DeviceHandle# DriverHandle#	Binds the EFI driver to a device and starts the driver
cp [-r] *file* [*file*] ... [*dest*]	Copies files and directories, [-r] = recursive
date [*mm/dd/yyyy*]	Gets or sets the date
dblk device [Lba] [Blocks]	Performs a hex dump of BlkIo Devices
devices [-b] [-1XXX]	Displays devices
devtree [-b] [-d]	Displays device tree
dh [-b] [-p *prot_id*] | [*handle*]	Dumps handle information
disconnect DeviceHandle# [DriverHandle# [ChildHandle#]	Disconnects device from driver
dmem {address] [size] [;MMIO]	Displays the contents of memory
dmpstore	Dumps the variable store

Command	Description
drivers [-b] [-lXXX]	Displays drivers
drvcfg [-c] [-lXXX] [-f] [-v] [-s]	Invokes the driver configuration protocol
drvdiag [-c] [-lXXX] [-s] [-e] [-m]	Invokes the driver diagnostics protocol
echo [[-on | -off] | [text]	Echoes text to the standard output device or toggles script echo
edit [*filename*]	Opens the text editor allowing you to create or edit a file
eficompress infile outfile	Compresses an EFI file
Efidecompress infile outfile	Decompresses an EFI file
endfor	Provides a delimiter for loop constructs (scripts only)
endif	Provides a delimiter for IF THEN constructs (scripts only)
for var in <set>	
goto label	Makes batch file execution jump to another label
guid [-b] [*sname*]	Dumps known guide ids
help [-b] [*internal_command*]	Displays help information
hexedit [[-f]FileName|[-d DiskName Offset Size]|[-m Offset Size]]	Edits in HEX mode
if [not] condition then	Provides conditional constructs (scripts only)
load *driver_name*	Loads a driver
loadbmp [-c] [-t] [-i[UGA Instance]] file	Displays a bitmap file on the screen
loadpcirom romfile	Loads a PCI option ROM
ls [-b] [*dir*] [*dir*] ...	Obtains directory listings
map [-bdvr] [*sname*[:]] [*handle*]	Maps *sname* to device path
mem [*address*] [*size*] [;MMIO]	Dumps Memory or Memory Mapped IO
memmap [-b]	Dumps memory map
mkdir *dir* [*dir*]	Creates a new directory
mm *address* [Width] [;Type] [n]	Memory Modify: type = Mem, MMIO, IO, PCI, [n] for non interactive mode when inside a .nsh file
mode [*col row*]	Sets or gets the current graphics mode
mount *BlkDevice* [*sname*[:]]	Mounts a file system on a block device
mv [src…] [dst]	Move one or more files/directories to destination
pause	Prompts to quit or continue (scripts only)
pci [*bus_dev*] [*func*]	Displays PCI device information
rconnect DeviceHandle# [DriverHandle# [ChildHandle#]] | [-r]	Reconnects one or more drivers from a device
reset [*reset_string*]	Performs a cold reset
rm *file*/*dir* [*file*/*dir*]	Removes files or directories
setsize file	Sets size of a new file
stall microseconds	Delays for the specified number of microseconds
time [*hh*:*mm*:*ss*]	Gets or sets the time
type [-a] [-u] [-b] *file*	Displays the contents of a file
ver	Displays version information
vol fs [*volume_label*]	Sets or displays a volume label

Part II: Service Guide

Part 2: Service Guide describes procedures that require internal server access.

The Service Guide exists for two audiences, Users and Qualified Service Technicians. The User Serviceable Platform Components chapter is intended for both Users and Qualified Server Technicians. One should be a qualified service technician to perform all procedures listed in the *Service Guide*.

5 User Serviceable Platform Components

Tools and Supplies Needed

- Phillips* #2 screwdriver
- Flat head screwdriver
- Antistatic wrist strap (recommended)

Equipment Log

To record the model and serial numbers of the server, all installed options, and any other pertinent information about the server, see “Equipment Log”.

Removing and Installing the Top Cover

WARNING

Make sure the rack is anchored securely so it will not tilt forward when the server chassis is extended. A crush hazard exists should the rack tilt forward. This could cause serious injury.

CAUTIONS

For proper cooling and airflow, do not operate the server with the cover removed. Do not leave the chassis cover open or a system fan removed any longer than necessary; system cooling could be reduced.

The server comes with a removable top cover that allows the PCI cards, memory boards, and the system fans to be hot-swapped, and the system components to be serviced. **With the exception of the components described in this chapter, all servicing must be done by a qualified service technician.**

Removing the Top Cover

To remove the top cover, follow these instructions:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. If the chassis is rack-mounted, slide the chassis out far enough to expose the entire top cover.
3. Unscrew the two captive screws on the faceplate of the chassis.
4. Slide the top cover toward the back of the chassis until the tabs on the cover disengage with the slots in the chassis.
5. Lift the cover to remove it.

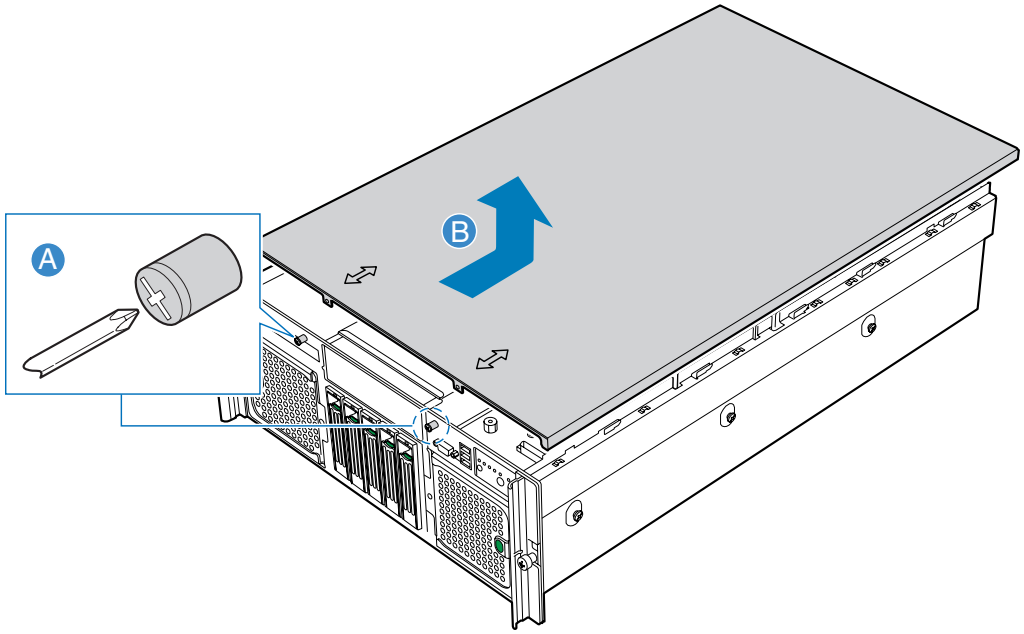


Figure 59. Removing the Top Cover

Installing the Top Cover

To install the top cover, follow these instructions:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information"
2. Place the top cover on the chassis so the tabs on the cover align with the slots on the chassis.
3. Slide the top cover towards the front of the chassis until it is fully closed.
4. Tighten the captive screws on the faceplate of the chassis.
5. Slide the server into the rack.

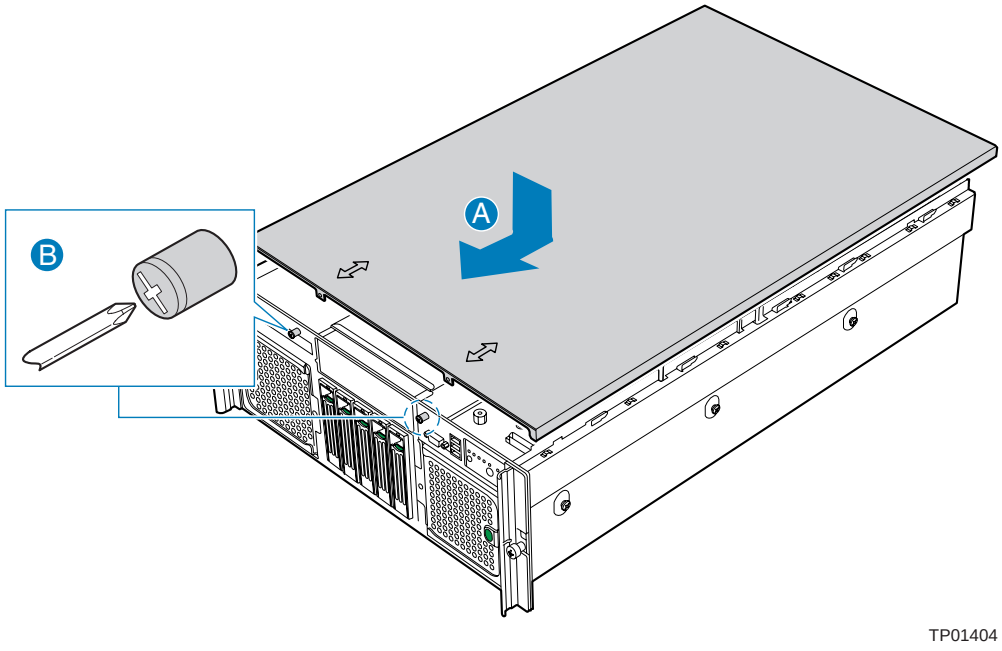


Figure 60. Installing the Top Cover

Hot-swapping a System Fan Assembly

Two cooling fan assemblies are located at the front of the chassis. Each assembly contains two fans. You cannot replace the individual fans within the assembly, but you can replace each fan assembly. You can replace a failed cooling fan assembly without turning off the power to the server only if the remaining fan in the assembly is fully operational. Each fan assembly uses an amber LED to indicate a failed fan condition. If the amber LED is on, the fan assembly needs to be replaced. The LED remains off during normal operation.

CAUTION

System cooling is reduced during the fan replacement process. Do not leave a system fan removed for longer than two minutes.

Do not touch the fan blades while they are turning.

1. Observer the safety, ESD, and other precautions described in "Safety Information."
2. Locate the fan assembly you are replacing. If a fan in the assembly has failed, the amber LED will be lit. See letter "A" in Figure 61.
3. Press the green button on the front of the fan assembly to release the handle. See letter "B" in the figure.
4. Use the handle to pull the fan from the system. See letter "C" in the figure.

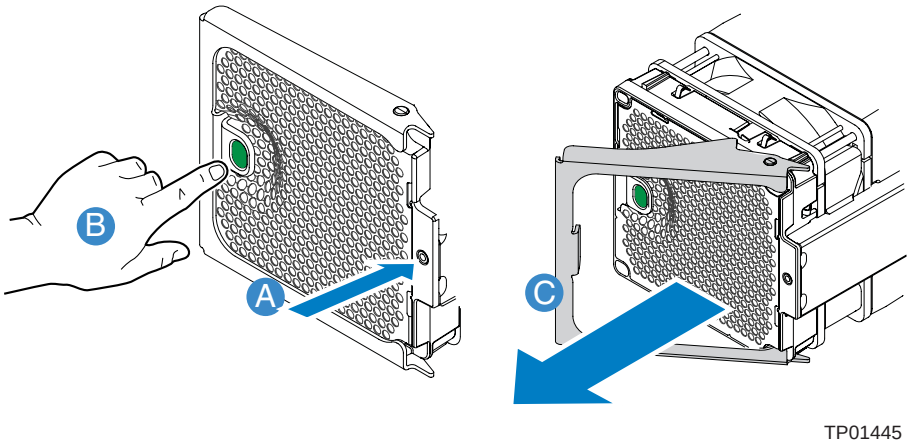


Figure 61. System Fan Location and Removal

5. Open the handle on the replacement fan assembly.
6. Slide the replacement fan into the fan bay. See letter “A” in Figure 62.
7. Push the handle closed until it clicks into place. See letter “B” in the figure

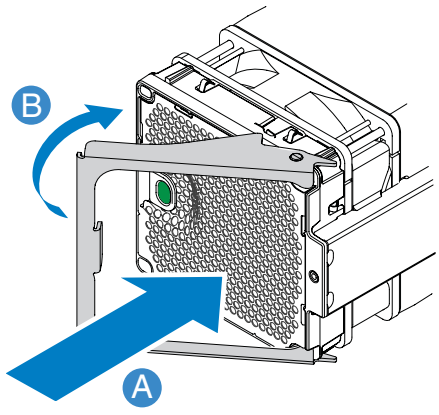


Figure 62. System Fan Module Installation

Hot-swapping Hard Disk Drives

The server supports five hot-swap drive carriers. Each carrier holds a standard one-inch high SCSI-2 or SCSI-3 hard drive.

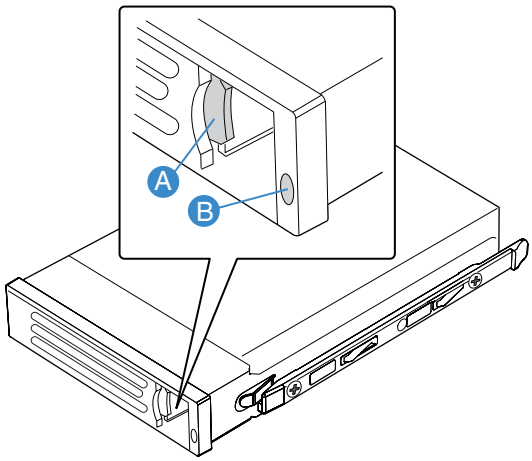
The procedures in this section describe how to determine drive status, remove a faulty drive, and install a new drive. If a drive is in a redundant configuration, you can install or replace a hot-swap hard disk drive without powering down the server.

CAUTION

To ensure proper airflow and server cooling, all drive bays must contain either a carrier with a hard drive installed in it or a carrier with an air baffle installed.

Determining Drive Status

The drive carriers contain light-pipes that allow dual-color LED indicators to show through the bezel to display the hard disk drive status, as shown by Figure 63.



Item	Description
A	Latch
B	Dual-color activity LED: ▪ Amber flashing: Indicates the hard drive is active. ▪ Amber and green alternating flashing: Indicates hard drive is powered on and is rebuilding RAID, or it is powered on and has a fault condition. ▪ Amber flashing: Indicates hard drive is not powered on and has a fault condition. ▪ Unlit: Indicates no hard drive is installed in that location, or a drive is installed but has no current activity.

Figure 63. Hard Disk Drive Carrier

Removing a Hard Disk Drive

1. Observer the safety, ESD, and other precautions described in "Safety Information."
2. Press on the green drive carrier latch. See letter "A" in Figure 64.
3. Pull the handle to remove the drive cage from the chassis. See letter "B" in the figure.
4. Place the drive cage on a clean, static-free work surface.

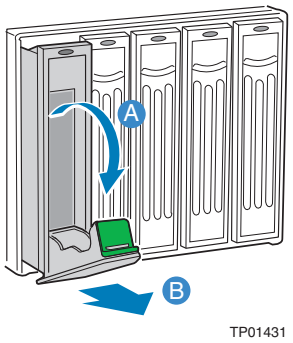


Figure 64. Removing a Hard Disk Drive Carrier

Mounting a Hard Disk Drive in a Carrier

To mount a hard drive in a carrier:

1. Observer the safety, ESD, and other precautions described in "Safety Information."
2. Remove the hard disk drive from the protective wrapper and place it on a clean ESD-protected work surface.
3. Record the model and serial number of the drive in your "Equipment".
4. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.
5. If the drive carrier is installed in the chassis, remove it and place it on a clean static-free work surface. For instructions, see "Removing a Hard Disk Drive".
6. Remove the four screws that hold the air baffle in place. See letter "A" in Figure 65.
7. Remove the air baffle from the carrier. See letter "B" in the figure.
8. Store the air baffle for future reinstallation.

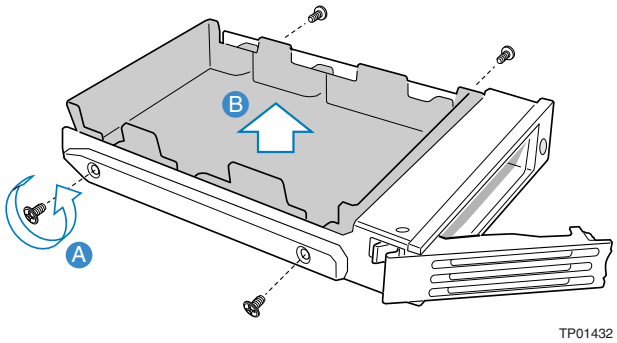


Figure 65. Removing the Air Baffle from the Hard Disk Drive Carrier

9. Position the carrier as shown by Figure 66.
10. Position the drive in the carrier with the label-side up and the connector end of the drive facing the back of the carrier. See letter “A” in the figure.
11. Align the holes in the drive to the holes in the drive carrier slide track and insert the screws that you were attached to the air baffle. See letter “B” in the figure.

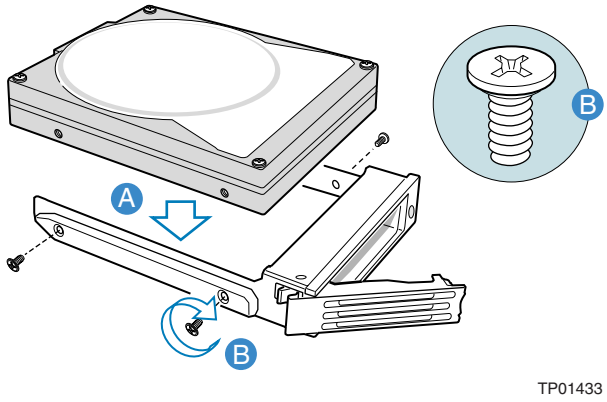


Figure 66. Attaching the Hard Disk Drive to the Carrier

Installing a Hard Disk Drive Assembly

1. Observer the safety, ESD, and other precautions described in “Safety Information”.
2. With the drive carrier handle fully open, slide the drive carrier all the way into the drive bay in the chassis. See letter “A” in Figure 67.
3. Use the handle to push the carrier until it docks in the chassis, then close the drive carrier handle. See letter “B” in the figure.

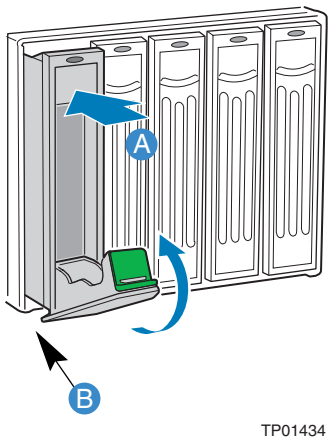


Figure 67. Installing Hard Disk Drive into Server

Hot-swapping Power Supplies

If your server is configured with two power supplies, you can replace a failed or failing power supply without powering down the server.

CAUTION

Because of chassis airflow disruption, a power supply bay should never be vacant for more than two minutes when the server power is on. Exceeding five-minutes might cause the system to exceed the maximum acceptable temperature and possibly damage system components.

Removing a Power Supply

CAUTION

Any unoccupied power supply slots must be covered with a filler panel. Uncovered slots can disrupt the airflow used for cooling the system.

1. Observer the safety, ESD, and other precautions described in "Safety Information".
2. Remove the AC power cord from the power supply to be removed.
3. Unscrew the thumb latch to unlock the power supply handle. See letter "A" in Figure 68.
4. Open the handle on the power supply. See letter "B" in the figure.
5. Pull the power supply from the chassis and set it on a clean, ESD-protected work surface. See letter "C" in the figure.
6. Install a replacement power supply or a filler panel. For instructions, see "Installing a Power Supply".

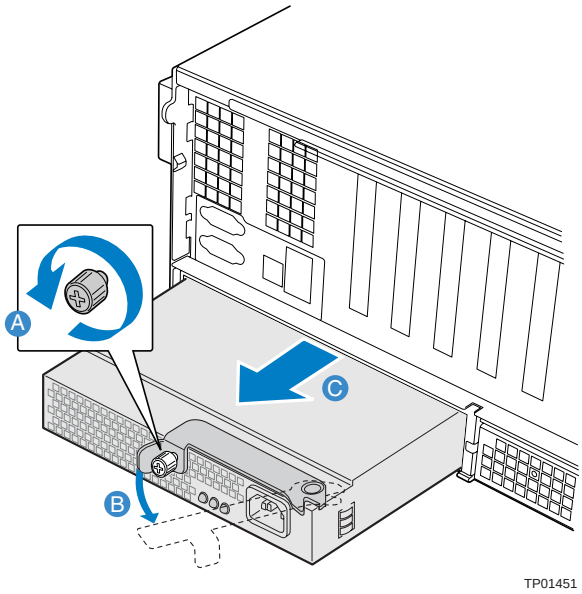


Figure 68. Removing a Power Supply

Installing a Power Supply

1. Remove the new power supply from the protective packaging and place it on a clean ESD-protected work surface.
2. Record the model and serial numbers of the power supply in your "Equipment Log".
3. Remove the filler panel from the back of the chassis, if installed.
4. Position the power supply as shown in Figure 69, with the handle at the right side of the power supply.
5. Slide the new power supply partway into the power supply bay. See letter "A" in Figure 69.
6. With the handle in the open position, push the power supply into the power supply fully into the bay until it stops.
7. Rotate the handle to the closed position. See letter "B" in the figure.
8. Tighten the thumbscrew to secure the power supply. See letter "C" in the figure.

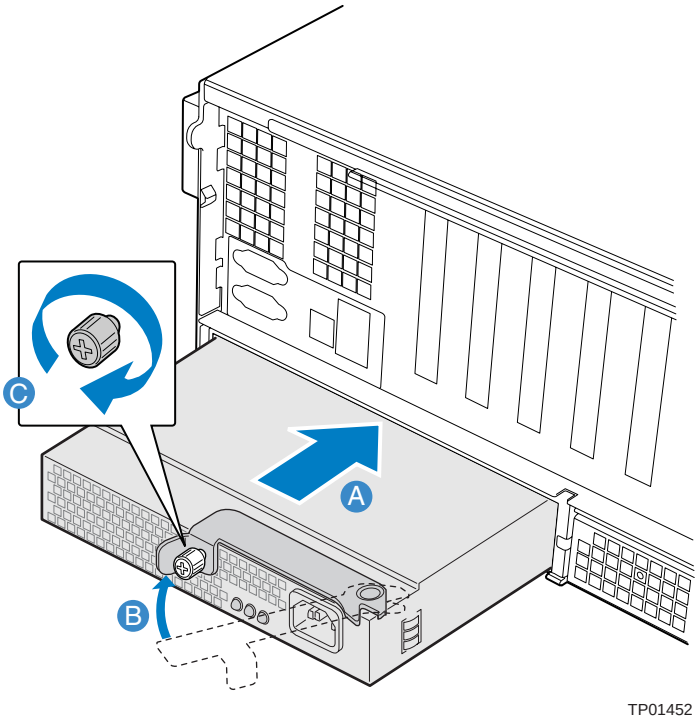


Figure 69. Installing a Power Supply

9. Plug the power cord into the AC receptacle on the power supply.
10. Use the LEDs on the power supply to confirm the power supply is functioning.

Installing and Removing PCI Cards

This section outlines the procedures for performing a Hot-plug operation with PCI cards and installing and removing non-Hot-plug PCI cards. Cards can be hot-swapped in PCI slots 1 through 5. The server must be powered down to install or remove a card from PCI slots 6 and 7.

CAUTION

Expansion slot covers must be installed on all vacant slots to maintain the electromagnetic emission characteristics of the server and to ensure proper cooling of the system.

See the BIOS release notes for the BIOS that is installed on the system to see if the attention button can be used to initiate the slot power down.

Removing Hot-plug PCI Card with Operating System Hot-plug Interface

CAUTION

Only PCI add-in cards in PCI slots 1 through 5 are hot-swappable. If you are adding or removing a PCI card from PCI slot 6 or 7, see "Removing a Non-Hot-Plug PCI Card" and "Installing a Non-Hot-plug PCI Card".

1. Observer the safety, ESD, and other precautions described in "Safety Information".
2. Remove the top cover. For instructions, see "Removing the Top Cover".
3. If you are using a Microsoft* Windows* operating system, double-click the "Unplug/Eject" icon in the taskbar to open the "Unplug or Eject Hardware" menu.
4. Select the device to be removed and click "Stop".
5. Wait for the PCI slot power LED at the rear if the slot to turn off.
6. Disconnect any cables attached to the card.

7. Rotate the retention latch at the rear of the card slot into the up position. See letter “A” in Figure 70.
8. If a long card is installed, press the blue plastic piece at the front of the card.
9. Pull up on the card to remove it. See letter “B” in the figure.

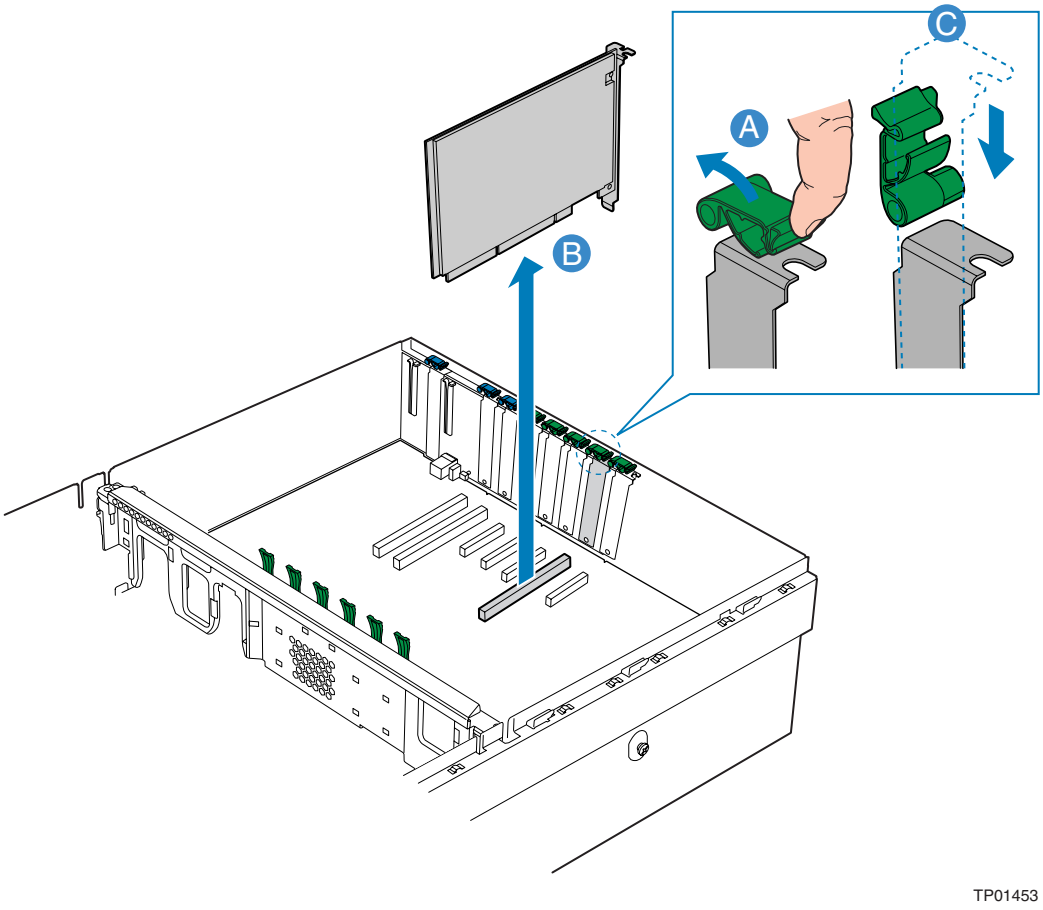


Figure 70. Removing a PCI Card

10. Store the card in an antistatic protective wrapper.
11. Install an expansion slot cover over the empty slot or install a replacement PCI card:
    - To install an expansion slot cover: align the cover with the slot from the rear of the chassis. Press the cover into the slot. Rotate the bracket at the rear of the card slot into the down position. See letter “C” in Figure 70.
    - To install a replacement PCI card: see “Installing a Hot-plug PCI Add-in Card”.
12. Install the top cover. For instructions, see “Installing the Top Cover”.

Removing Hot-plug PCI Card with Hardware Hot-Plug Interface

CAUTION

Only PCI add-in cards in PCI slots 1 through 5 are hot-swappable. If you are adding or removing a PCI card from PCI slot 6 or 7, see "Removing a Non-Hot-Plug PCI Card" and "Installing a Non-Hot-plug PCI Card".

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Remove the top cover. For instructions, see "Removing the Top Cover".
3. Press the attention button for the slot. See Figure 71 to locate the attention button.

NOTE

Press the attention button again within five seconds to abort the Hot-plug operation.

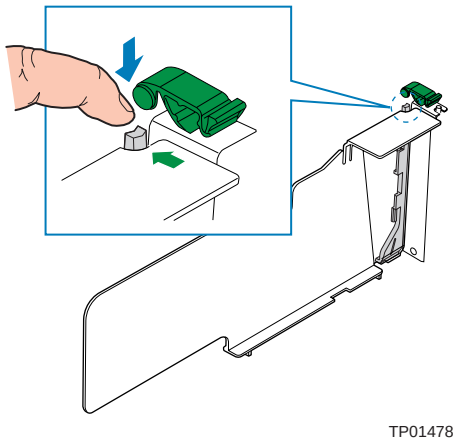


Figure 71. PCI Slot Attention Button

4. Wait for the power LED on the slot to turn off.
5. Disconnect any cables to the PCI card.
6. Rotate the retention latch at the rear of the card slot into the up position. See letter "A" in Figure 70.
7. If a long card is installed, press the blue plastic piece at the front of the card.
8. Pull up on the card to remove it.
9. Store the card in an anti-static bag.
10. Install an expansion slot cover over the empty slot or install a replacement PCI card:
    - To install an expansion slot cover: align the cover with the slot from the rear of the chassis. Press the cover into the slot. Rotate the retention latch at the rear of the board slot into the down position. See letter "C" in Figure 70.
    - To install a replacement PCI card: see "Installing a Hot-plug PCI Add-in Card".
11. Install the top cover. For instructions, see "Installing the Top Cover".

Installing a Hot-plug PCI Add-in Card

CAUTION

Only PCI add-in cards in PCI slots 1 through 5 are hot-swappable. If you are adding or removing a PCI card from PCI slot 6 or 7, see "Removing a Non-Hot-Plug PCI Card" and "Installing a Non-Hot-plug PCI Card".

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. If your server is operating, use your operating system or GUI application to power down the PCI slot.
3. Remove the top cover. For instructions, see "Removing the Top Cover".
4. Being careful not to touch the components or gold edge-connectors on the add-in card, remove the card from the anti-static bag, and place it on a clean, ESD-protected work surface.
5. Record the serial number of the board and any jumpers or switch settings according to the board manufacturer's instructions. Record these settings in the "Equipment Log".
6. Rotate the retention latch at the rear of the card slot into the up position. See letter "A" in Figure 72.
7. If necessary, remove the expansion slot cover in the slot you are using by sliding it up from inside the chassis. See letter "B" in the figure.
8. Align and slide the adapter board down until it seats in its connector. If you are installing a full-length card, guide the front of the card into the slot shown by letter "D" in the figure.
9. Press the card down firmly until it seats into the slot.

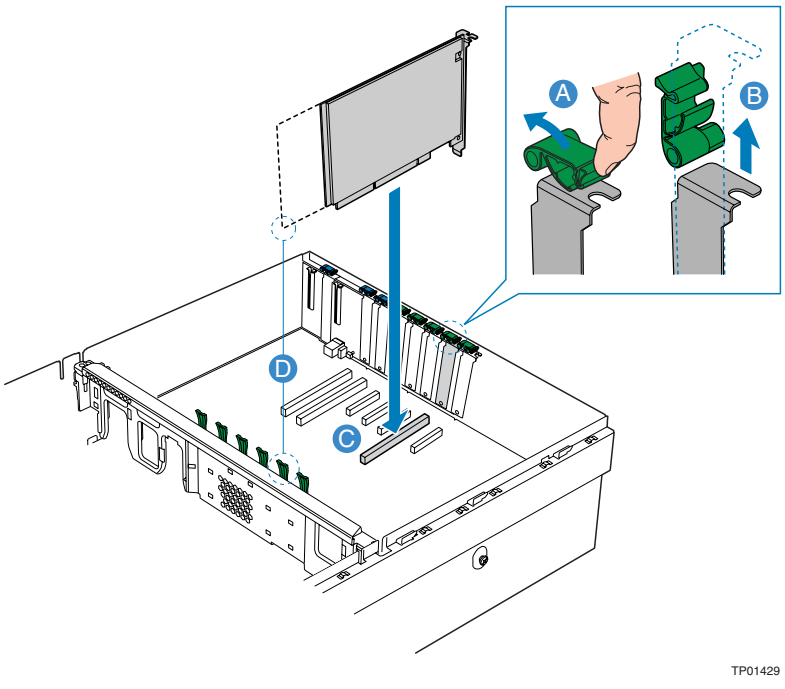


Figure 72. Installing a Hot-plug PCI Add-in Card

CAUTION

Some accessory/option board outputs exceed Class 2 or limited power source limits. Use appropriate interconnecting cabling in accordance with the national electrical code.

10. Rotate the retention latch at the rear of the card slot into the down position.
11. Connect any required cabling to the PCI add-in board.
12. If using the operating system Hot-plug interface:
    - Wait for the software user interface to appear on your monitor and then confirm the device to be enabled.
    - Wait for the power LED to turn on.

    If using the hardware Hot-plug interface:
    - Press the attention button for the slot. If you need to abort the Hot-plug operation, press the attention button again within five seconds.
    - Wait for power LED to turn on.

NOTE

For either the operating system interface or the hardware Hot-plug interface, if the attention LED is blinking, a power fault has occurred. You may need to remove the adapter, wait for the LED to turn off, and re-start the hot-insertion.

13. Install the top cover. For instructions, see "Installing the Top Cover".

Removing a Non-Hot-Plug PCI Card

PCI cards installed in slots 1 through 5 are hot-swappable. If you are adding or removing a card from one of these slots, you can do so without powering down the server. If you wish to do so, follow the instructions under "Removing Hot-plug PCI Card with Operating System Hot-plug Interface" or "Removing Hot-plug PCI Card with Hardware Hot-Plug Interface", and "Installing a Hot-plug PCI Add-in Card".

CAUTION

Damage to the system occurs if power is not removed from the system prior to removal or installation of non-Hot-plug boards.

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords to remove power from the server.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Disconnect any cables attached to the PCI card.

6. Rotate the retention latch at the rear of the card slot into the up position. See letter “A” in Figure 70.
7. Pull up on the card to remove it.
8. Place the PCI card on a clean, static-free work surface or inside a static-free plastic bag.
9. Install an expansion slot cover over the empty slot or install a replacement PCI card:
   - To install an expansion slot cover: align the cover with the slot from the rear of the chassis. Press the cover into the slot. Rotate the bracket at the rear of the chassis into the down position. See letter “C” in Figure 70.
   - To install a replacement PCI card: see “Installing a Non-Hot-plug PCI Card”.
10. Install the top cover. For instructions, see “Installing the Top Cover”.

Installing a Non-Hot-plug PCI Card

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Being careful not to touch the components or the gold edge connectors on the PCI card, remove it from its protective wrapper. Place the card component-side up on a clean, static-free work surface.
6. Record the serial number of the PCI card in your “Equipment Log”.
7. Rotate the retention latch at the rear of the card slot into the up position. See letter “A” in Figure 72.
8. If necessary, remove the expansion slot cover in the slot you are using by sliding it up from inside the chassis. See letter “B” in Figure 72.
9. Align and slide the adapter board down until it seats in its connector. If you are installing a full-length card, guide the front of the card into the slot shown by letter “D” in Figure 72.
10. Press the card down firmly until it seats into the slot.
11. Rotate the retention latch at the rear of the card slot into the down position.
12. Attach the required cables to the PCI card.
13. Install the top cover. For instructions, see “Installing the Top Cover”.

Installing and Removing the Fibre Channel Module

Removing the Fibre Channel Module

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Disconnect any cables attached to the Fibre Channel Module.
6. Remove the memory board or memory board air baffle from Slot C. For instructions, see "Cold Removal of Memory Board".
7. Rotate the retention lever at the rear of the Fibre Channel Module slot into the up position.
8. Pull up on the Fibre Channel Module to remove it.
9. Place the Fibre Channel Module inside a static-free plastic bag on a clean, static-free work surface.
10. Install an expansion slot cover over the empty slot or install a replacement Fibre Channel Module:
    - To install an expansion slot cover: align the cover with the slot from the rear of the chassis. Press the cover into the slot. Rotate the retention lever at the rear of the Fibre Channel Module slot into the down position.
    - To install a replacement Fibre Channel Module: see "Installing the Fibre Channel Module".
11. Install the memory board or memory board air baffle into Slot C. For instructions, see "Cold Insertion of a Memory Board".
12. Install the top cover. For instructions, see "Installing the Top Cover".

Installing the Fibre Channel Module

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Remove the memory board or memory board air baffle from Slot C. For instructions, see “Cold Removal of Memory Board”.
6. Being careful not to touch the components or gold edge-connectors on the Fibre Channel Module, remove the Module from the anti-static bag, and place it on a clean, ESD-protected work surface.
7. Record the serial number of the Fibre Channel Module in your “Equipment Log”.
8. Rotate the retention lever at the rear of the Fibre Channel Module slot into the up position. See letter “A” in Figure 73.
9. If necessary, remove the expansion slot cover in the slot you are using by sliding it up from inside the chassis. See letter “B” in the figure.
10. Align and slide the adapter board down until it seats in the connector. See letter “C” in the figure.
11. Press the card down firmly until it seats into the slot.

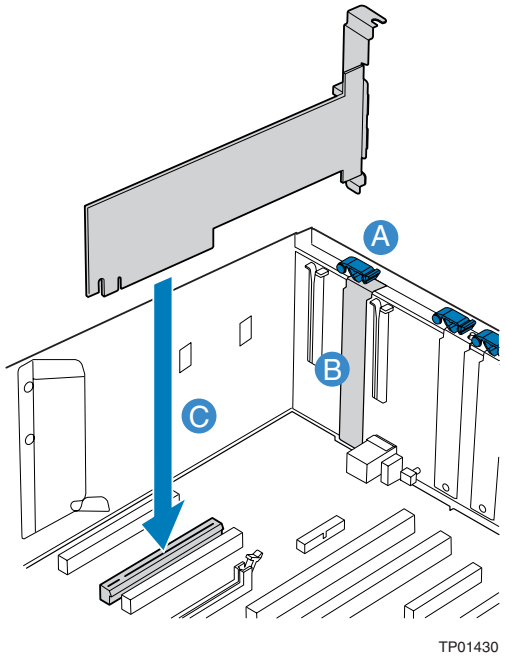


Figure 73. Installing a Fibre Channel Module

12. Attach any required cables to the Fibre Channel Module.
13. Install the memory board or memory board air baffle into Slot C. For instructions, see “Cold Insertion of a Memory Board”.
14. Install the top cover. For instructions, see “Installing the Top Cover”.

Installing and Removing Memory Boards

Memory boards can be configured in a redundant or a non-redundant configuration. Memory boards configured using RAID or mirroring are in a redundant configuration. If a memory board that is configured in a redundant configuration has a memory DIMM or a memory board fault, the memory board and / or DIMM containing the fault can be removed and replaced while the system is powered on.

Memory boards that are configured in a non-redundant configuration (including memory boards configured with spare memory) must not be removed while the system is powered on.

The following Hot-plug memory options are available.

- **Memory Hot-Replace:** While the system is in operation and configured with a RAID or Mirroring configuration, you can replace a failed memory board. The replacement board must include an identical memory capacity. The system will test, initialize, and rebuild the data on the memory board and then include this board in the system memory configuration. The activity is transparent to the operating system,
- **Memory Hot-Add:** While the system is in operation and configured with a RAID or Mirroring configuration, you can increase the memory capacity of the system while the operating system is active. For RAID remove and add memory to one memory board at a time. Replace the removed memory board before adding memory to another board. If your server is configured in the Maximum Compatibility configuration, a new memory board can be added to an empty slot. When the initialization is complete, the operating system is informed of the new memory.

⚠ CAUTION

Do not attempt to hot-remove or hot-add a memory board in a non-redundant configuration. If your server is not configured in the BIOS setup utility for Maximum Compatibility, Memory RAID, or Memory Mirroring, you must power down your server before removing or installing any memory board or memory DIMMs. For instructions, see “Cold Removal of Memory Board” and “Cold Insertion of a Memory Board”.

Removing Memory Board Air Baffle

Either a memory board or a memory board air baffle must be installed in each memory board slot.

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Remove the top cover. For instructions, see "Removing the Top Cover".
3. Insert your fingers into the two holes on the top of the memory board air baffle.
4. Push the tab between the two holes in the direction of the arrow. See letter "A" in Figure 74.
5. Lift the memory board air baffle from the server. See letter "B" in the figure.

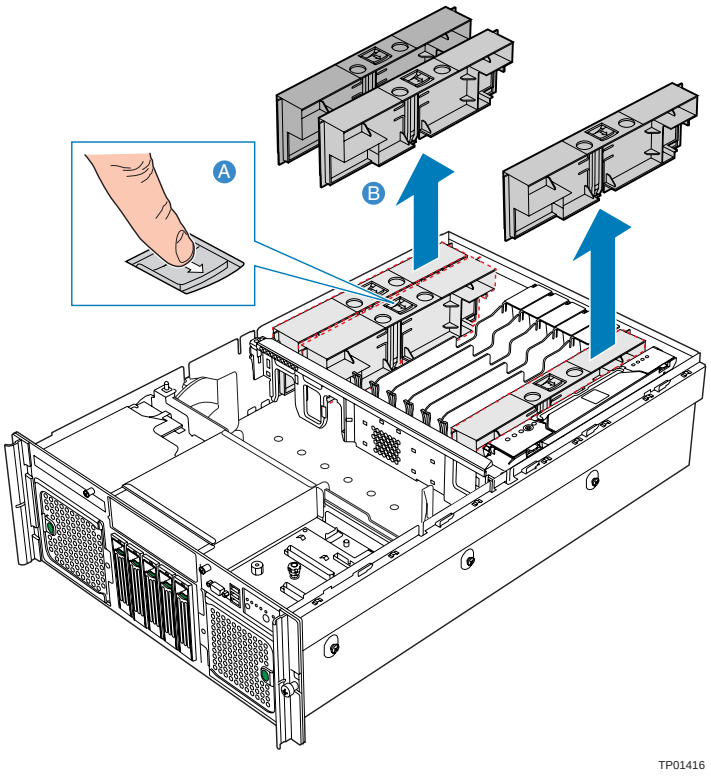


Figure 74. Removing Memory Board Air Baffle

Installing Memory Board Air Baffle

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Remove the top cover. For instructions, see "Removing the Top Cover".
3. Insert the memory board air baffle into the memory board slot with the arrow on the tab pointing to the right. The memory board air baffle will lock into the memory board slot. See Figure 75.

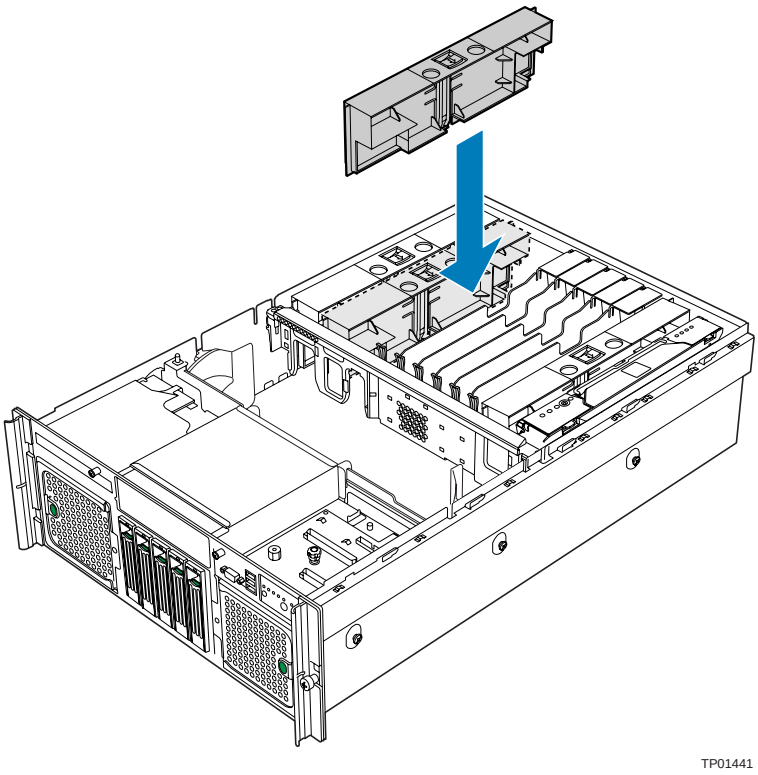


Figure 75. Installing Memory Board Air Baffle

Hot-removal of a Memory Board

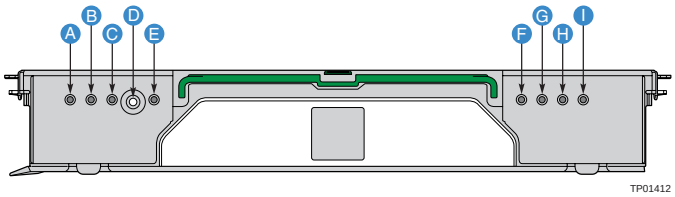
NOTE

If you remove a memory board from your server, either you must replace it with a replacement memory board or you must install a memory board air baffle.

If the memory board is installed in a system that is powered on, the following steps are required to ensure proper hot-removal so that the system will not crash:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Remove the top cover. For instructions, see "Removing the Top Cover".

3. Press the attention button on the memory board. The power LED will begin to flash. See letter "E" in Figure 76.



Item	Feature	Description
A	Mirror Configuration (green)	LED on: The server is in Memory Mirror configuration. This memory board mirrors another memory board in the system. LED off: The server is not configured for Memory Mirror
B	RAID Configuration (green)	LED on: The server is in RAID Memory configuration. LED off: server is not in a RAID configuration.
C	Hot-plug Attention LED (amber)	LED off: Normal operation. LED on: Memory Hot-plug transition event.
D	Attention Button	Press this button to perform a hot-insertion or hot-removal of a memory board.
E	Power LED (green)	LED on: Power is detected. The memory board is powered on. LED off: Power is not detected. LED flashing: The memory board is in a Hot-plug event.
F	DIMM 1B Status LED (amber)	LED on: Error LED for DIMM slot 1B (J3A1). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.
G	DIMM 1A Status LED (amber)	LED on: Error LED for DIMM slot 1A (J3A2). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.
H	DIMM 2B Status LED (amber)	LED on: Error LED for DIMM slot 2B (J3B1). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.
I	DIMM 2A Status LED (amber)	LED on: Error LED for DIMM slot 2A (J3B2). The DIMM is malfunctioning and needs to be replaced. LED off: The DIMM is functioning properly.

Figure 76. Memory Module Buttons and LEDs

4. After the Hot-plug Attention LED stops flashing and turns off (letter "C" in the figure), make sure the Power LED for the memory board is also off (letter "E" in the figure).

⚠ CAUTION

Do not attempt to remove any memory board while any of the LEDs are either on or blinking. If the attention LEDs do not turn off, your configuration may not support Hot-plug memory board activity. For instructions on non-Hot-plug memory board maintenance, see "Cold Removal of Memory Board" and "Cold Insertion of a Memory Board".

5. Once all the board LEDs are off, the latch on the handle (letter “A” in Figure 77) and lift the memory board handle (letter “B” in the figure).
6. Pull up on the memory board handle to lift the memory board from the server. See letter “C” in the figure.
7. Install DIMMs, then reinstall the memory board, or install a memory board air baffle:
   - For instructions to install DIMMs, see “Installing and Removing DIMMs”.
   - For instructions to install the memory board air baffle, see “Hot-insertion of a Memory Board”.

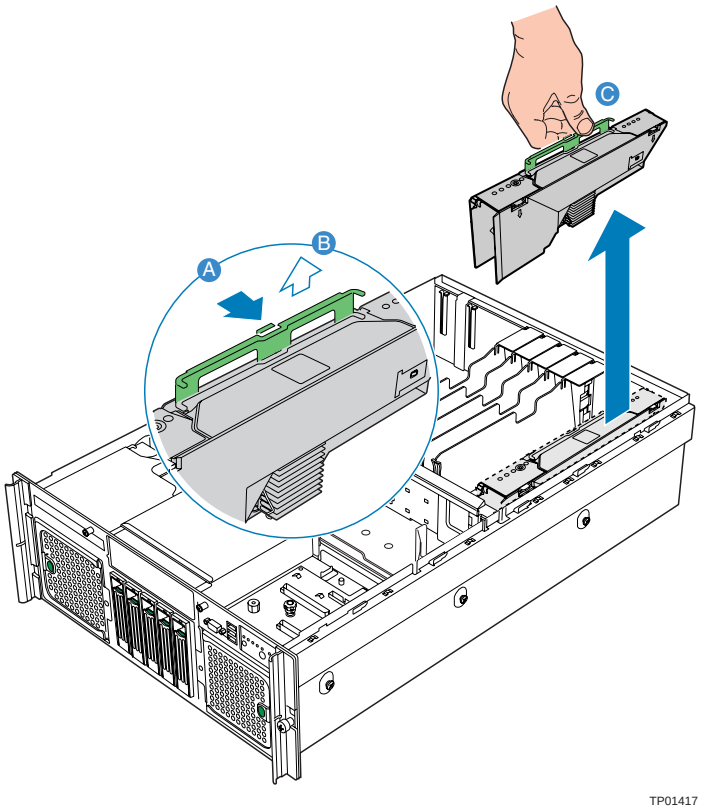


Figure 77. Memory Board Removal

NOTE

If you fail to follow the proper Hot-plug Remove process you must unlock the memory module by unlatching the handle shown in the figure above. By pulling the handle, power to the slot will be immediately disabled. The “surprise hot-remove” action may cause the operating system to crash, but will not electrically damage the system.

Hot-insertion of a Memory Board

1. Add or replace memory DIMMs as needed. For instructions, see “Installing and Removing DIMMs”.
2. Ensure the handle on the memory board is in the open / up position.
3. Align the ends in the card guides and slide the memory board into the memory board slot. See letter “A” in Figure 78.
4. Push the handle down into the fully-locked position. See letter “B” in the figure.
5. Install the top cover. For instructions, see “Installing the Top Cover”.

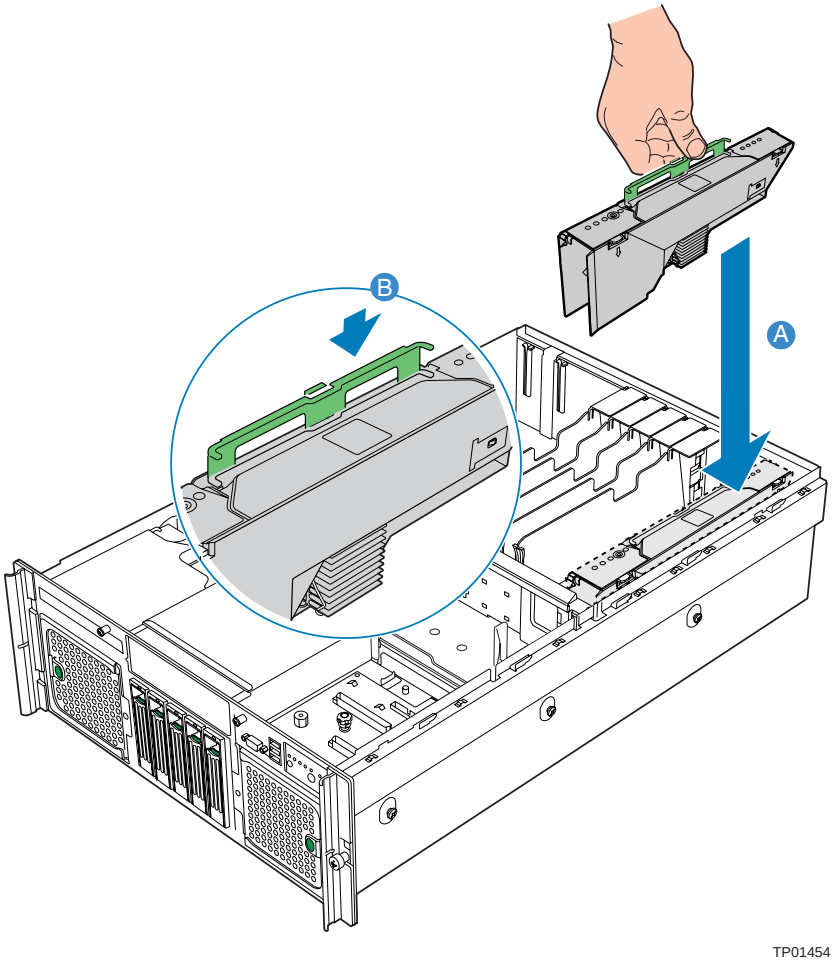


Figure 78. Installing Memory Board

Cold Removal of Memory Board

NOTE

If you remove a memory board from your server, either you must replace it with a replacement memory board or you must install a memory board air baffle.

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Press the latch on the handle (letter “A” in Figure 77) and lift the memory board handle (letter “B” in Figure 77).
6. Pull up on the memory board handle to lift the memory board from the server. See letter “C” in Figure 77.
7. Install DIMMs, then reinstall the memory board, or install a memory board air baffle:
   - For instructions to install DIMMs, see “Installing and Removing DIMMs”.
   - For instructions to install the memory board air baffle, see “Cold Insertion of a Memory Board”.
8. Install the top cover. For instructions, see “Installing the Top Cover”.

Cold Insertion of a Memory Board

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Install DIMMs onto the memory board. For instructions, see “Installing and Removing DIMMs”.
6. Remove a memory board air baffle from the server. For instructions, see “Cold Removal of Memory Board”.
7. Ensure the handle on the memory board is in the open / up position.
8. Align the ends in the card guides and slide the memory board into the memory board slot. See letter “A” in Figure 78.
9. Push the handle down into the fully-locked position. See letter “B” in Figure 78.
10. Install the top cover. For instructions, see “Installing the Top Cover”.

Installing and Removing DIMMs

To remove or install the DIMMs, remove the memory board from the chassis and install the DIMMs on the memory board, then reinstall the memory board. Be sure to follow the "Rules for Adding Memory".

CAUTION

Do not attempt to hot-remove or hot-add a memory board in a non-redundant configuration. If your server is not configured in the BIOS setup utility for Maximum Compatibility, Memory RAID, or Memory Mirroring, you must power down your server before removing or installing any memory board or memory DIMMs. For instructions, see "Cold Removal of Memory Board" and "Cold Insertion of a Memory Board".

Rules for Adding Memory

The following rules apply when adding memory to the memory boards:

- DIMMs must be populated in pairs, referred to as a bank. The two banks of DIMMs are defined on each memory board as:
  - Bank 1: DIMM connectors 1A and 1B
  - Bank 2: DIMM connectors 2A and 2B
- Within a single bank, both DIMMs must be identical. (Identical DIMM size and identical number of devices on the DIMM.
- The system does not support mixed-sized DIMMs or DIMMs from different vendors within the same bank.
- If installing a single bank of DIMMs on the memory board, install in Bank 1.
- If installing both a bank of single- ranked DIMMs and a bank of dual ranked DIMMs on the same memory board, install the double-sided DIMMs in Bank 1 and the single sided DIMMs in Bank 2.
- For best performance, use identical memory DIMMs on each memory board.
- Use only DDR2 DIMMs. Other DIMMs will not fit into the socket. Attempts to force a non-DDR2 DIMM into a socket will damage either the socket or the DIMM.

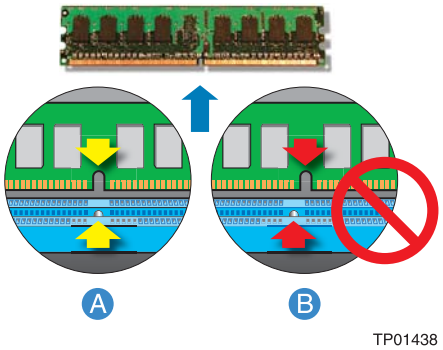


Figure 79. Use Only DDR2 DIMMs

Installing DIMMs

CAUTIONS

Use extreme care when installing a DIMM. Applying too much pressure can damage the connector. DIMMs are keyed and can be inserted in only one way.

Hold DIMMs only by the edges. Do not touch the components or gold edge connectors.

Install DIMMs with gold-plated edge connectors only.

The maximum DIMM height is 4.445 cm (1.75 inches). Do not install DIMMs that exceed this height.

NOTE

DIMM slots on the memory module must be installed only in certain configurations. Numbers next to DIMM slots correspond to installation sequence. DIMMs must be installed by groups of two.

1. Remove the top cover. For instructions, see "Removing the Top Cover".
2. Remove the memory board. For instructions, see "Hot-removal of a Memory Board" or "Cold Removal of Memory Board", depending on your server configuration
3. Remove the memory board DIMM cover from the memory board:
   - Pull out on the latch labeled "A" in Figure 80.
   - Press on the two tabs labeled "B" in the figure.
   - Press on the tab labeled "C" in the figure.
   - Lift the memory board DIMM cover from the memory board. See letter "D" in the figure.

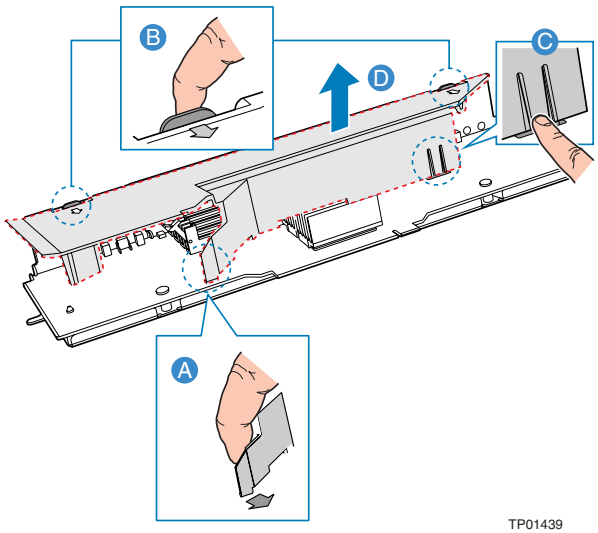


Figure 80. Remove Memory Board DIMM Cover

4. Open the plastic levers on each end of the DIMM socket(s). See letter “A” in Figure 81.
5. Remove the DIMM from its antistatic container. Hold the DIMM only by the edges. Do not touch the components or gold edge connectors.
6. Install DIMMs in the correct order. See Figure 81 and “Rules for Adding Memory”.
7. Position the DIMM above the socket. Align the notch on the bottom edge of the DIMM with the key in the DIMM socket. See letter “B” in Figure 81.
8. Insert the bottom edge of the DIMM into the socket. See letter “C” in the figure.
9. Push down on the top edge of the DIMM. The levers at each end of the DIMM socket will close. Make sure the levers close securely. See letter “D” in the figure.

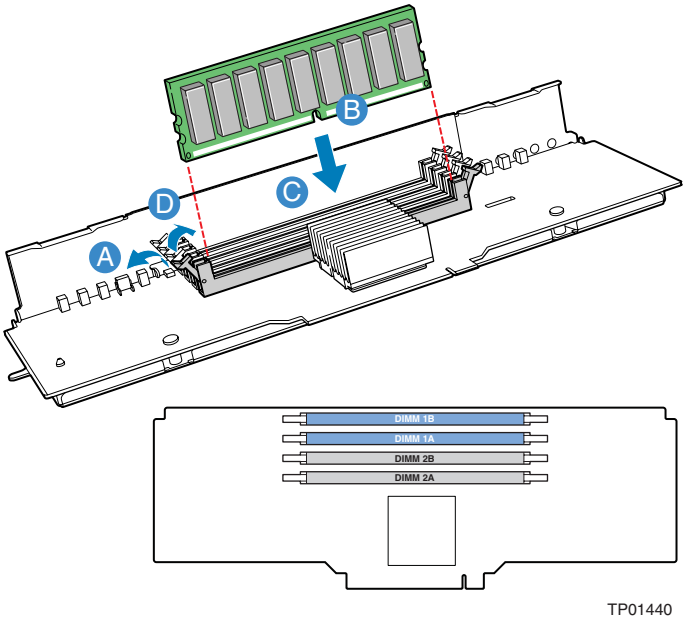


Figure 81. Install DIMMs

10. Install the memory board DIMM cover on the memory board:
    - Line up the two tabs labeled “A” in Figure 82.
    - Press on the tab labeled “B” in the figure.

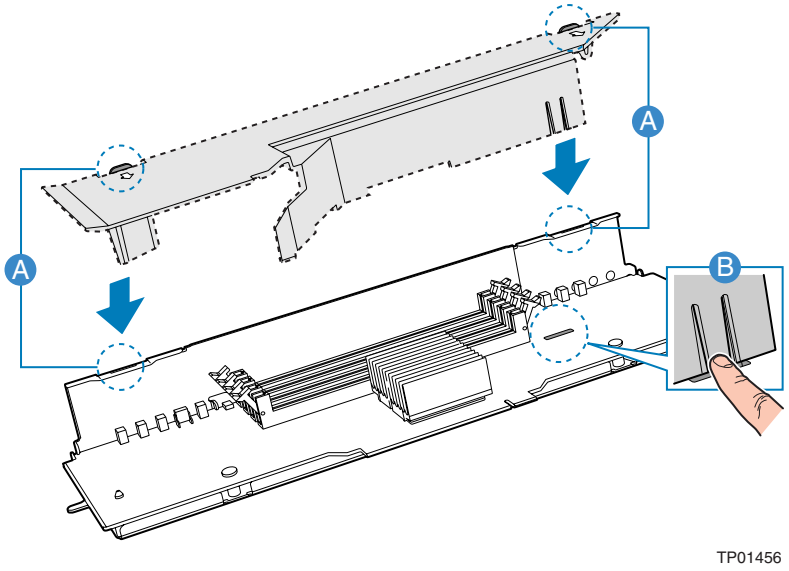


Figure 82. Install Memory Board DIMM cover

11. Install the memory board. For instructions, see “Hot-insertion of a Memory Board” or “Cold Insertion of a Memory Board”, depending on your server configuration.

Removing DIMMs

CAUTION

Use extreme care when removing DIMMs. Too much pressure can damage the connector. Apply only enough pressure on the plastic levers to release the DIMM.

1. Remove the top cover. For instructions, see "Removing the Top Cover".
2. Remove the memory board. For instructions, see "Hot-removal of a Memory Board" or "Cold Removal of Memory Board", depending on your server configuration.
3. Remove the memory board DIMM cover from the memory board:
   - Pull out on the latch labeled "A" in Figure 80.
   - Press on the tab labeled "B" in Figure 80.
   - Press on the tab labeled "C" in Figure 80.
   - Lift the memory board DIMM cover from the memory board. See letter "D" in Figure 80.
4. Open the plastic levers on each end of the DIMM socket(s). The DIMM will lift from the socket.
5. Hold the DIMM only by the edges. Do not touch the DIMM components or the gold edge connectors. Store it in an antistatic bag.
6. Install replacement DIMMs if necessary. For instructions, see "Installing DIMMs".
7. Install the memory board DIMM cover on the memory board:
   - Line up the two tabs labeled "A" in Figure 82.
   - Press on the tab labeled "B" in Figure 82.
8. Install the memory board or install a memory board air baffle into the memory board slot. For instructions, see "Hot-insertion of a Memory Board" or "Cold Insertion of a Memory Board", depending on your server configuration.

6 Technician's Serviceable Platform Components

This chapter presents procedures that describe removal and installation of many components inside the system.

Tools and Supplies Needed

Procedures in this part require the following tools and supplies:

- Jumper-removal tool or needle-nosed pliers
- Phillips* #2 screwdriver
- Torx screwdrivers (T-15)
- Antistatic wrist strap and conductive foam pad (recommended)

As you integrate new parts into the system, add information about them to the "Equipment Log". Record the model and serial number of the system, all installed options, and any other pertinent information specific to the system.

Safety: Before Top Cover Removal

Before removing the top cover, observe these safety guidelines:

1. Turn off all peripheral devices connected to the system.
2. Power down the system by pressing and holding the power button on the front of the chassis for several seconds.
3. After the server shuts down, unplug both AC power cords to remove standby power from the server.
4. 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.

Torque Settings

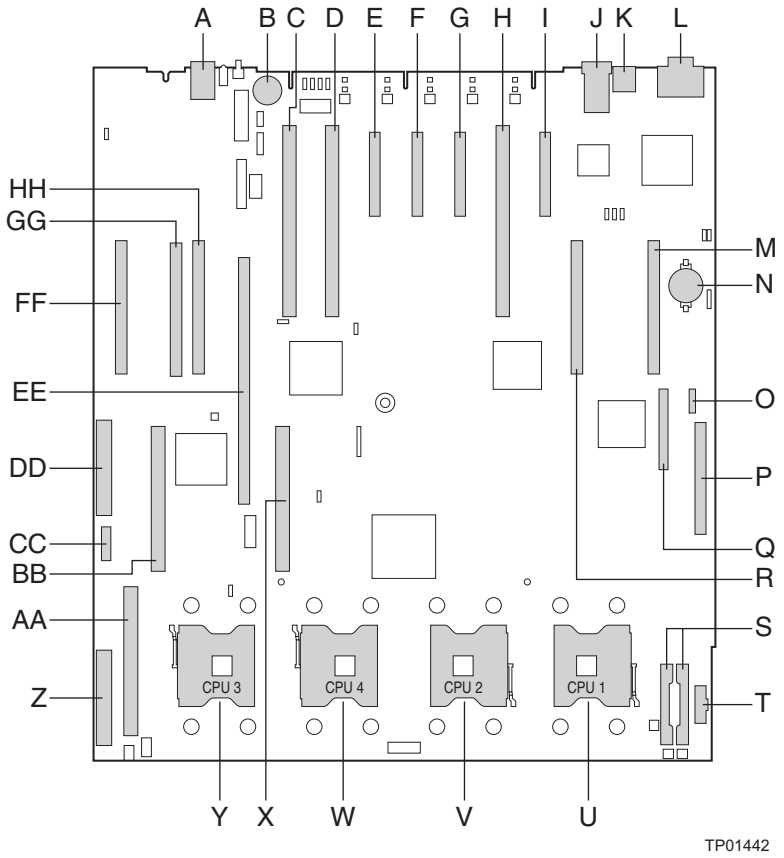
Screws securing certain components in the system require tightening to specific torque values. Table 11 shows the chassis torque settings.

Table 11. Torque Settings

Component	Torque	Component	Torque
Top Cover	0.90 N-m (8 in-lb)	SCSI backplane board	0.90 N-m (8 in-lb)
Processor Heat Sink	0.67 N-m (6 in-lb)	Front panel I/O board	0.90 N-m (8 in-lb)
Hard Drive Carrier	0.90 N-m (8 in-lb)		

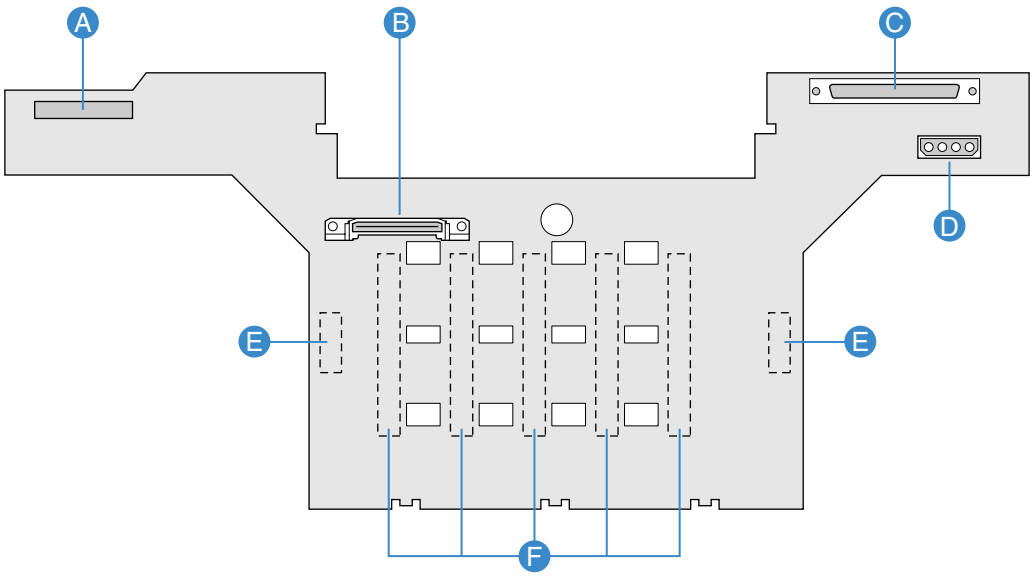
Component Locations

Use the following figures to help you locate components you may need to remove or disconnect to service components.



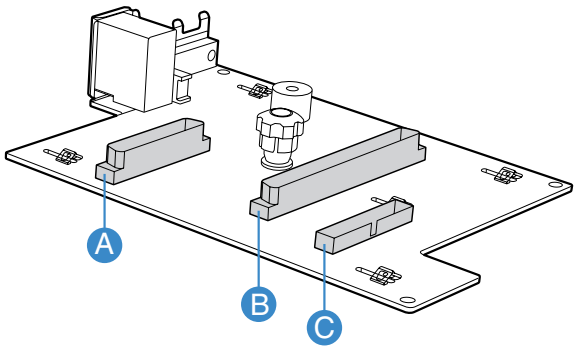
Item	Description	Item	Description
A	Generic Communication Module (GCM)	R	Memory board connector B
B	Intel® RAID Activation Key	S	DC power connectors
C	PCI-X* 100MHz (Slot 7)	T	Power distribution board (PDB) signal connector
D	PCI-X* 100MHz (Slot 6)	U	Processor socket 1
E	PCI Express* x4 – Hot-plug (Slot 5)	V	Processor socket 2
F	PCI Express* x4 – Hot-plug (Slot 4)	W	Processor socket 4
G	PCI Express* x4 – Hot-plug (Slot 3)	X	VRM 10.2L connector (CPU 4)
H	PCI-X*133MHz – Hot-plug (Slot 2)	Y	Processor socket 3
I	PCI Express* x8 – Hot-plug (Slot 1)	Z	SCSI Connector channel A (internal)
J	Ethernet LAN 1 (top), LAN 2 (bottom)	AA	VRM 9.1 Connector (processor cache)
K	Dual USB ports	BB	VRM 10.2LD Connector (Processor 4)
L	Serial / EMP (top), video connector (bottom)	CC	On board Intel® RAID Battery Backup Unit connector
M	Memory board connector A	DD	SCSI Connector Channel B (external)
N	Real-time clock battery	EE	On board RAID Cache Memory (DDR-2) connector
O	SATA connector	FF	Memory board D
P	Front Panel connector	GG	Fibre Channel Module connector
Q	Intel® Management Module (IMM)	HH	Memory board C

Figure 83. Main Board Component Locations



Item	Description	Item	Description
A	Front panel board connector	D	Power cable connector to CD-ROM/DVD-ROM drive and 5 ¼" peripheral
B	Power distribution board connector	E	Hot-swap cooling fan connector on reverse side of board (two)
C	SCSI cable connector	F	Hot-swap hard drive sockets on reverse side of board (five)

Figure 84. SCSI Backplane Board Component Locations



Item	Description
A	Control Panel connector
B	Main board connector
C	SCSI backplane board connector

Figure 85. Front Panel Board Component Locations

Removing and Installing the Top Cover

WARNING

Make sure the rack is anchored securely so it will not tilt forward when the server chassis is extended. A crush hazard exists should the rack tilt forward. This could cause serious injury.

CAUTION

For proper cooling and airflow, do not operate the server with the cover removed. Always reinstall the cover before turning the server on.

Do not leave the chassis cover open or a system fan removed any longer than necessary; system cooling could be reduced.

The server comes with a removable top cover that allows the PCI cards, memory boards, and the system fans to be hot-swapped, and the system components to be serviced.

Removing the Top Cover

To remove the top cover, follow these instructions:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. If the chassis is rack-mounted, slide the chassis out far enough to expose the entire top cover (see cautions and warnings above).
3. To open the top cover, unscrew the two captive screws on the faceplate of the chassis, as shown by letter "A" in Figure 86.
4. Slide the top cover toward the back of the chassis until the tabs on the cover disengage with the slots in the chassis. See letter "B" in the figure.
5. Lift the cover from the chassis.

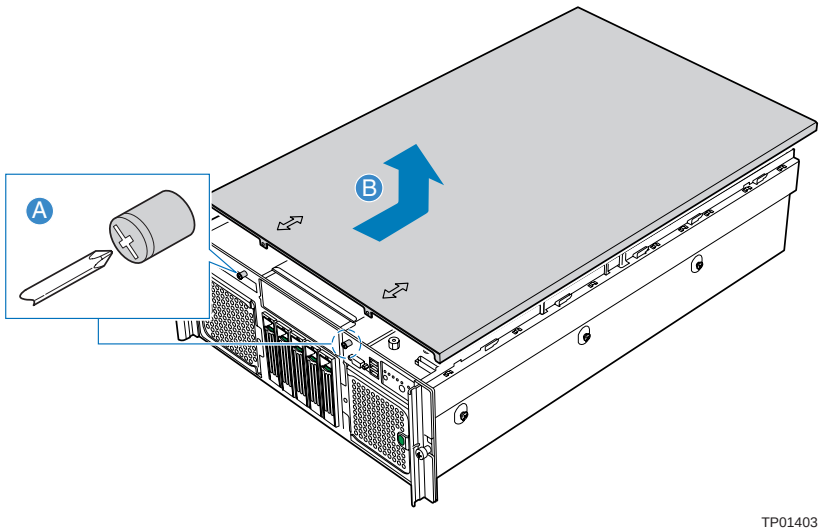


Figure 86. Removing the Top Cover

Installing the Top Cover

To install the top cover, follow these instructions:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Place the top cover on the chassis so that the tabs on the cover align with the slots on the chassis.
3. Slide the top cover towards the front of the chassis until it is fully closed. See letter "A" in Figure 87.
4. Tighten the captive screws on the faceplate of the chassis. See letter "B" in the figure.

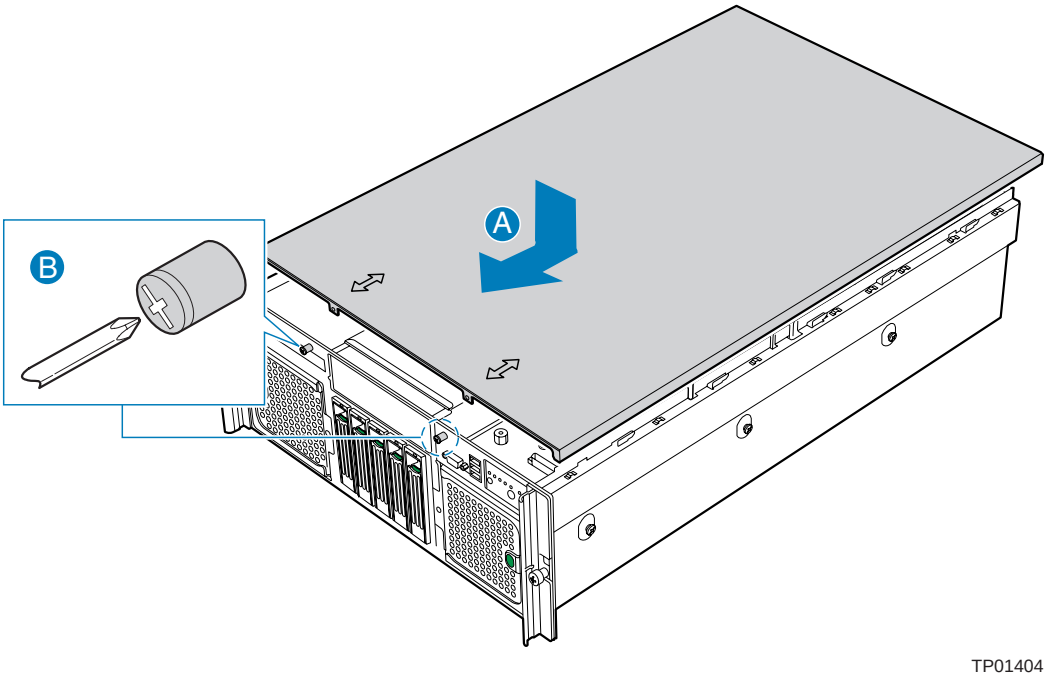


Figure 87. Installing the Top Cover

Removing and Installing the Processor Air Baffle

You will need to remove the processor air baffle to perform the following procedures:

- Removing and installing a processor thermal blank
- Removing and installing a processor
- Removing and installing a processor cache VRM converter
- Removing and installing a CD-ROM/DVD-ROM drive
- Removing and installing the main board
- Removing and installing a front panel I/O board

Refer to the steps to remove and install the processor air baffle when directed to do so.

Removing the Processor Air Baffle

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the server and disconnect both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Disconnect the 100-pin cable from the front panel I/O board. See letter "B" in Figure 85 to locate the connection point.
6. Hang the end of the cable over the side of the chassis where it will be out of the way.
7. Disconnect the SCSI cable from the SCSI backplane board. See letter "C" in Figure 84 to locate the cable connection point.
8. Disconnect the CD-ROM/DVD/ROM power cable from the SCSI backplane board. See letter "D" in Figure 84 to locate the cable connection point.
9. Disconnect any cables attached to the device in the 5 ¼" peripheral bays.

10. Insert your fingers in the holes in the top of the baffle. See letter “A” in Figure 88.
11. Pull the baffle up and back to disengage the baffle from the two-sheetmetal tabs at the front of the baffle.
12. Lift the baffle up to remove it. See letter “B” in the figure.

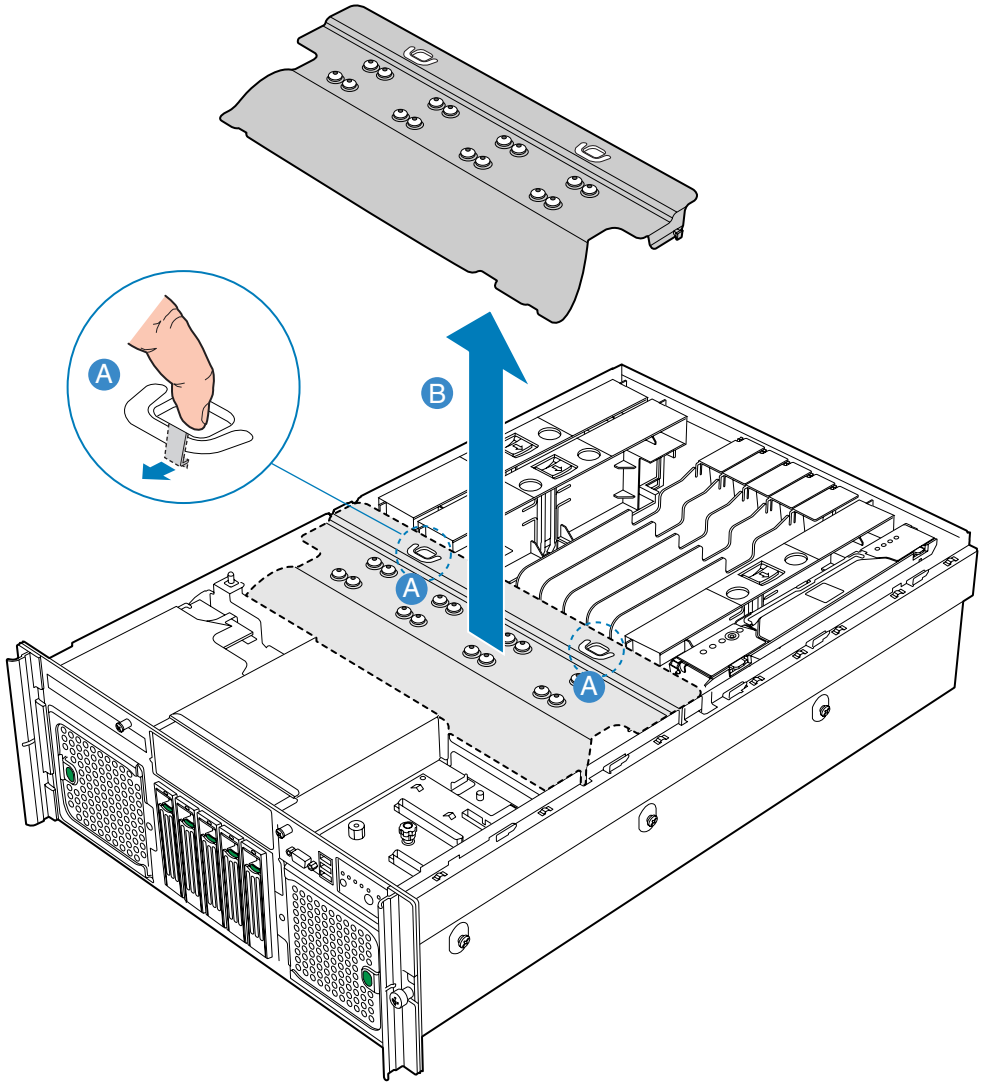


Figure 88. Removing the Processor Air Baffle

Installing the Processor Air Baffle

1. Insert the front processor air baffle under the two metal tabs at the front of the baffle, just below the SCSI backplane board. One tab is located on each side of the chassis. See letter “A” in Figure 89.

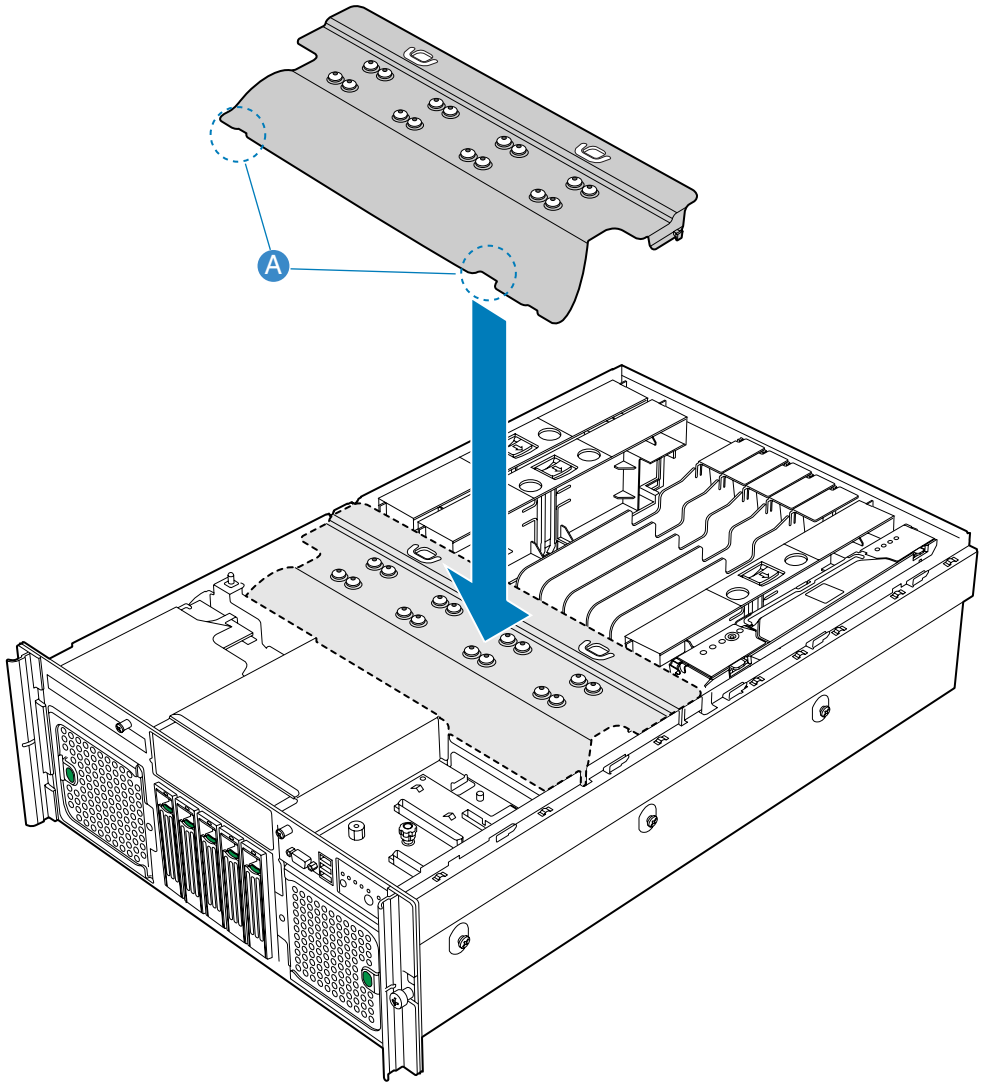


Figure 89. Installing the Processor Air Baffle

2. Lower the rear of the baffle into place, making sure the guides on each side of the air baffle will correctly engage in the left and right chassis slots. See the following figure.

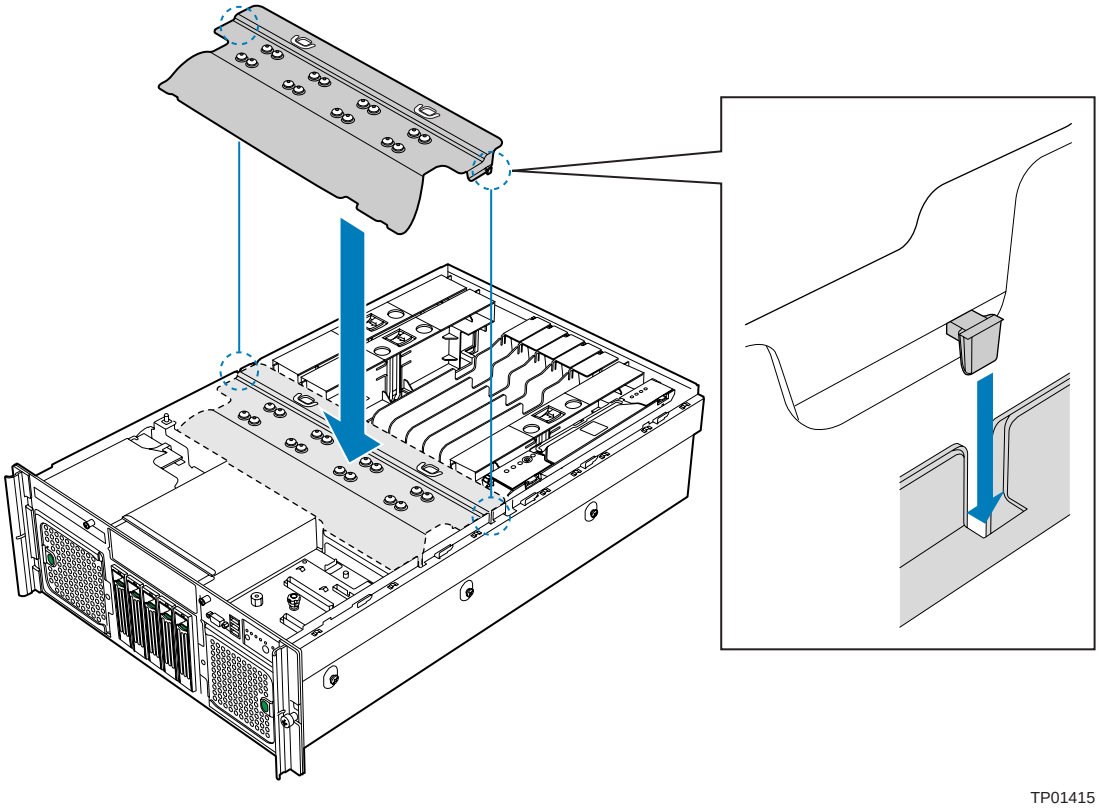


Figure 90. Engaging the Processor Air Baffle Guides

3. To seat the air baffle, push down on it at the two locations where the word “memory” is written on the air baffle.
4. Connect the 100-pin cable to the front panel I/O board. See letter “B” in Figure 85 to locate the connection point.
5. Connect the SCSI cable to the SCSI backplane board. See letter “C” in Figure 84 to locate the cable connection point.
6. Connect the CD-ROM/DVD ROM power cable to the SCSI backplane board. See letter “D” in Figure 84 to locate the cable connection point.
7. Connect any cables attached to the device in the 5 ¼” peripheral bay.

Removing and Installing the Center Brace

You will need to remove the center brace to perform the following procedures:

- Removing and installing a processor core VRM converter (optional step)
- Removing and installing the main board
- Removing and installing the SCSI backplane board

Refer to the steps to remove and install the center brace when directed in specific procedures.

Removing the Center Brace

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the server and disconnect both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Slide the latches at each side of the chassis to the unlock position. See letter "A" in Figure 91.
6. Lift the center brace from the chassis. See letter "B" in the figure.

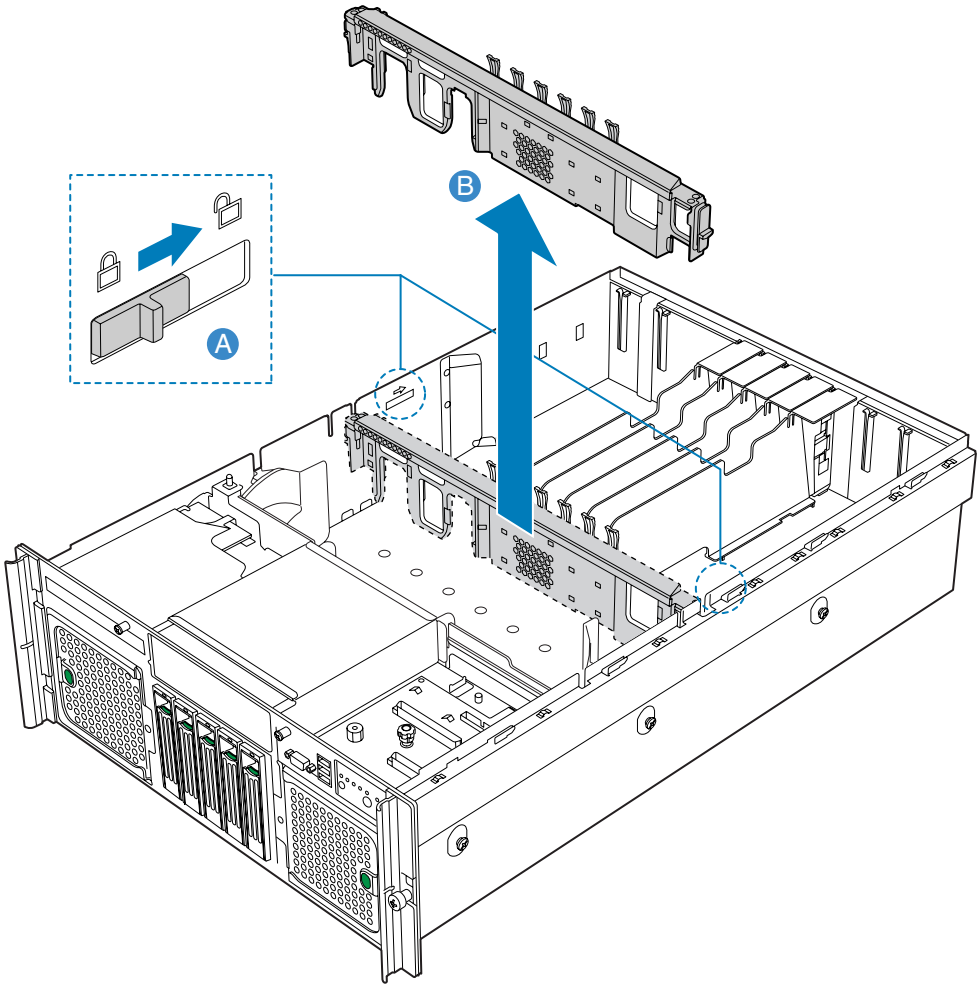


Figure 91. Removing the Center Brace

Installing the Center Brace

1. Set the center brace into position in the chassis. See Figure 92.
2. Slide the latches at each side of the chassis to the locked position.

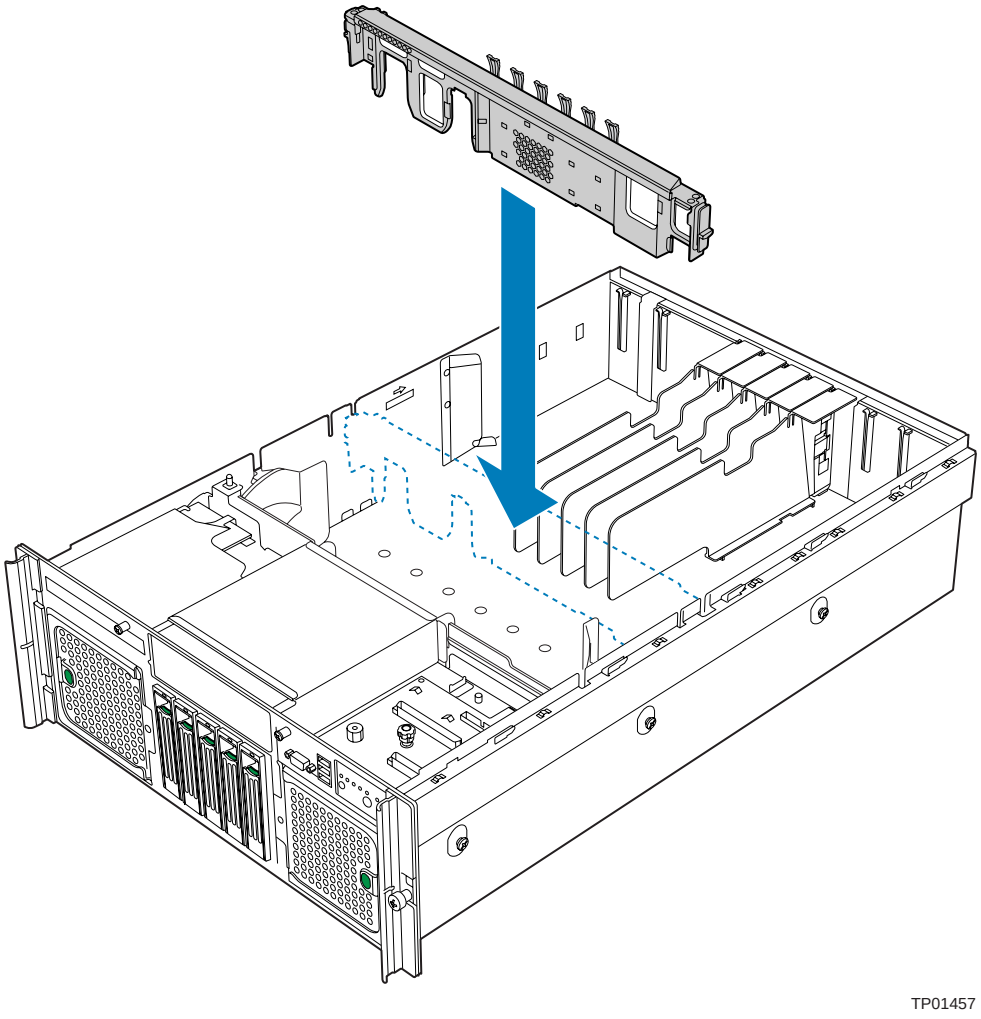


Figure 92. Installing the Center Brace

7 Servicing the Processors

The Intel® Server Platform SR4850HW4 requires a minimum of one 64-bit Intel® Xeon® processor MP with 1MB L2 Cache or 64-bit Intel® Xeon® processor MP with 8MB L3 Cache. The following rules must be followed:

- Each processor socket must include either a processor thermal blank, or a processor and heat sink combination.
- Processors must be installed in sequential order, beginning with the CPU_1 socket.

- **If you need to replace a processor:**
  - Read the information on "Handling the Intel® Xeon® Processors".
  - Follow the instructions on "Removing a Processor".
  - Follow the instructions on "Installing a Processor".
- **If you are adding an additional processor:**
  - Read the information on "Handling the Intel® Xeon® Processors".
    - Read the information on "Processor VRM Requirements" to determine if you need to add any VRMs.
  - Follow the instructions on "Processor VRM Requirements".
  - Follow the instructions on "Installing a Processor".
- **If you are removing a processor, but not installing a replacement processor:**
  - Read the information on "Handling the Intel® Xeon® Processors".
    - Read the information on "Processor VRM Requirements" to determine if you need to remove any VRMs.
  - Follow the instructions on "Processor VRM Requirements".
  - Follow the instructions on "Installing a Processor Thermal Blank".

Handling the Intel® Xeon® Processors

The processors require special handling procedures. Be sure to follow these guidelines when handling the processors:

- Observe the safety precautions, warnings, and cautions described in "Safety Information".
- Ground yourself with a grounding heel or wrist strap, and an antistatic smock.
- Remove processors from the packaging at a clean ESD-protected work surface.
- When removing processors from the packaging, keep the package flat on the surface while you open it so that no processors fall from the packaging.
- Hold processors by their sides with the pins facing down.
- To avoid mechanical and/or ESD damage, do not touch the cartridge pin array or PCB components.
- When placing processors on the clean ESD-protected work surface, place them with their pins facing down. Do not stack processors on top of each other.

Processor VRM Requirements

This server platform requires the installation of two types of Voltage Regulator Modules (VRMs). The VRMs necessary depend on the number of processors and the main board model installed. Before installing or removing any processors, consult the board specific Technical Product Specification at http://www.intel.com for specific VRM requirements. As an overview the following generic VRM rules apply:

- One processor installed: No VRM required
- Two processors installed: No VRM required
- Three processors installed
  - One processor cache VRM required
  - One core voltage processor VRM required
- Four processors installed
  - One processor cache VRM is required. This was installed when you added the third processor. You do not need to install another one.
  - Two core voltage processor VRMs required. One was installed when you installed the third processor. You need to install one more.

Installing and Removing a Processor Thermal Blank

Removing a Processor Thermal Blank

CAUTION

Make sure to install a processor and a heat sink to replace the thermal blank. Only power on a system that has all four processor sockets populated with processor heat sinks and/or processor thermal blanks.

The server may have from one to four processors installed on the main board. If you are adding a processor to the system, the thermal blank must be removed.

To remove a thermal blank:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the server and disconnect both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".

6. Use a long Phillips* head screwdriver to loosen the four screws on the thermal blank.
7. Lift the thermal blank to remove it. See Figure 93.

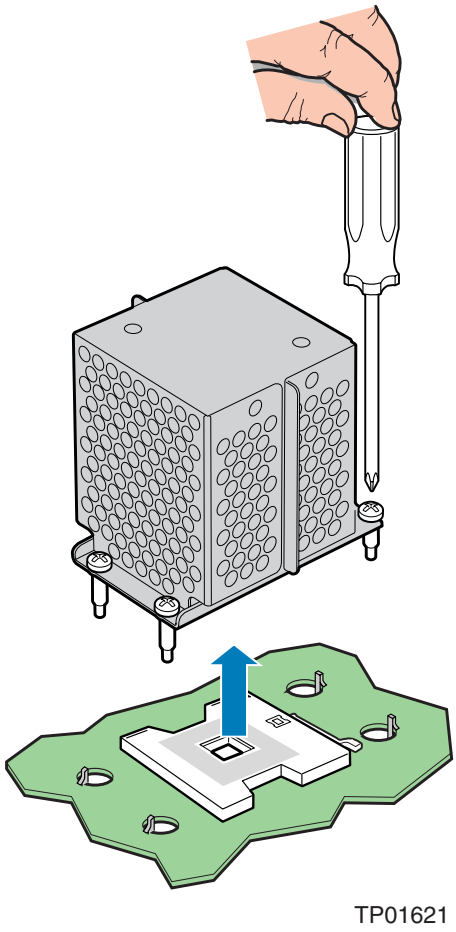


Figure 93. Removing Thermal Blank

8. Install a processor in the empty socket. For instructions, see "Installing a Processor".
9. Install the processor air baffle. For instructions, see "Installing the Processor Air Baffle".
10. Install the top cover. For instructions, see "Installing the Top Cover".

Installing a Processor Thermal Blank

If a processor and its heatsink are removed from the system, a thermal blank must be installed to maintain proper airflow within the chassis.

To install a thermal blank:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the server.
3. Power down the server and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".
6. Position the thermal blank on the main board as shown in Figure 94.
7. Use a long Phillips* head screwdriver to lightly engage the four screws.
8. Tighten the four screws to secure the processor thermal blank.

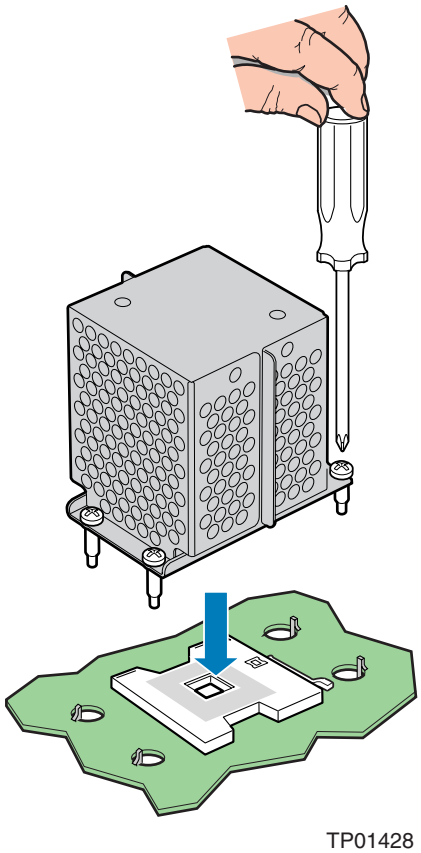


Figure 94. Installing Thermal Blank

9. Install the processor air baffle. For instructions, see "Installing the Processor Air Baffle".
10. Install the top cover. For instructions, see "Installing the Top Cover".

Installing and Removing a Processor

Removing a Processor

NOTE

To aid in separating the heat sink from the processor, power on the server for a few minutes. This will warm the thermal grease and prevent the processor from pulling out of the closed socket. Make sure the heat sink is cool to the touch before removing.

To remove a processor:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the server.
3. Power down the server and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".
6. Use a long Phillips* head screwdriver to loosen the four screws on the corners of the heat sink.
7. Gently rock the heat sink back and forth to break the seal between the heat sink and the processor.
8. Lift the heat sink from the processor.
9. Lift the lever on the processor socket.
10. Remove the processor from the chassis. Store it in an anti-static bag or in the original packaging.
11. Install a replacement processor or install a processor thermal blank in the processor socket. For instructions, see "Installing a Processor" or "Installing a Processor Thermal Blank".
12. Install the processor air baffle. For instructions, see "Installing the Processor Air Baffle".
13. Install the top cover. For instructions, see "Installing the Top Cover".

NOTE

Once the processor is removed, note that the release mechanism shows the socket is open.

Installing a Processor

NOTES

Failure to correctly apply thermal grease between a processor and the heat sink could cause damage to the server.

Populate the processor sockets in order, beginning with the CPU_1 socket.

To install a processor:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the server.
3. Power down the server and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".
6. If a Processor Thermal Blank is installed, remove it. For instructions, see "Removing a Processor Thermal Blank".
7. Verify that the processor release mechanism is in the open position. See Figure 95.

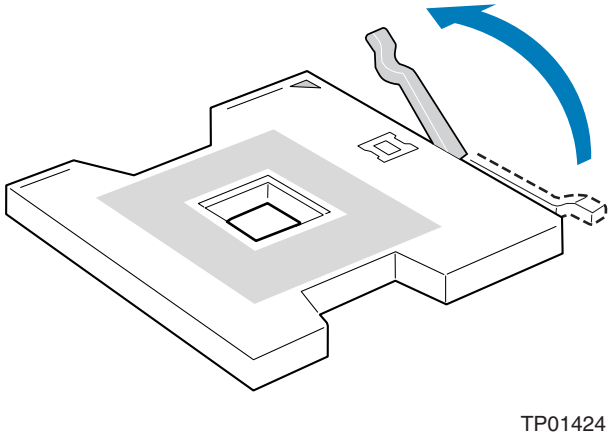


Figure 95. Open Processor Socket Lever

8. Position the processor over the socket, matching the two triangles and lining up the processor pins with the socket. See letter “A” in Figure 96. Once centered in the socket, the processor should easily insert into the socket. Do not apply force.
9. Once the processor is in the socket, **gently** press the processor to verify the processor has seated properly.

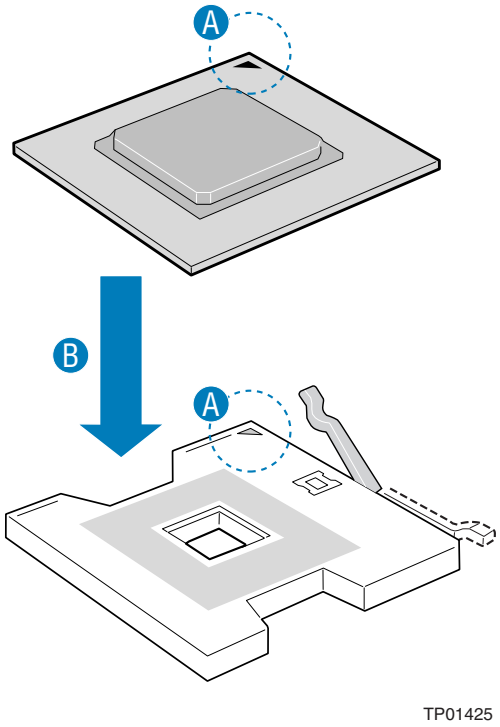


Figure 96. Set Processor into Socket

10. Close the processor release lever. See Figure 97.

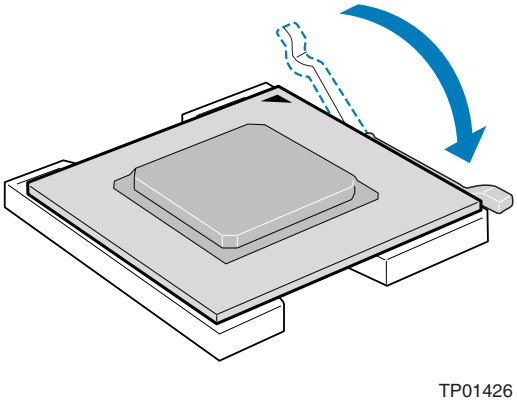


Figure 97. Close Processor Socket Lever

11. If the heat sink does not have thermal grease on the bottom of it, apply thermal grease to the heat sink to cover the area where the processor will come in contact with it.
12. Set the heat sink on the processor, aligning the four screws in the heat sink with the screw sockets in the chassis.
13. Use a long Phillips* screwdriver to turn each screw one full turn. Continue to tighten the screws approximately one full turn at a time until each is evenly tightened. Do not fully tighten one screw at a time.
14. Install Processor VRMs and Processor Cache VRMs as necessary. To determine requirements, see "Processor VRM Requirements".
15. Install the processor air baffle. For instructions, see "Installing the Processor Air Baffle".
16. Install the top cover. For instructions, see "Installing the Top Cover".

Installing or Removing Processor VRM Converters

Three VRM converters are used with processors installed in sockets 3 and 4. One VRM 9.1 is for cache. The other two are VRM 10.2LD, one for each processor. See the configuration label on the inside of the chassis top cover for the locations of these VRMs. Labels on the converters list their output voltage.

Removing the Processor Cache VRM Converter

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the server.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".

6. Open the two levers on the processor cache VRM converter socket and lift the processor cache VRM converter to remove it. See letter “A” in Figure 98.
7. Lift the processor cache VRM converter to remove it. See letter “B” in the figure
8. Install the replacement processor cache VRM converter. For instructions, see “Installing the Processor Cache VRM Converter”.
9. Install the processor air baffle. For instructions, see “Installing the Processor Air Baffle”.
10. Install the top cover. For instructions, see “Installing the Top Cover”.

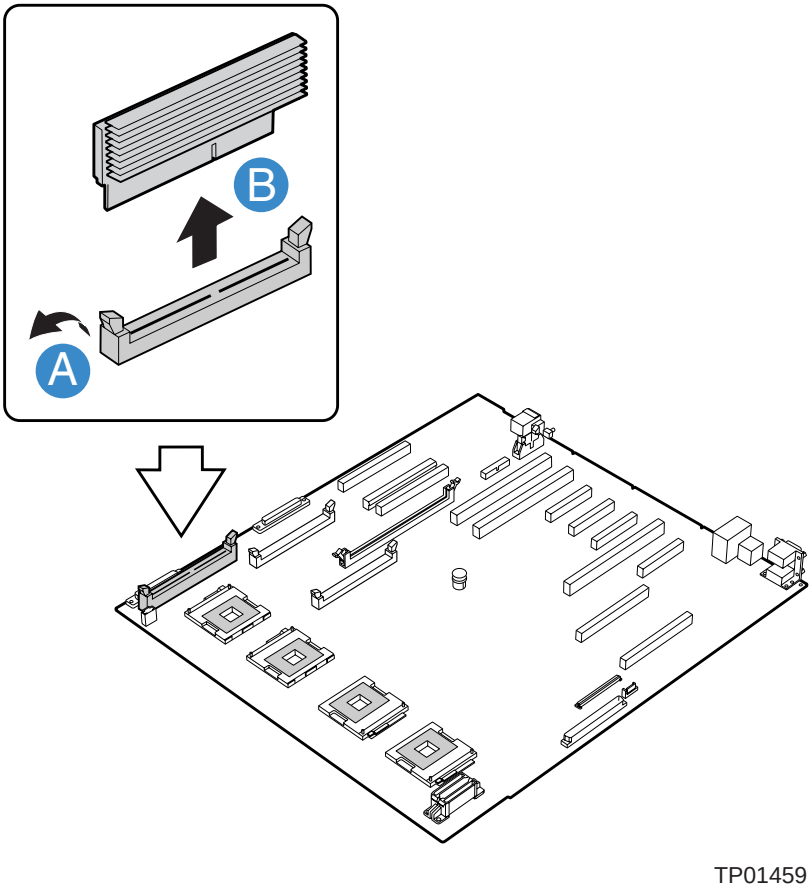


Figure 98. Removing a Processor Cache VRM Converter

Installing the Processor Cache VRM Converter

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the server.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Remove the processor air baffle. For instructions, see “Removing the Processor Air Baffle”.
6. Open the two levers on the processor cache VRM converter socket. See letter “A” in Figure 99.
7. Push the processor cache VRM converter firmly into the socket. See letter “B” in the figure.
8. Make sure the levers close securely. See letter “C” in the figure.
9. Install the processor air baffle. For instructions, see “Installing the Processor Air Baffle”.
10. Install the top cover. For instructions, see “Installing the Top Cover”.

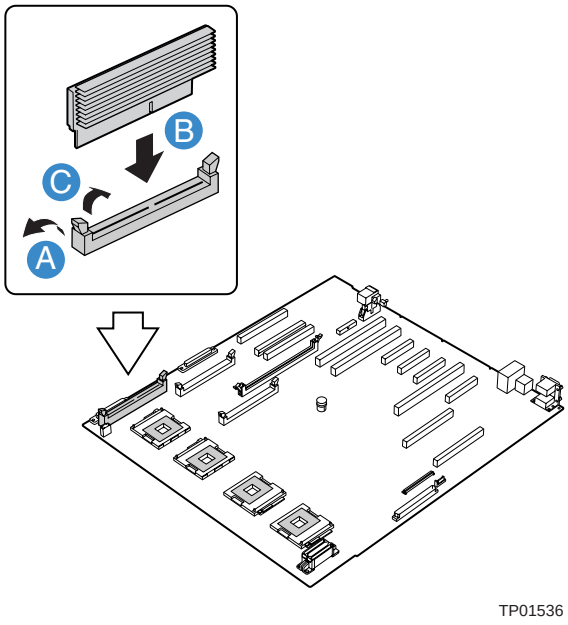


Figure 99. Installing a Processor Cache VRM Converter

Removing the Processor Core VRM Converters

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Remove memory boards or memory board air baffles from Slots C and D. For instructions, see “Cold Removal of Memory Board”.
6. Remove the Fibre Channel Module. For instructions, see “Removing the Fibre Channel Module”
7. Optional: Remove the center brace. For instructions, see “Removing the Center Brace”.

NOTE

The two-processor core VRM converters are located under the center brace. You do not need to remove the center brace to remove or install the processor VRM converters.

8. If you are removing the fourth processor core VRM converter, remove the VRM baffle:
   - Push down at the top of the baffle to unlatch it. See letter “A” in Figure 100.
   - Pull the cover out at an angle. See letter “B” in the figure.

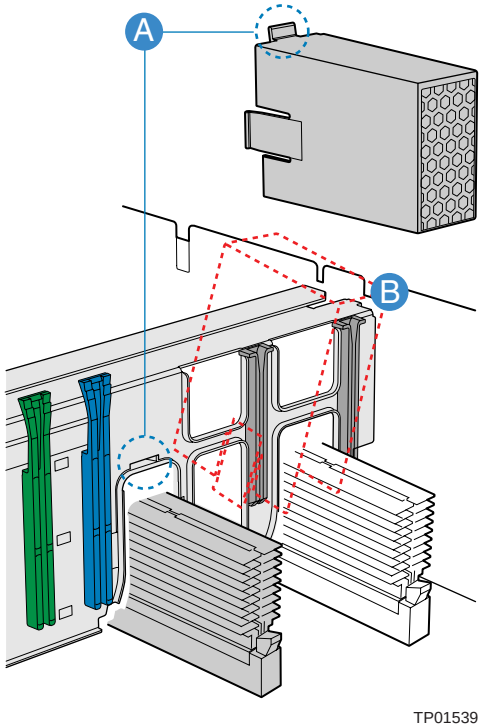


Figure 100. Removing Processor 4 Core VRM Baffle

9. Open the two socket levers on the VRM converter socket. If you are removing the processor 3 VRM, see letter “A” in Figure 101. If you are removing the processor 4 VRM, see letter “A” in Figure 102.
10. Lift the VRM converter and slide it from beneath the center brace to remove it. If you are removing the processor 3 VRM, see letter “B” and “C” in Figure 101. If you are removing the processor 4 VRM, see letter “B” and “C” in Figure 102.

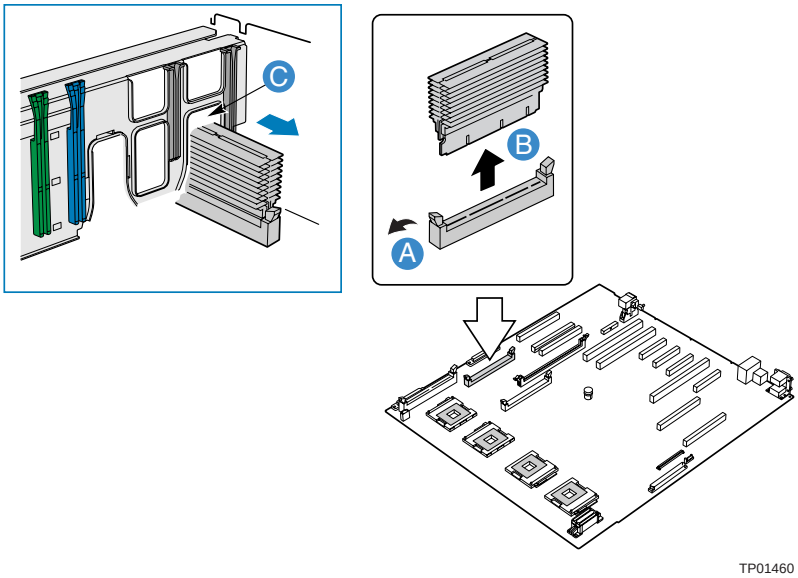


Figure 101. Removing Processor 3 Core VRM

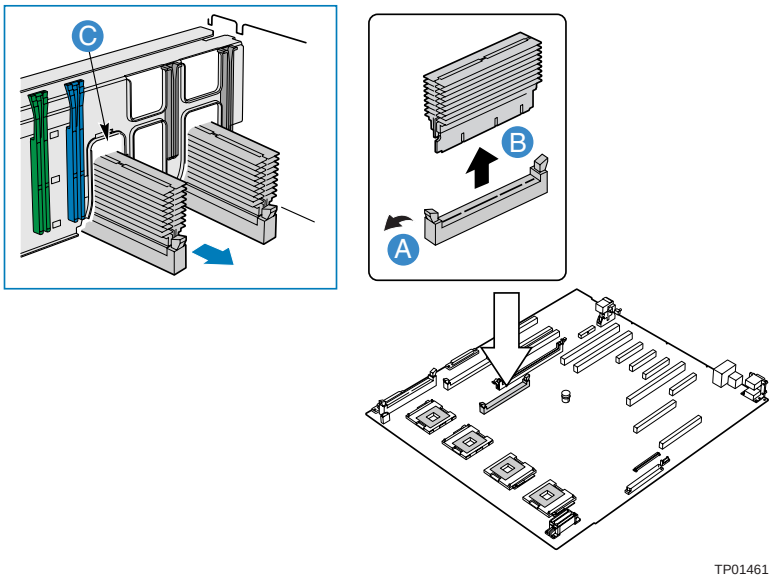


Figure 102. Removing Processor 4 Core VRM Converter

11. Install the memory boards or memory board air baffles into Slots C and D. For instructions, see "Cold Insertion of a Memory Board".
12. Install the top cover. For instructions, see "Installing the Top Cover".

Installing a Processor Core VRM Converter

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove memory boards or memory board air baffles from Slots C and D. For instructions, see "Cold Removal of Memory Board".
6. Remove the Fibre Channel Module. For instructions, see "Removing the Fibre Channel Module.
7. Verify that the connector of the VRM converter matches the connector type on the main board.
8. Slide the VRM converter under the center brace and position it on the socket. If you are removing the processor 3 VRM, see letter "A" in Figure 103. If you are removing the processor 4 VRM, see letter "A" in Figure 104.
9. Insert the VRM converter into the correct socket and press down firmly. Be certain the VRM converter seats fully in its connector. If you are removing the processor 3 VRM, see letter "B" in Figure 103. If you are removing the processor 4 VRM, see letter "B" in Figure 104.

CAUTION

Do not exert excessive force. Notches in the VRM converter's connector and corresponding barriers on the main board's sockets prevent incorrect insertion. Forcing the wrong VRM converter into a connector can damage the VRM converter or the connector.

10. Close the two levers to secure the converter.
11. Install the VRM baffle over the processor 4 core VRM converter, if installed. See Figure 100.
12. Install the memory board or memory board air baffles into Slots C and D. For instructions, see "Cold Insertion of a Memory Board".
13. Install the top cover. For instructions, see "Installing the Top Cover".

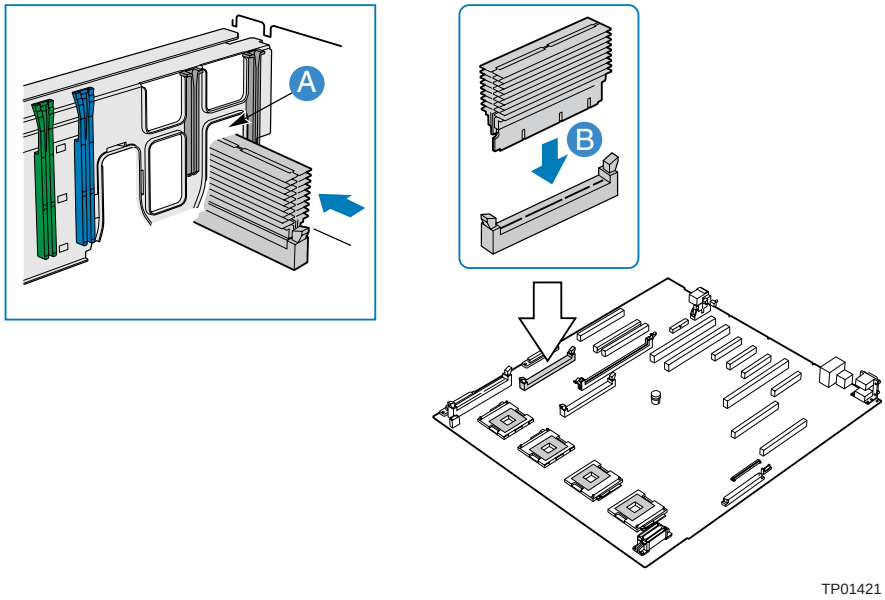


Figure 103. Installing Processor 3 VRM

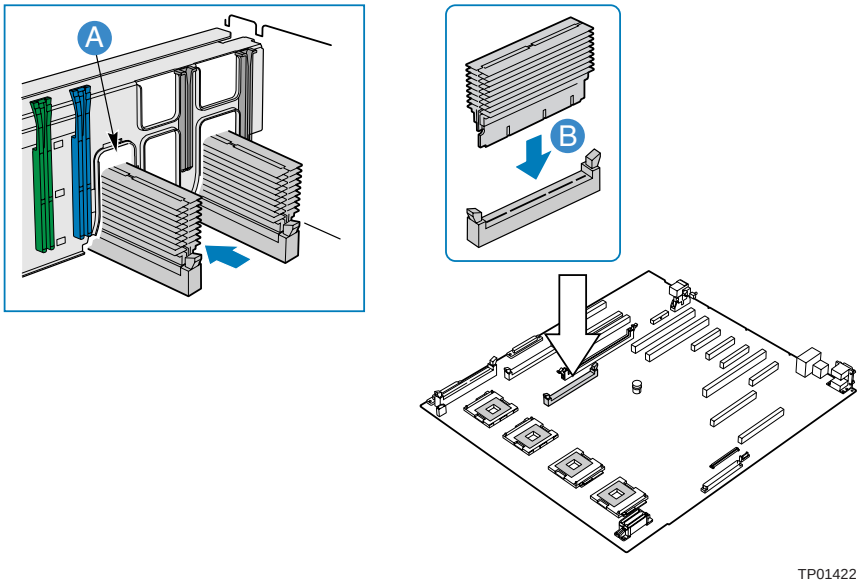


Figure 104. Installing Processor 4 VRM

8 Servicing the RAID on Motherboard (ROMB) Components

Installing and Removing the Intel® RAID Activation Key

Installing the Intel® RAID Activation Key

The optional Intel® RAID Activation Key provides access to the RAID functionality on the main board.

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board air baffle or the memory board from Slot C. For instructions, see "Cold Removal of Memory Board".
6. If a PCI card is in Slot 7, remove it to expose the Intel® RAID Activation Key holder. For instructions on removing a PCI card, see "Removing a Non-Hot-Plug PCI Card".
7. Remove the Intel® RAID Activation Key from its package.

8. Insert the Activation Key into the socket on the main board and push it into the socket until it is below the two retaining clips. See letter “C” in Figure 105.

NOTE

Letters “A” and “B” in Figure 105 show the installation of the RAID DIMM. The RAID DIMM is also required to activate ROMB. For instructions on installing the RAID DIMM, see “Installing the RAID DDR2-400 DIMM”.

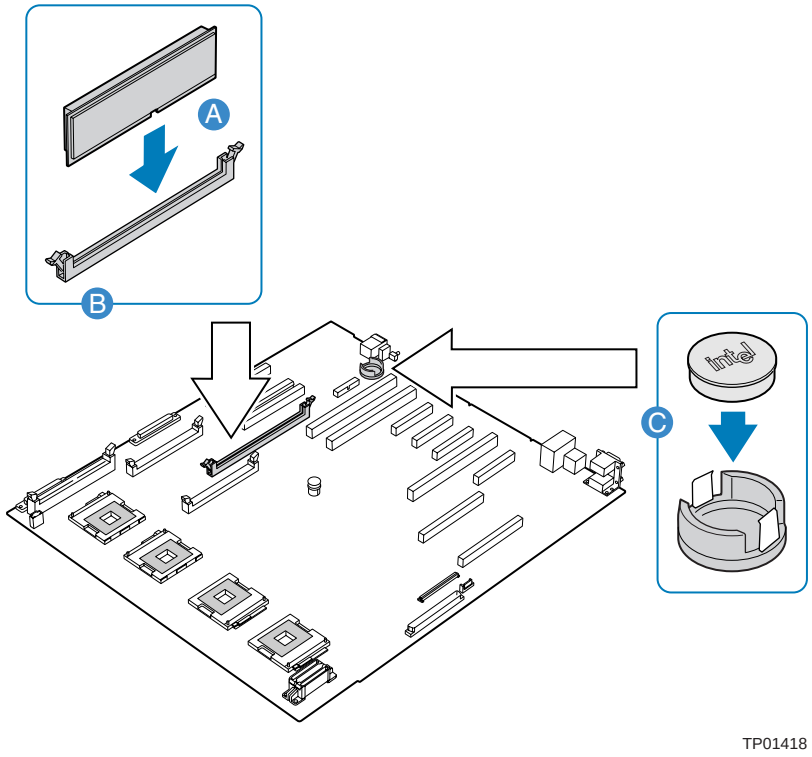


Figure 105. Installing the Intel® RAID Activation Key

9. Install the memory board air baffle or the memory board into Slot C. For instructions, see “Cold Insertion of a Memory Board”.
10. If you needed to remove a PCI card from slot 7, install the card. For instructions, see “Installing a Non-Hot-plug PCI Card”.
11. Install the top cover. For instructions, see “Installing the Top Cover”.

Removing the Intel® RAID Activation Key

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board air baffle or the memory board from Slot C. For instructions, see "Cold Removal of Memory Board".
6. If a PCI card is in Slot 7, remove it to expose the Intel® RAID Activation Key holder. For instructions on removing a PCI card, see "Removing a Non-Hot-Plug PCI Card".
7. Insert the tip of a small flat-bladed screwdriver or equivalent under the plastic tab on the snap-on plastic retainer holding the Intel® RAID Activation Key on the main board.
8. Gently push down on the screwdriver to lift the Intel® RAID Activation Key from the holder.
9. Store the Intel® RAID Activation Key in an anti-static bag.
10. Install the memory board air baffle or the memory board into Slot C. For instructions, see "Cold Insertion of a Memory Board".
11. If you needed to remove a PCI card from slot 7, install the card. For instructions, see "Installing a Non-Hot-plug PCI Card".
12. Install the top cover. For instructions, see "Installing the Top Cover".

Installing and Removing the Intel® RAID Smart Battery

Installing the Intel® RAID Smart Battery

Support for a DDR2 DIMM serves as memory for the Intel® IOP332 Storage I/O Processor, and as a disk cache to store write data to the drives. If power to the Intel® IOP332 Storage I/O Processor with Intel XScale® Microarchitecture drops below specifications, a battery back-up unit maintains the contents of the DIMM by keeping the DIMM in self-refresh mode until power is restored. After power is restored, the data can be safely written to drives, maintaining the integrity of the disk array.

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board or the memory board air baffle from Slot D. For instructions, see "Cold Removal of Memory Board".
6. Connect the cable inside of the battery pack. See letter "B" in Figure 106.

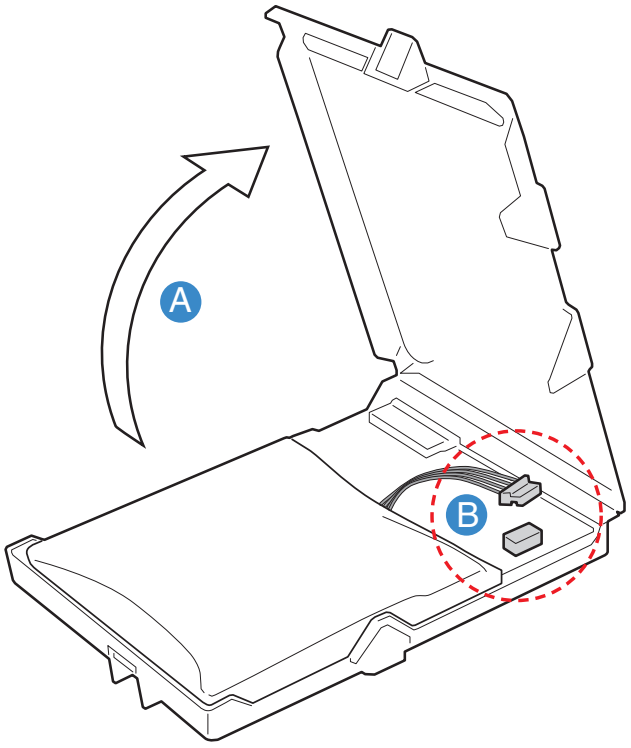


Figure 106. Install Cable Inside the Intel® RAID Smart Battery

7. Route the battery cable through the holder on the side of the chassis. See letter “A” in Figure 107.
8. Attach the connector on the cable to the 2 x10 header on the main board at J1H1. This connector is labeled “BBU”. See letter “B” in Figure 107.

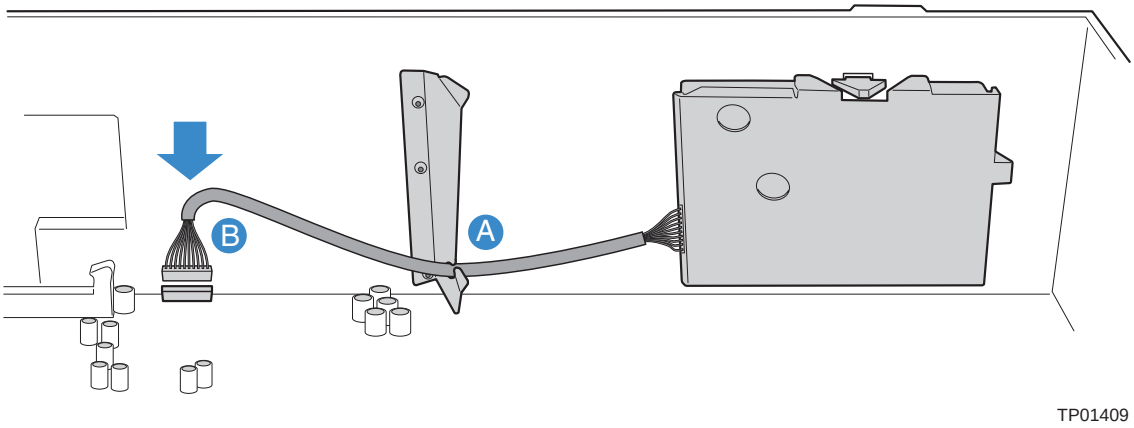


Figure 107. Route and Connect RAID Battery Cable

9. Fit the hooks on the back of the battery into the matching slots on the chassis. See Figure 108.

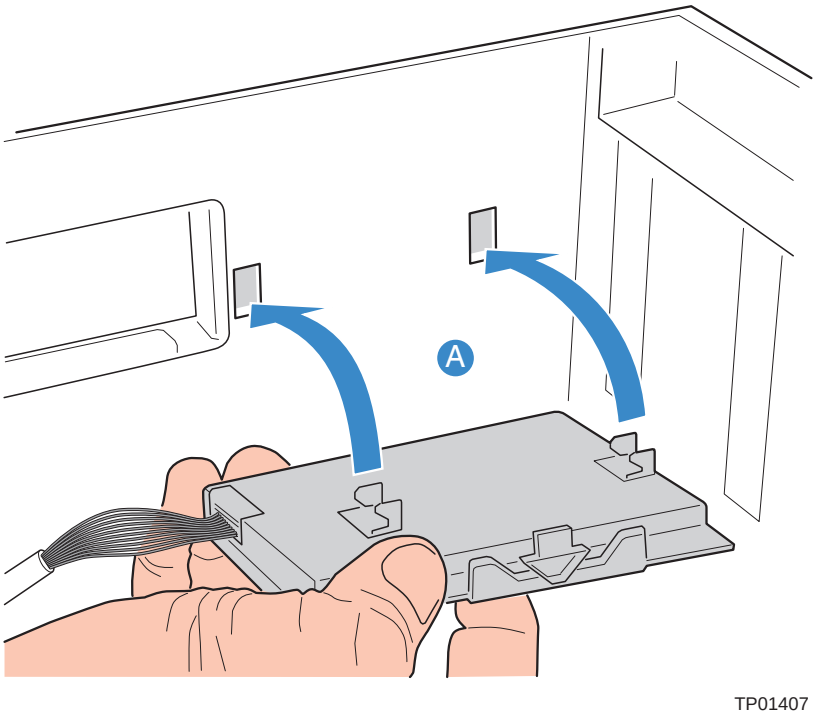


Figure 108. Attach Intel® RAID Smart Battery to Chassis

10. Push the battery to the left to latch the battery into place. See Figure 109.

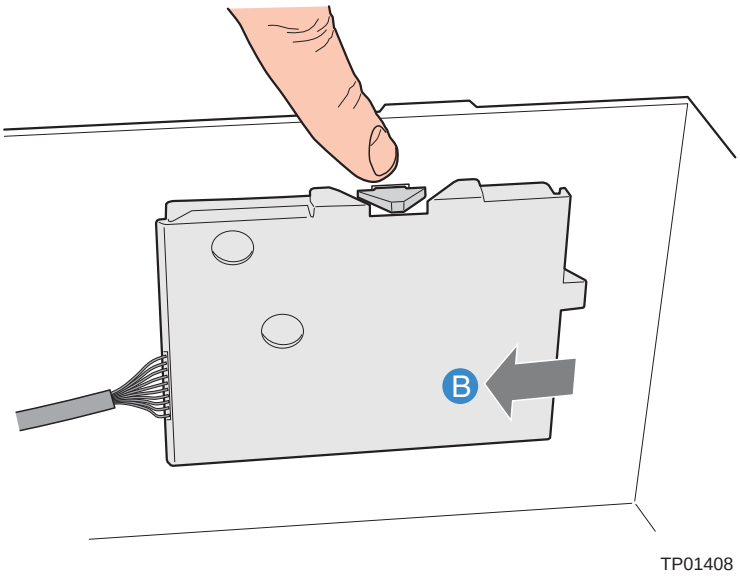


Figure 109. Lock Intel® RAID Smart Battery into Place

11. Install the memory board or the memory board air baffle into Slot D. For instructions, see "Cold Insertion of a Memory Board".
12. Install the top cover. For instructions, see "Installing the Top Cover".

Removing the Intel® RAID Smart Battery

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board or the memory board air baffle from Slot D. For instructions, see "Cold Removal of Memory Board".
6. Disconnect the battery cable from the main board.
7. Pinch the top and bottom covers of the battery holder to open it.
8. Remove the Intel® RAID Smart Battery from the chassis.
9. Install the memory board or the Memory Baffle air baffle into Slot D. For instructions, see "Cold Insertion of a Memory Board".
10. Install the top cover. For instructions, see "Installing the Top Cover".

Installing and Removing the RAID DDR2-400 DIMM

Installing the RAID DDR2-400 DIMM

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board or the memory board air baffle from Slot C. For instructions, see "Cold Removal of Memory Board".
6. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
7. Holding the DIMM by the edges, remove it from its anti-static package.
8. Position the DIMM above the socket. Align the notch on the bottom edge of the DIMM with the key in the DIMM socket.
9. Insert the bottom edge of the DIMM into the socket. See letters "A" and "B" in Figure 110.
10. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place. See Figure 110.

NOTE

Letter "C" in Figure 110 shows the installation of the RAID Activation Key. The Intel® RAID Activation Key is also required to activate ROMB. For instructions on installing the Intel® RAID Activation Key, see "Installing the Intel® RAID Activation Key".

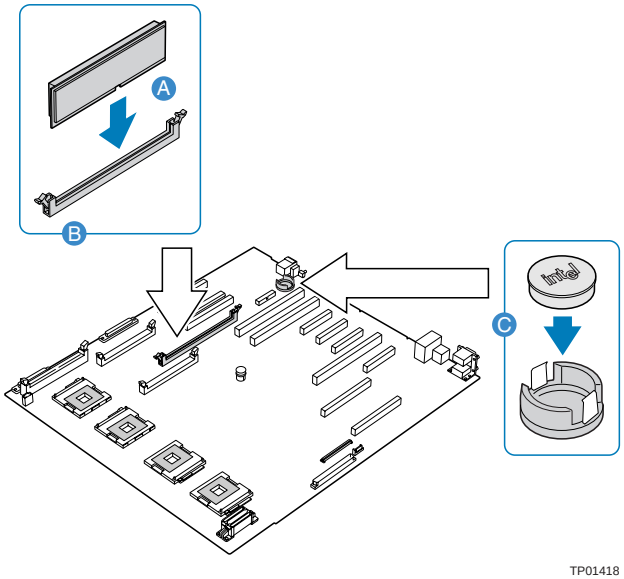


Figure 110. Installing the RAID DDR2-400 DIMM

11. Install the memory board or the memory board air baffle into Slot C. For instructions, see "Cold Insertion of a Memory Board".
12. Install the top cover. For instructions, see "Installing the Top Cover".

Removing the RAID DDR2 DIMM

1. Observe the safety precautions, warnings, and cautions described in "Safety Information"
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory board or the memory board air baffle from Slot C. For instructions, see "Cold Removal of Memory Board".
6. Gently spread the retaining clips at each end of the RAID DIMM socket. The DIMM lifts from the socket.
7. Holding the DIMM by the edges, lift it from the socket, and store it in an anti-static package.
8. Close the latches.
9. Install the memory board or the memory board air baffle into Slot C. For instructions, see "Cold Insertion of a Memory Board".
10. Install the top cover. For instructions, see "Installing the Top Cover".

9 Servicing the Peripheral Area Components

Installing the External SCSI Cable Assembly

The optional external SCSI cable assembly allows external SCSI components to be connected to the chassis.

To install the external SCSI cable assembly:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory boards from Slots C and D. For instructions, see "Cold Removal of Memory Board".
6. If installed, remove the Fibre Channel Module. For instructions, see "Removing the Fibre Channel Module".
7. Connect the end of the SCSI cable labeled either "main board" or "Baseboard" into the Channel B SCSI connector.
8. Route the remaining length of cable along the chassis wall and through the air dam to the rear of the chassis.
9. Bend and route the end of the cable beneath the two memory board and Fibre Channel Module locations.
10. If installed, remove the filler bracket by pushing down on the latch at the top of it and pulling the panel from the server. See letter "A" in Figure 111.

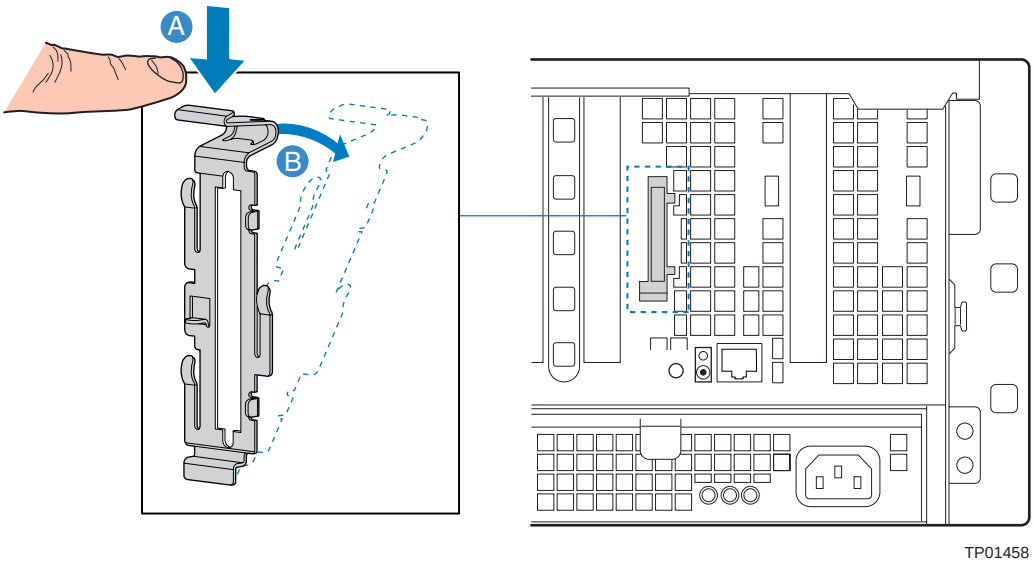


Figure 111. Removing External SCSI Filler Panel

11. Install the memory boards or memory board air baffles into Slots C and D. For instructions, see "Cold Insertion of a Memory Board".
12. Reinstall any other boards removed. Verify the cable is not pinched between the assemblies.
13. Install the top cover. For instructions, see "Installing the Top Cover".

Replacing Removable Media Devices

The Intel® Server Platform SR4850HW4 and SR4850HW4/M can accommodate a DVD/CD-ROM device and one 5 ¼" peripheral device. The devices are not hot-swappable, so the system must be powered down and the power cords removed from the chassis before the devices can be serviced. The DVD/CD drive is housed in a sheetmetal carrier. It also has a SATA-to-IDE converter board. The 5¼" device has slide rails that mount into the chassis.

Removing the CD-ROM/DVD-ROM Drive

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Disconnect the SATA and power cable from the SATA-to-IDE converter board at the rear of the CD-ROM/DVD-ROM. See letter "A" in Figure 112.
6. Press the blue release latch on the CD-ROM/DVD-ROM carrier. See letter "B" in the figure.
7. Slide the CD-ROM/DVD-ROM from the front opening in the faceplate of the system. See letter "C" in the figure.

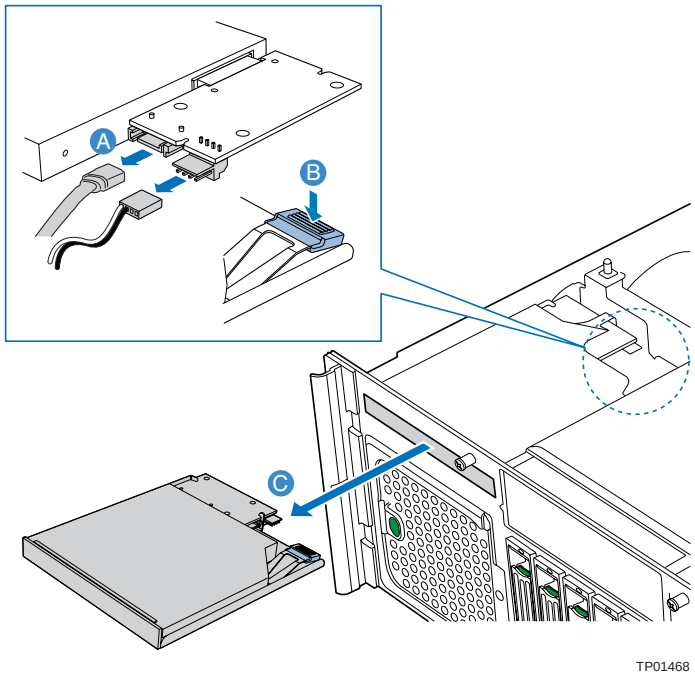


Figure 112. Removing the CD-ROM/DVD-ROM Drive Carrier from the Server

8. Lift up on the rear right corner of the CD-ROM/DVD-ROM to remove it from the carrier. See letters “A” and “B” in Figure 113.
9. Disconnect the SATA-to-IDE converter board. See letter “C” in the figure.

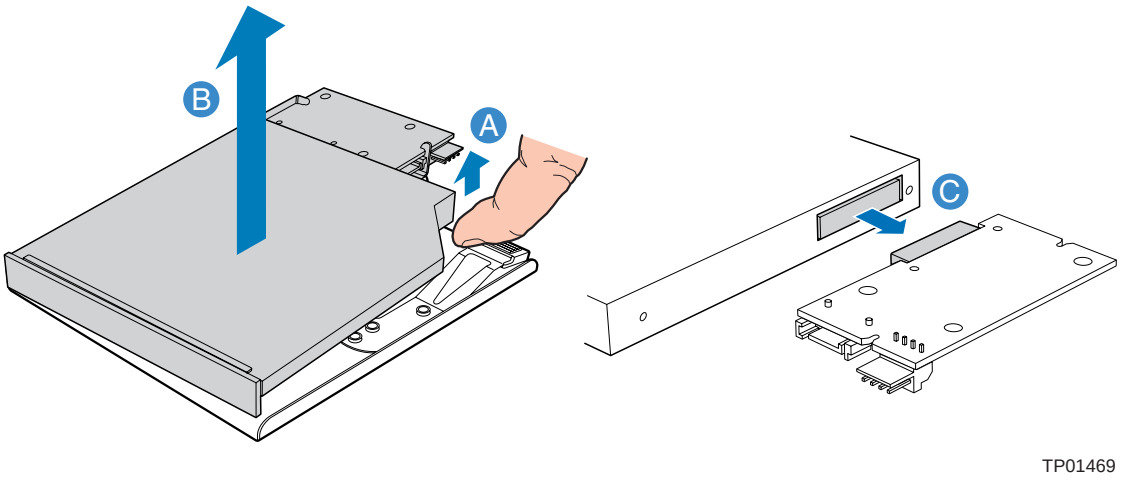


Figure 113. Removing the CD-ROM/DVD-ROM Drive from the Carrier

10. Store the drive in an antistatic protective wrapper or in its original packaging.
11. Install a new CD-ROM / DVD-ROM drive into the carrier or slide the empty carrier into the server.
12. Install the top cover. For instructions, see “Installing the Top Cover”.

Installing the CD-ROM/DVD-ROM Drive

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the new drive from its protective wrapper, and place it component-side down on a clean ESD-protected work surface.
6. Record the drive model and serial numbers in your "Equipment Log".
7. Attach the SATA-to-IDE converter board to the CD-ROM/DVD-ROM drive.
8. Place the left side of the drive into the drive carrier as shown in Figure 114.
9. Press the CD-ROM/DVD-ROM drive into the carrier until it is firmly secured.

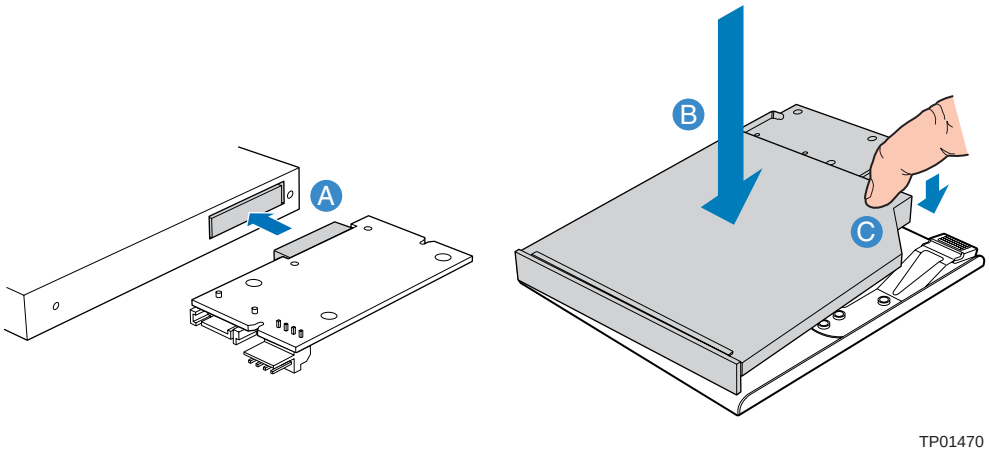


Figure 114. Assembling the CD-ROM/DVD-ROM Drive and Carrier

10. Insert the CD-ROM/DVD-ROM drive carrier assembly into the front opening in the chassis. See letter “A” in. Figure 115.
11. Plug the SATA cable and power cable into the converter board. See letter “B” in the figure.
12. Install the top cover. For instructions, see “Installing the Top Cover”.

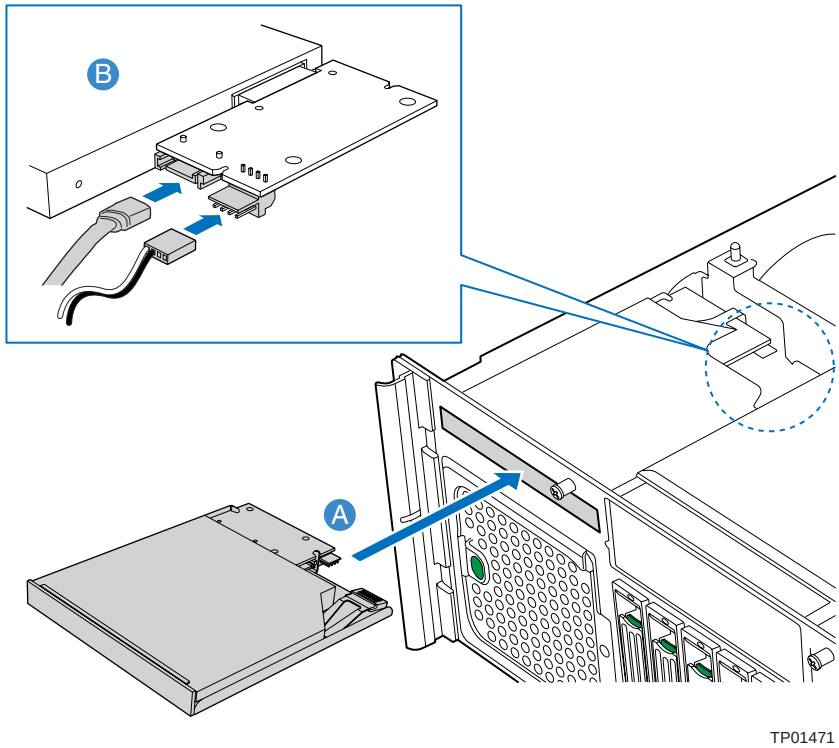


Figure 115. Inserting the CD-ROM/DVD-ROM Drive Carrier into the Platform

Installing and Removing a 5 ¼ Peripheral

Installing a 5 ¼" Peripheral

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Push the tabs at each side of the carrier filler panel. See letter "A" in Figure 116.
6. Hold the tabs in while pulling the carrier filler panel from the bay. See letter "B" in the figure.

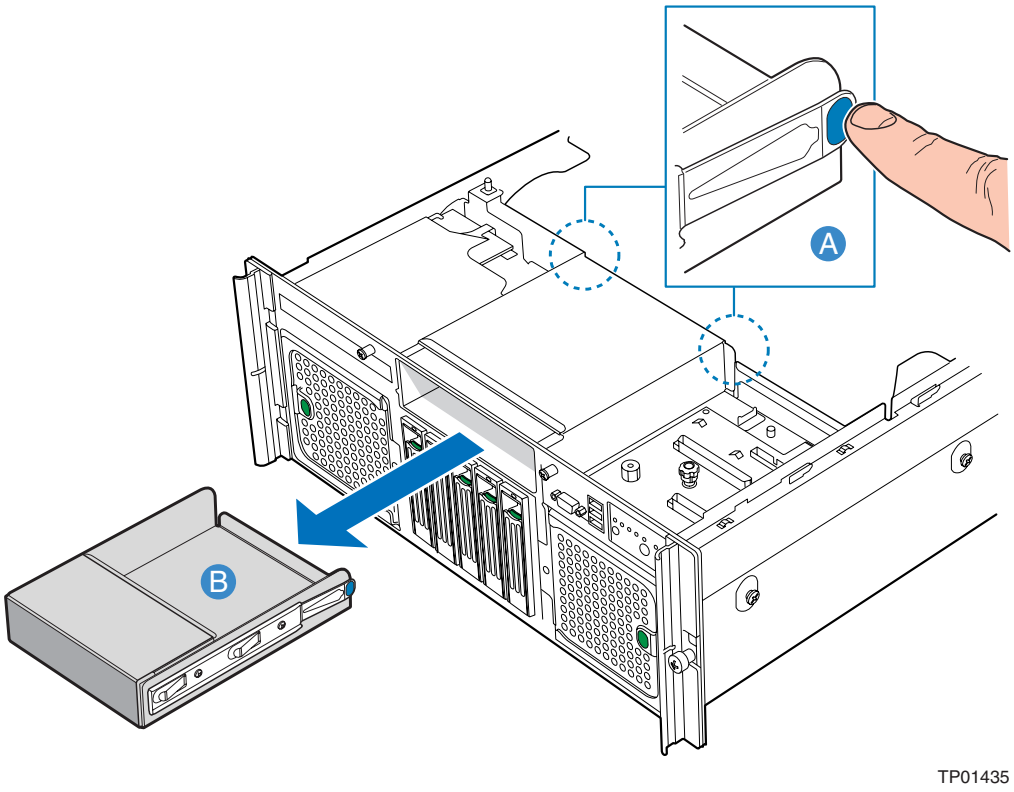


Figure 116. Removing 5 ¼ Peripheral Filler Panel from Server

7. Remove the screws that attach the slide rails to the filler panel.
8. Attach the slide rails to the device using the screws removed from the filler panel.
9. Pull the Y-power cable through the 5 ¼ peripheral opening.
10. Attach the Y-cable to the 5 ¼ peripheral.
11. Slide the 5 ¼ peripheral device into the server until it clicks into place. See Figure 117.
12. Install the top cover. For instructions, see "Installing the Top Cover".

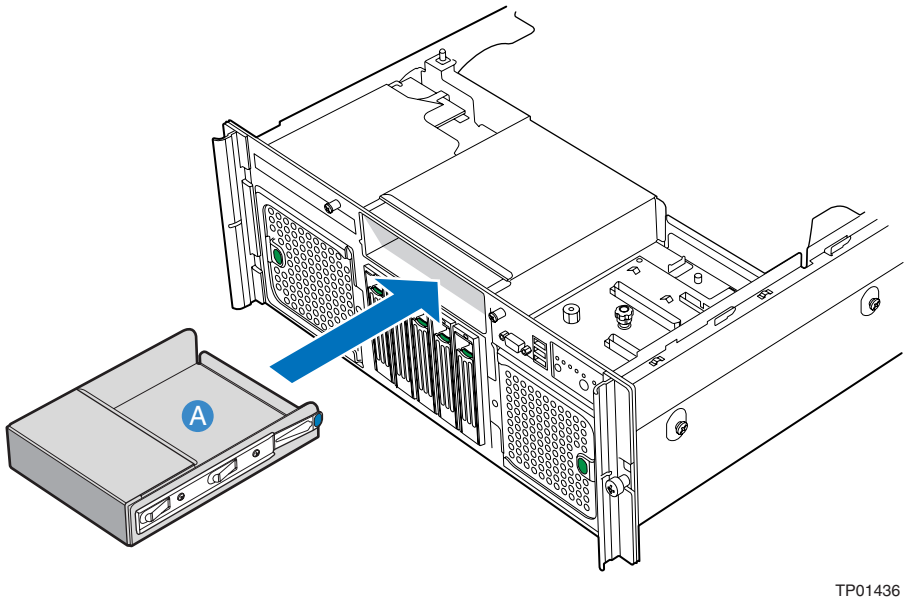


Figure 117. Installing 5 ¼ Peripheral into Server

Removing a 5 ¼" Peripheral

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Push the tabs at each side of the carrier filler panel. See letter "A" in Figure 116.
6. Hold the tabs in while pulling the carrier filler panel from the bay. See letter "B" in the figure.
7. Disconnect the power cable at the rear of the device.
8. Unscrew the slide rails from the 5 ¼ peripheral.
9. Install the slide rails on the replacement device or install them on the 5 ¼ filler panel that came with your server.
10. If installing a replacement device, attach the Y-power cable to the device.
11. Slide the device or filler panel into the 5 ¼ bay until it clicks into place. See Figure 117.

10 Servicing the Intel® Management Module

The Intel® Management connects to the main board. The Intel® Management Module provides server management firmware and functionality for the system.

NOTES

Do not install the Intel® Management Module or the GCM that is included with product code AXXIMMADV. The correct Intel® Management Module product code for the Intel® Server Platform SR4850HW4 and SR4850HW4/M is AXXIMMADV2.

The GCM features are included in the Intel® Server Platform SR4850HW4 and SR4850HW4/M. You do not need to install the GCM. **If the wrong product code is used and you use the GCM that is included with product code AXXIMMADV, your server will not function correctly.**

The first time a server is booted with a new Intel® Management Module update the BMC with firmware to ensure correct operation.

Installing the Intel® Management Module (Professional Edition or Advanced Edition)

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory boards or memory board air baffles from Slots A and B. For instructions, see "Cold Removal of Memory Board".
6. Remove the Intel® Management Module from the antistatic bag.

7. Align the pin on the Intel® Management Module with the hole in the main board. See letter “A” in Figure 118.
8. Align the connector on the Intel® Management Module with the connector on the main board. See letter “B” in the figure.
9. Press the Intel® Management Module gently, but firmly into the connector until it is fully seated.

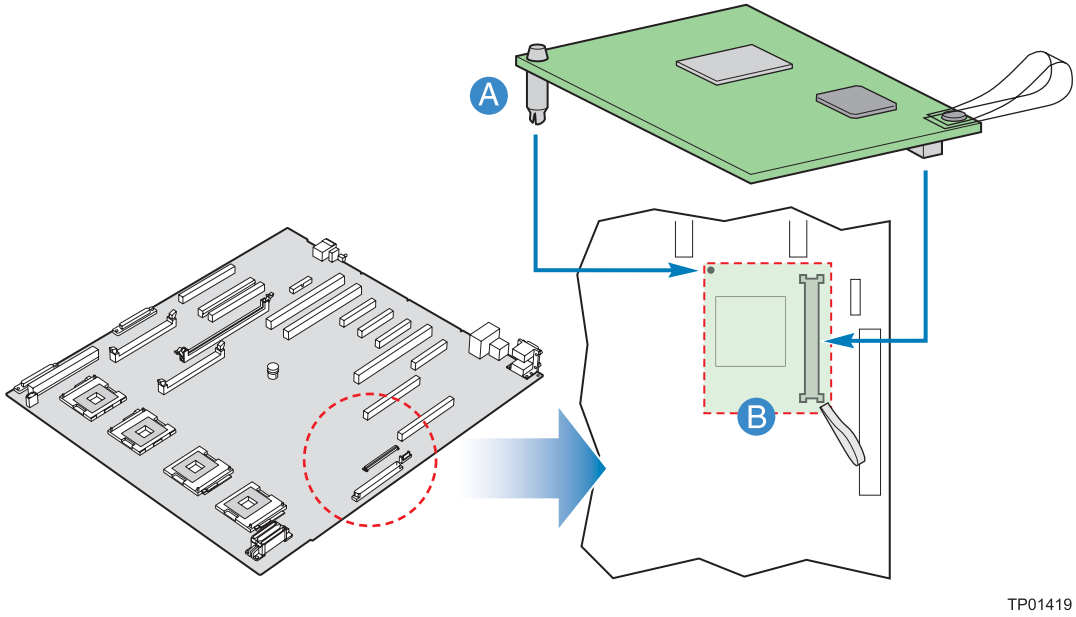


Figure 118. Installing the Intel® Management Module

10. Install the memory boards into Slots A and B. For instructions, see “Cold Insertion of a Memory Board”.
11. Replace the top cover. For instructions, see “Installing the Top Cover”.

Removing the Intel® Management Module

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".
5. Remove the memory boards from Slots A and B. For instructions, see "Cold Removal of Memory Board".
6. Remove the Intel® Management Module. In removing the Module, be sure to hold the module both by the loop finger grip and by the opposite corner, as shown by the two letters "A" in Figure 119. Do not twist or bend the Module.
7. Install the memory boards into Slots A and B. For instructions, see "Cold Insertion of a Memory Board".
8. Replace the top cover. For instructions, see "Installing the Top Cover".

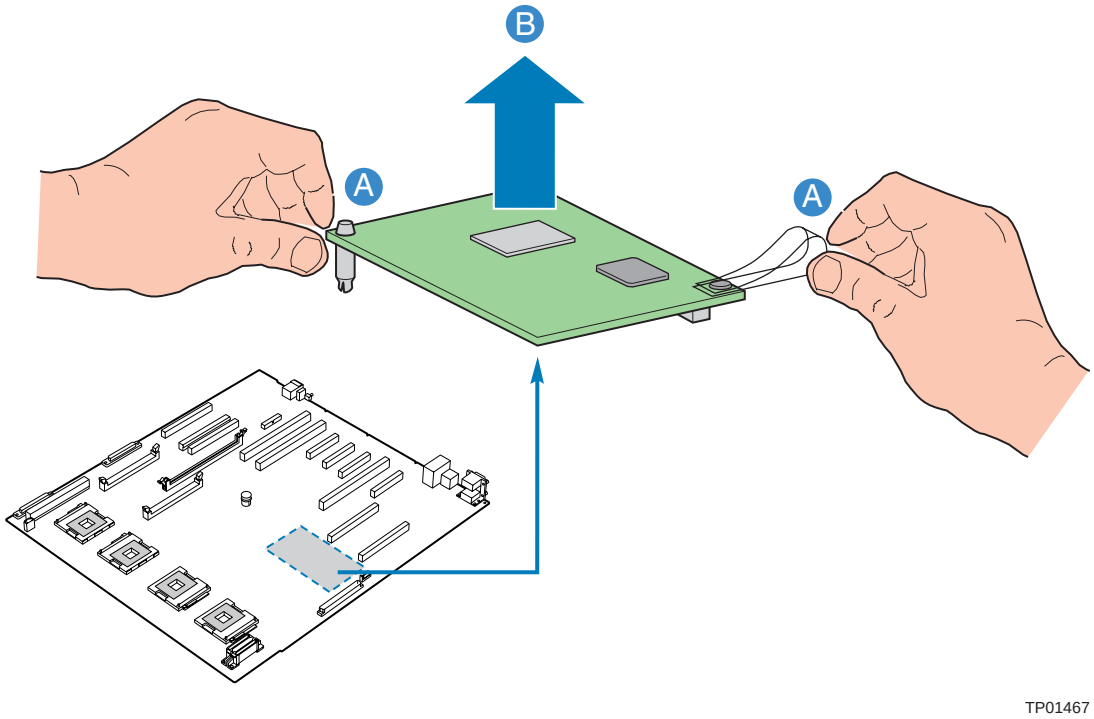


Figure 119. Removing the Intel® Management Module

11 Servicing the Server Boards

Unless otherwise noted, each of the server boards is required for the server platform to function. If a board fails, first follow the steps below to remove the failed board and then follow the steps to install the replacement board.

After all replacements are complete, install the top cover. For instructions on installing the top cover, see "Installing the Top Cover".

Replacing the Main Board

Removing the Main Board

1. Observe the safety precautions, warnings, and cautions described in "Safety Information"
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Disconnect all external cables attached to the server.
5. Remove the top cover. For instructions, see "Removing the Top Cover".
6. Remove the processor air baffle. For instructions, see "Removing the Processor Air Baffle".
7. Lift up the lower center air baffle to remove it. See Figure 120.

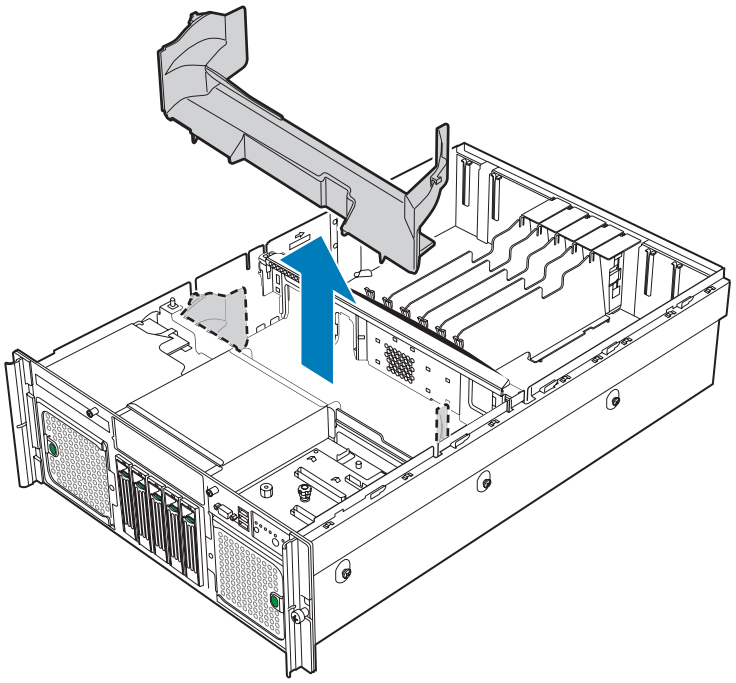


Figure 120. Removing the Lower Center Air Baffle

8. Remove the center brace. For instructions, see “Removing the Center Brace”.
9. Disconnect all internal cables attached to PCI add-in cards.
10. Remove all installed PCI add-in boards. For instructions, see “Removing a Non-Hot-Plug PCI Card”.
11. Remove the Fibre Channel Module if it is installed. For instructions, see “Removing the Fibre Channel Module”.
12. Remove all installed memory boards and memory board air baffles. For instructions, see “Cold Removal of Memory Board”.
13. Remove all installed processors. For instructions, see “Removing a Processor”.
14. Remove all installed VRMs. For instructions, see “Removing the Processor Core VRM Converters” and “Removing the Processor Cache VRM Converter”.
15. Remove the Intel® RAID Smart Battery if it is installed. For instructions, see “Removing the Intel® RAID Smart Battery”.
16. Remove the Intel® RAID Activation Key if it is installed. For instructions, see “Removing the Intel® RAID Activation Key”.
17. Remove the RAID DIMM if it is installed. For instructions, see “Removing the RAID DDR2 DIMM”.
18. Remove the Intel® Management Module. For instructions, see “Removing the Intel® Management Module”.
19. Remove the plastic PCI slot dividers:
    - Push on the two release latches. See letter “A” in Figure 121.
    - Lift the dividers from the server. See letter “B” in the figure.

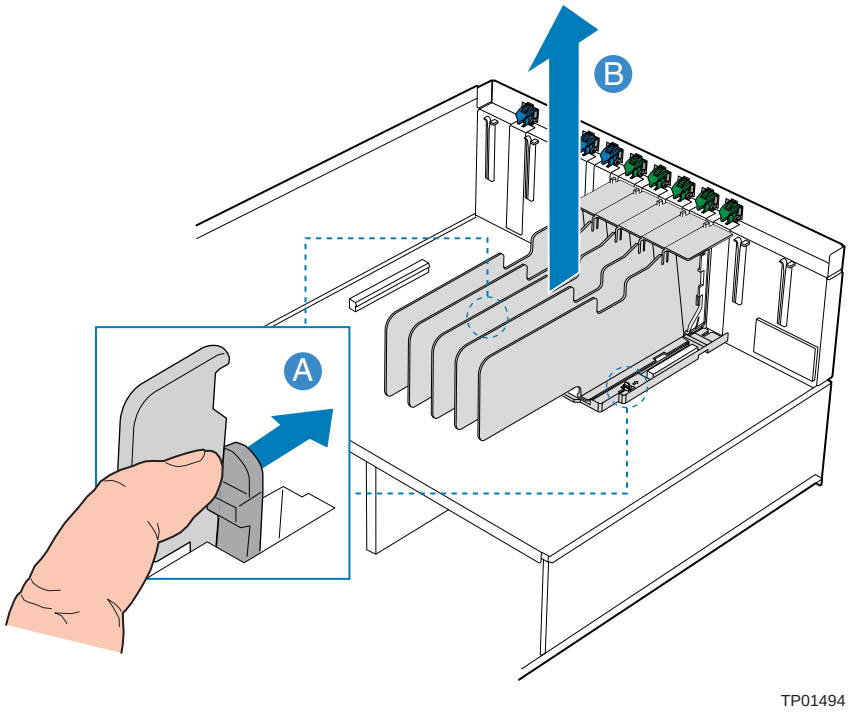


Figure 121. Removing the PCI Dividers

20. If the optional external SCSI connector is installed, press down on the tab and push inward as shown in Figure 135. Drape the cable over the side of the chassis out of the way.
21. Disconnect the chassis intrusion cable from the main board.
22. Disconnect any cables still connected to the main board.
23. Lift the blue plunger in the center of the main board. See letter “A” in Figure 122.
24. While holding the plunger up, slide the main board toward the front of the chassis. See letter “B” in the figure.
25. Use the plunger to lift the board from the chassis. See letter “C” in the figure.
26. Install a replacement main board. For instructions, see “Installing the Main Board”.

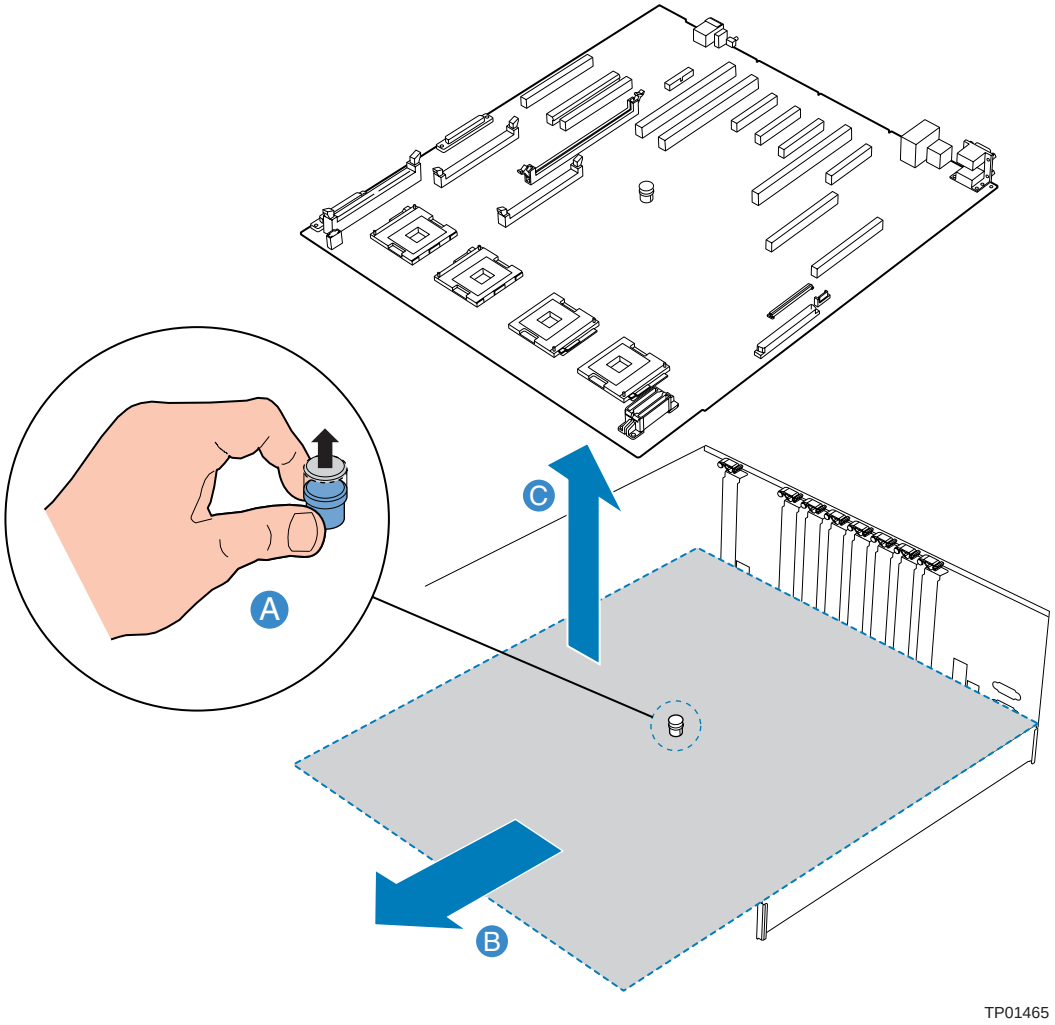


Figure 122. Removing the Main Board

Installing the Main Board

To install the main board, follow these instructions:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. Set the main board into the chassis. See letter "A" in Figure 123.
3. Hold up the plunger at the center of the board. See letter "B" in the figure.
4. While holding the plunger, slide the board to the rear of the chassis, aligning the two slots at the rear of the board with the tabs in the chassis. See letter "C" in the figure.
5. Release the plunger and ensure it is fully seated.

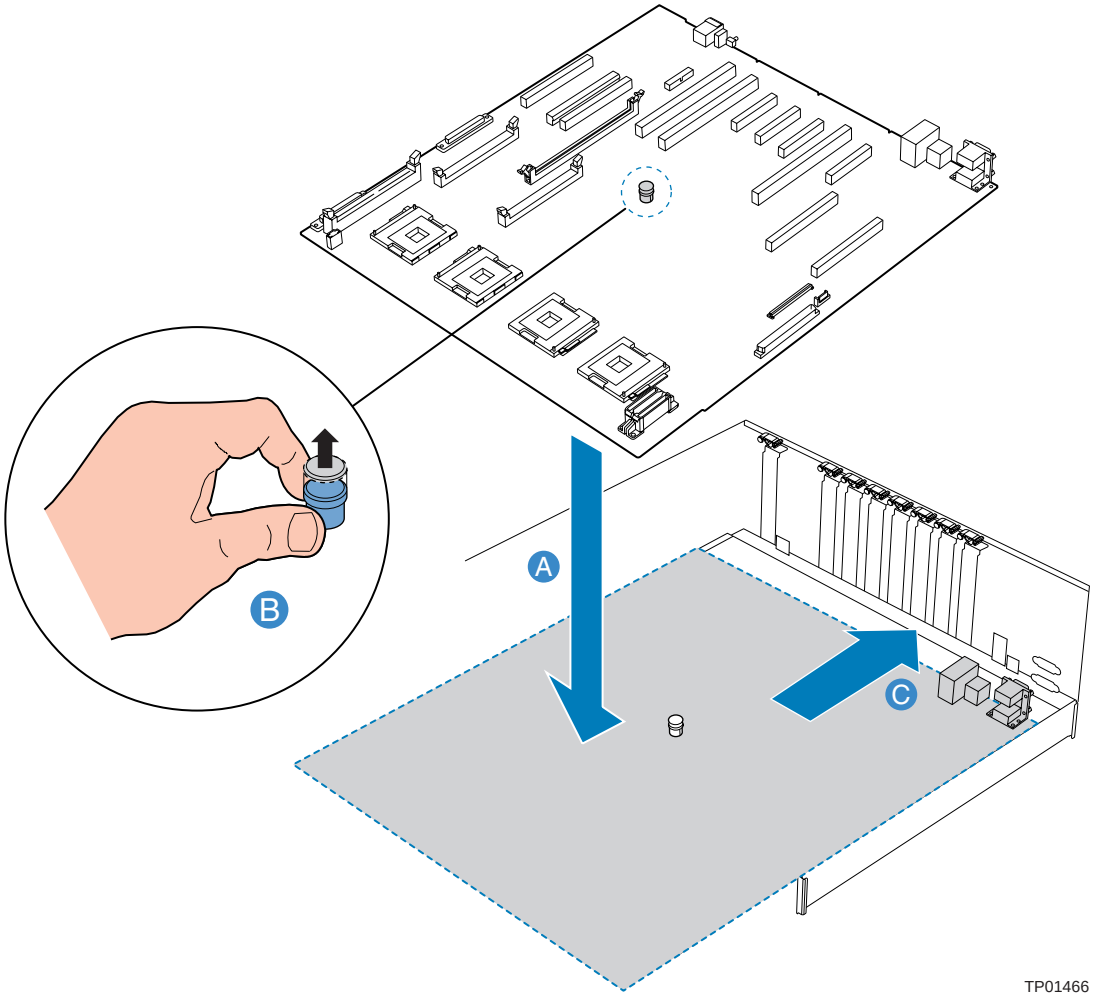


Figure 123. Installing the Main Board

6. Install the PCI card guide, lining up the slots on the card guide with the hooks in the floor of the chassis. See Figure 124.

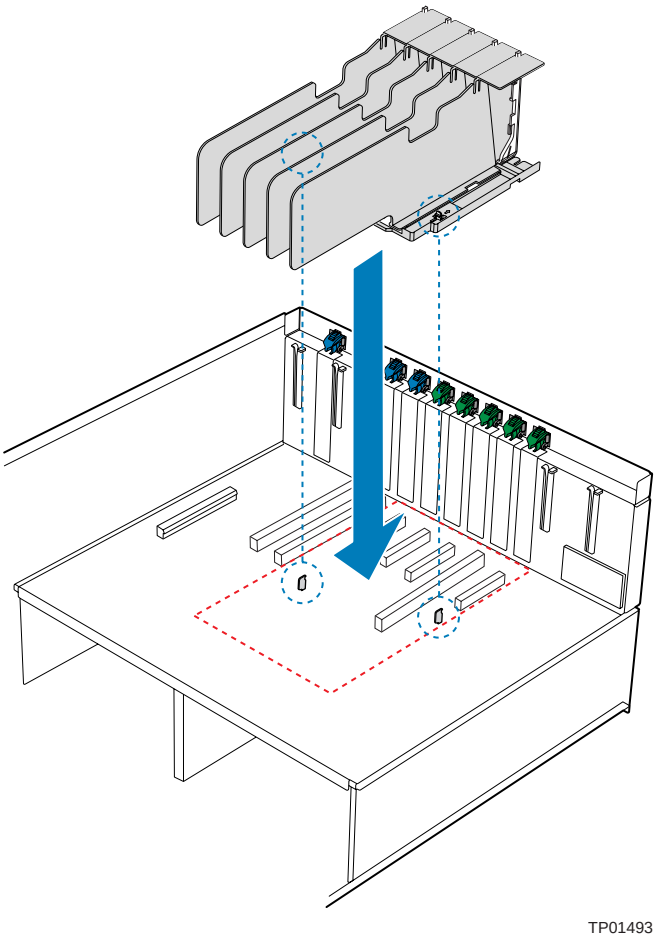


Figure 124. Installing the PCI Card Guide

7. Connect the three-cable bundle from the power distribution board to the connectors on the main board.
8. Connect the chassis intrusion switch cable to the main board.

9. Connect the SCSI A cable to the main board. For the location of the connection, see Figure 83.
10. Lower the lower center air baffle into place:
    - Line up the tabs at the sides of the baffle with the slots in the chassis. See letter “B” in Figure 125.
    - Line up the two tabs at the bottom of the air baffle with the matching holes. See letter “A” in the figure.

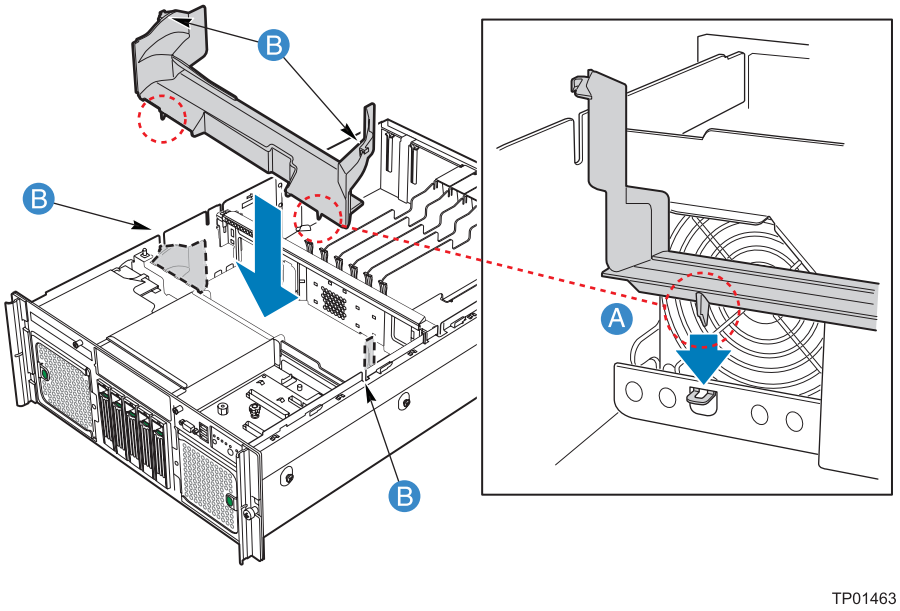


Figure 125. Installing the Lower Center Air Baffle

11. Install the Intel® RAID Activation Key if it is needed. For instructions, see “Installing the Intel® RAID Activation Key”.
12. Install the RAID DIMM if it is needed. For instructions, see “Installing the RAID DDR2-400 DIMM”.
13. Install the Intel® RAID Smart Battery if it is needed. For instructions, see “Installing the Intel® RAID Smart Battery”.
14. Install the Intel® Management Module. For instructions, see “Installing the Intel® Management Module (Professional Edition or Advanced Edition)”.
15. Install the Fibre Channel Module if it is needed. For instructions, see “Installing the Fibre Channel Module”.
16. Install the processors. For instructions, see “Installing a Processor”.
17. Install the VRMs. For instructions, see “Installing a Processor Core VRM Converter” and “Removing the Processor Cache VRM Converter”.
18. Connect the optional external SCSI connector on the back of the chassis if needed. For instructions, see “Installing the External SCSI Cable Assembly”.
19. Install all PCI add-in cards. For instructions, see “Installing a Non-Hot-plug PCI Card”.
20. Install all memory boards and memory board air baffles. For instructions, see “Cold Insertion of a Memory Board”.
21. Install the processor air baffle. For instructions, see “Installing the Processor Air Baffle”.

22. Install the center brace. For instructions, see “Installing the Center Brace”.
23. Connect any remaining cables to the main board. For connection locations, see Figure 83.
24. Install the top cover. For instructions, see “Installing the Top Cover”.

Replacing the SCSI Backplane Board

The SCSI backplane board is located behind the peripheral devices on the underside of the peripheral bay.

CAUTIONS

Note the location of the SCSI hard disk drives to ensure they are reinstalled in their original positions. Failure to reinstall the drives in the correct locations may result in a loss of data.

Removing the SCSI Backplane Board

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove all hot-swap hard drive carriers. For instructions, see “Removing a Hard Disk Drive”.
5. Remove the top cover. For instructions, see “Removing the Top Cover”.
6. Remove the main board. For instructions, see “Removing the Main Board”.
7. Disconnect all cables attached to the SCSI backplane board.

8. Loosen the captive screw that secures the SCSI backplane board to the chassis. See letter “A” in Figure 126.
9. Pull the SCSI backplane board upward slightly to disengage the tabs. See letter “B” in the figure.
10. Tilt the SCSI backplane board towards the rear and lift it from the system. See letters “C” and “D” in the figure.

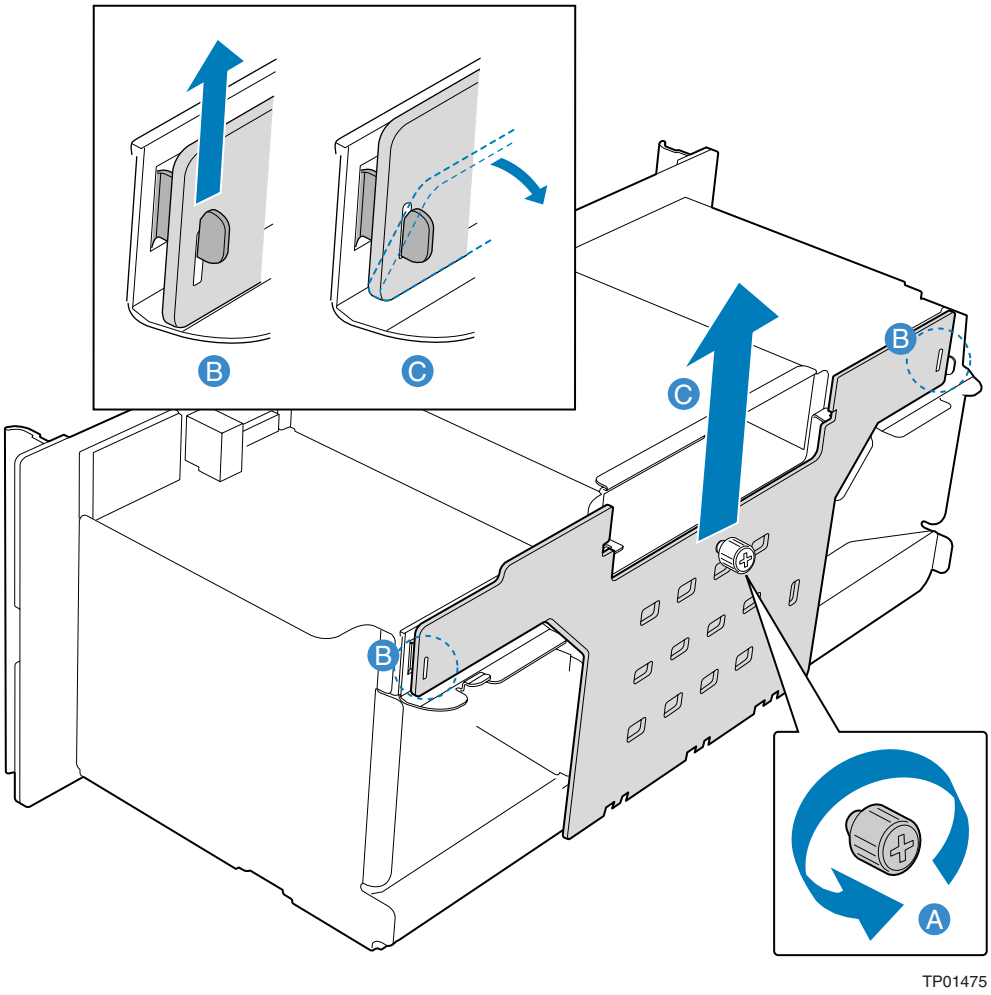


Figure 126. Removing the SCSI Backplane Board

11. Store the SCSI backplane board in an anti-static bag.
12. Install the replacement SCSI backplane board or replace the power distribution board if necessary. For instructions, see “Installing the SCSI Backplane Board” and “Replacing the Power Distribution Board”.

Installing the SCSI Backplane Board

1. Observe the safety precautions, warnings, and cautions described in "Safety Information".
2. At an angle, place the SCSI backplane board over the three tabs at the lower edge of the board. See letter "A" in Figure 127.
3. Move the board until it is vertical, ensuring all nine tabs are through the slots in the SCSI backplane board. See letters "A" and "B" in the figure.
4. Slide the board downward, engaging all hooks. See letter "C" in the figure.
5. Tighten the captive screw. See letter "D" in the figure.

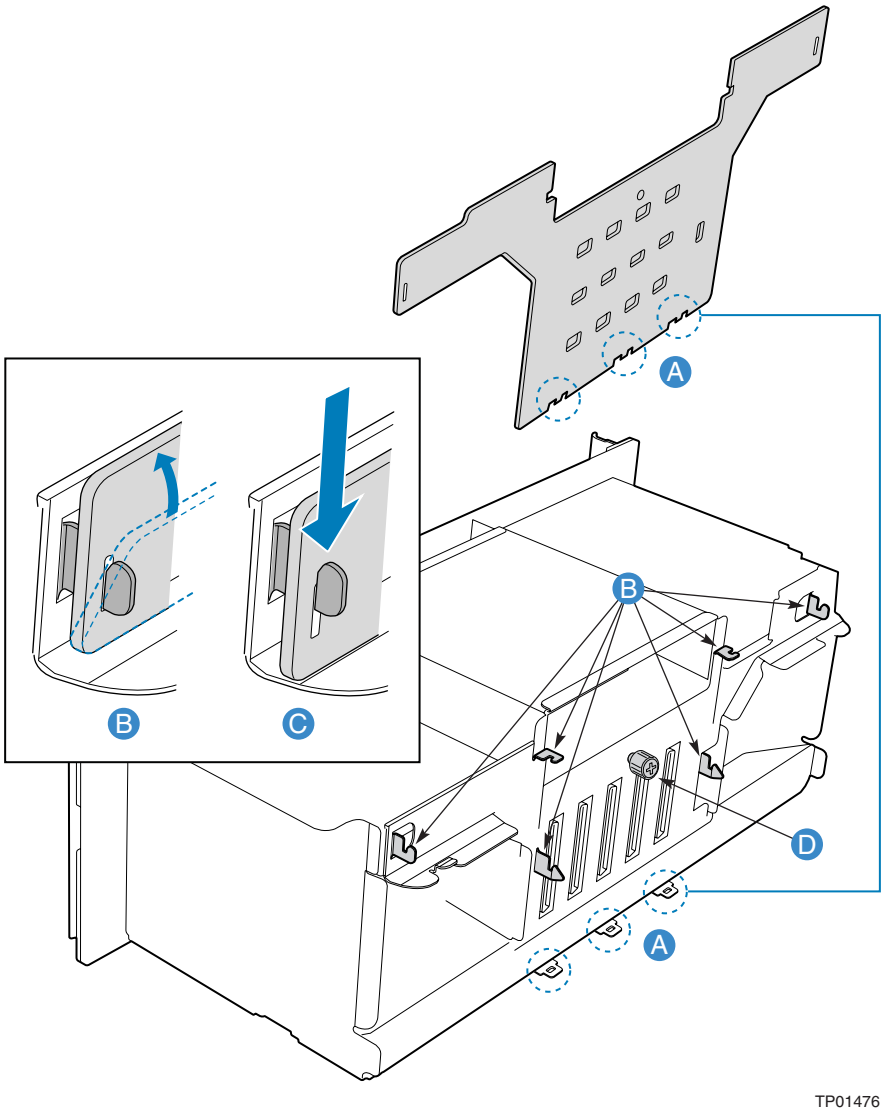


Figure 127. Installing the SCSI Backplane Board

6. Connect the cables you disconnected during the removal process from the SCSI backplane board. For connection locations, see Figure 84.
7. Install the main board. For instructions, see “Installing the Main Board”.
8. Install the top cover. For instructions, see “Installing the Top Cover”.
9. Install the hot-swap hard drives and hard drive carriers. For instructions, see “Installing a Hard Disk Drive”.

Replacing the Power Distribution Board

The power distribution board provides the output power interface between the hot-swap power supplies and the main board.

Removing the Power Distribution Board

To remove the power distribution board:

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the power supplies. For instructions, see “Removing a Power Supply”.
5. Remove the top cover. For instructions, see “Removing the Top Cover”.
6. Remove the main board. For instructions, see “Removing the Main Board”.
7. Remove the SCSI backplane board. For instructions, see “Removing the SCSI Backplane Board”.

8. Remove the seven screws on the power distribution board. See letter “A” in Figure 128.
9. Lift the board from the chassis.
10. Install the replacement power distribution board. For instructions, see “Installing the Power Distribution Board”.

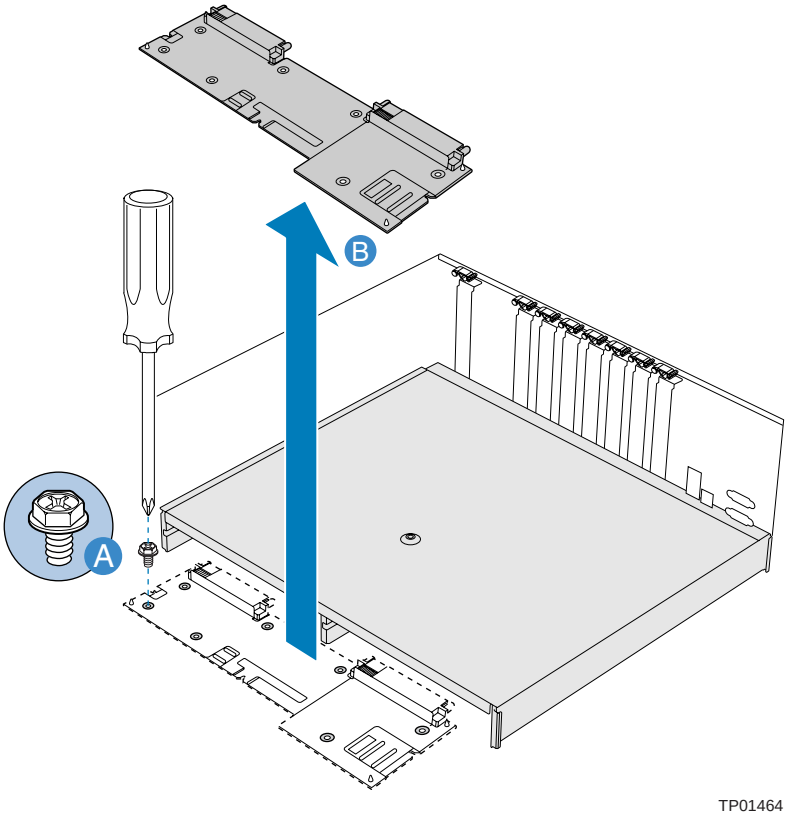


Figure 128. Removing the Power Distribution Board

Installing the Power Distribution Board

To install the power distribution board:

1. Observe the safety precautions, warnings, and cautions described in "Safety Information"
2. Set the power distribution board in place.
3. Use the seven screws to secure the power distribution board to the chassis.
4. Connect the cable between the power distribution board and the SCSI backplane board.
5. Install the SCSI backplane board. For instructions, see "Installing the SCSI Backplane Board".
6. Install the power supplies. For instructions, see "Installing a Power Supply".
7. Install the main board. For instructions, see "Installing the Main Board".
8. Install the top cover. For instructions, see "Installing the Top Cover".

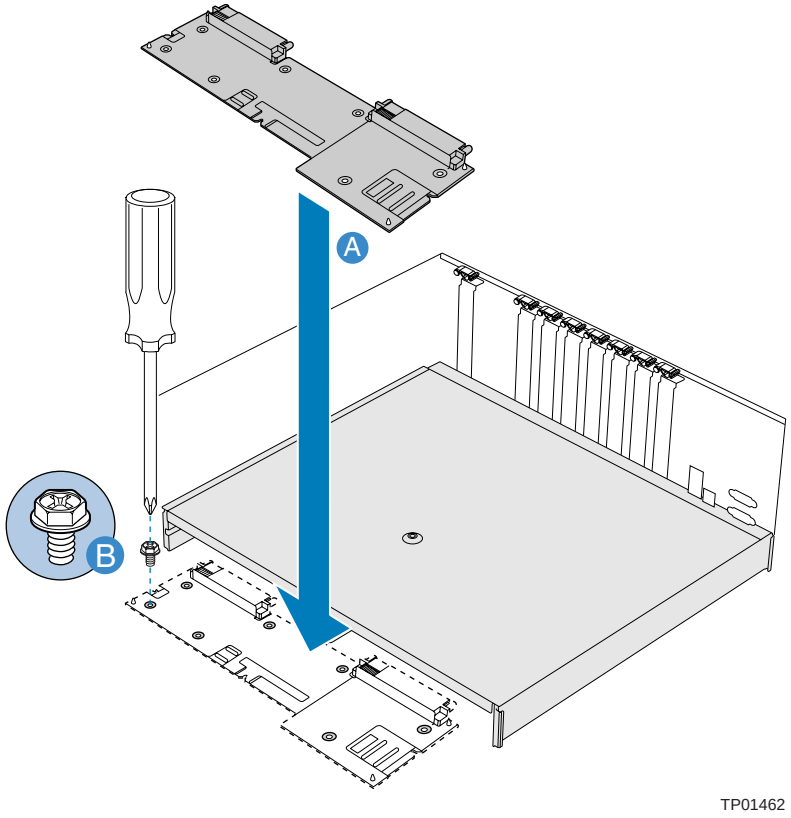


Figure 129. Installing the Power Distribution Board

Replacing the Front Panel I/O Board

The front panel I/O board is located next to the front fan bay.

Removing the Front Panel I/O Board

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Remove the top cover. For instructions, see “Removing the Top Cover”.
3. Remove the processor air baffle. For instructions, see “Removing the Processor Air Baffle”.
4. Disconnect all cables attached to the front panel I/O board.
5. Pull up the captive screw. See letter “A” in Figure 130.
6. Slide the board towards the rear of the chassis until the tabs disengages with the board. See letters “B” and “C” in the figure.
7. Lift the board from the chassis. See letter “D” in the figure.
8. Install the replacement front panel I/O board. For instructions, see “Installing the Front Panel I/O Board”.

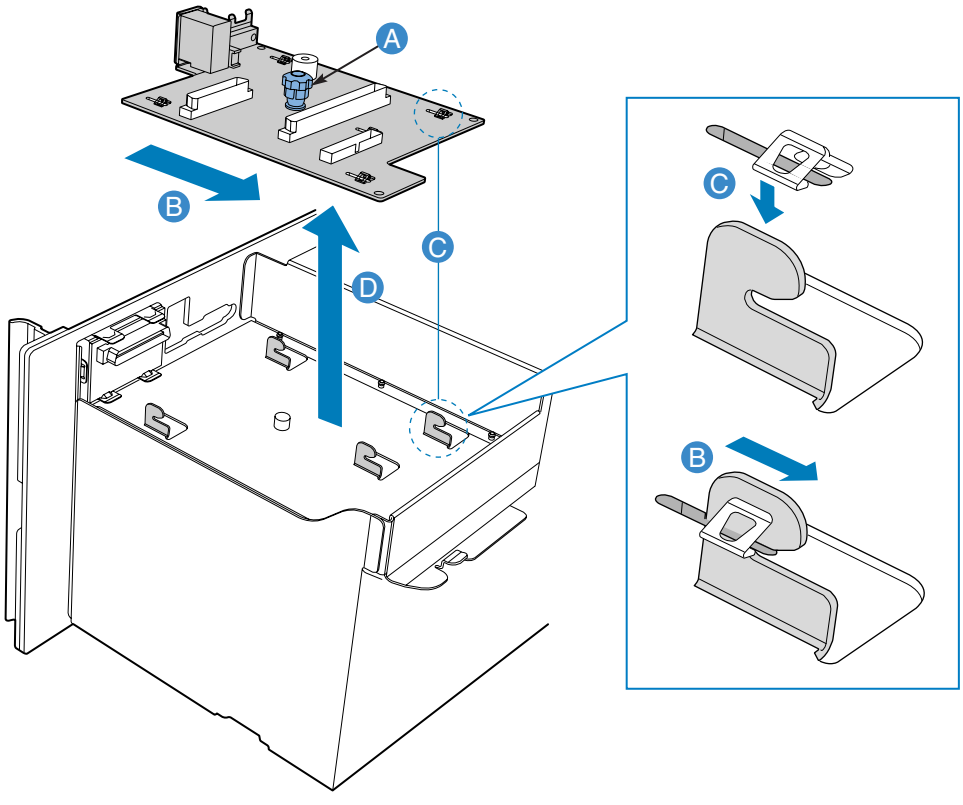


Figure 130. Removing the Front Panel I/O Board

Installing the Front Panel I/O Board

1. Observe the safety precautions, warnings, and cautions described in “Safety Information”.
2. Set the front panel I/O board in place over the hooks. See letters “A” and “B” in Figure 131.
3. Slide the front panel I/O board forward until seated over the hooks. See letter “C” in the figure.
4. Tighten the captive screw. See letter “D” in the figure.
5. Reconnect all cables you disconnected when you removed the front panel I/O board. For connection locations, see Figure 85.
6. Install the processor air baffle. For instructions, see “Installing the Processor Air Baffle”.
7. Install the top cover. For instructions, see “Installing the Top Cover”.

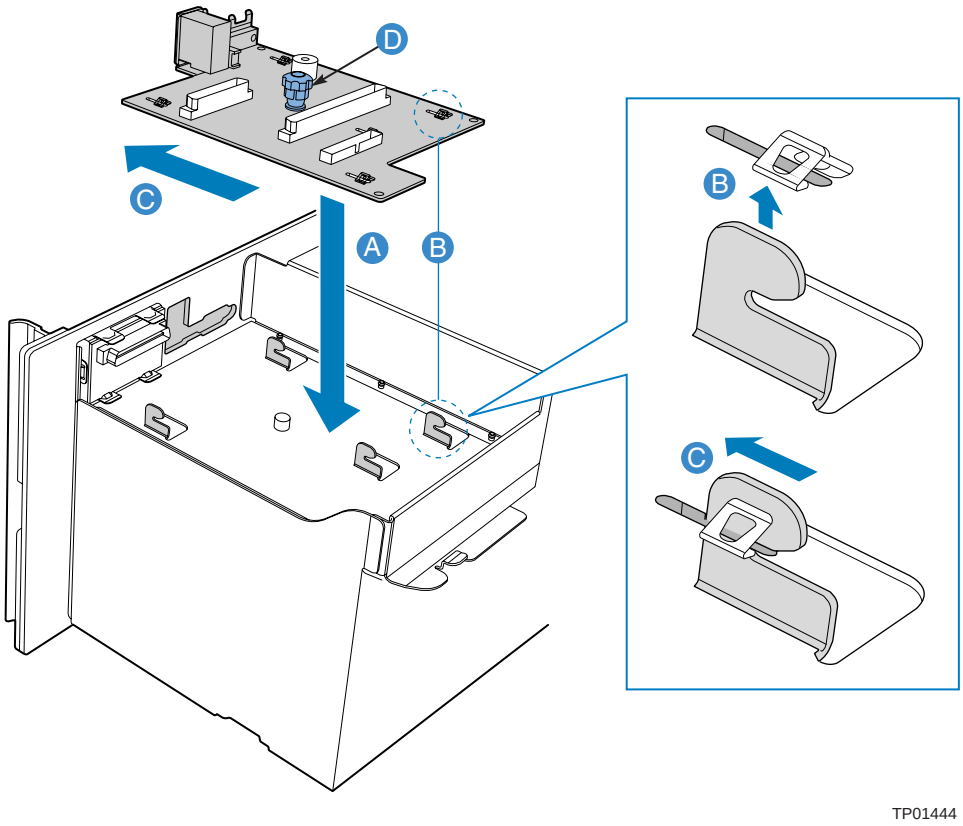


Figure 131. Installing the Front Panel I/O Board

12 Replacing the CMOS Battery

The lithium battery on the main board powers the real-time clock (RTC) for three to four years in the absence of power. When the battery weakens, it loses voltage and the system settings stored in CMOS RAM and the Real Time Clock (such as the date and time) can be wrong. Contact your customer service representative or dealer for a list of approved replacement batteries.

The following warning and translations are required by specific certifying agencies to be printed immediately adjacent to the procedure for removing the battery.

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.

ADVARSEL

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

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 the safety precautions, warnings, and cautions described in "Safety Information".
2. Turn off all peripheral devices connected to the system.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see "Removing the Top Cover".

5. Remove the memory board or the memory board air baffle from Slot A to expose the battery. For instructions, see “Cold Removal of Memory Board”.
6. Place your finger on the edge of the battery, between the two smaller prongs that hold the battery in place.
7. Without pulling up on the battery, push the battery toward the larger prongs until the edge of the battery clears the small prongs.
8. Maintain pressure on the battery while pulling up on the released edge of the battery to lift it from the server. See Figure 132.

CAUTION

Do not attempt to pull the battery up until it is pushed clear of the smaller prongs. Doing so may damage the battery holder on the main board.

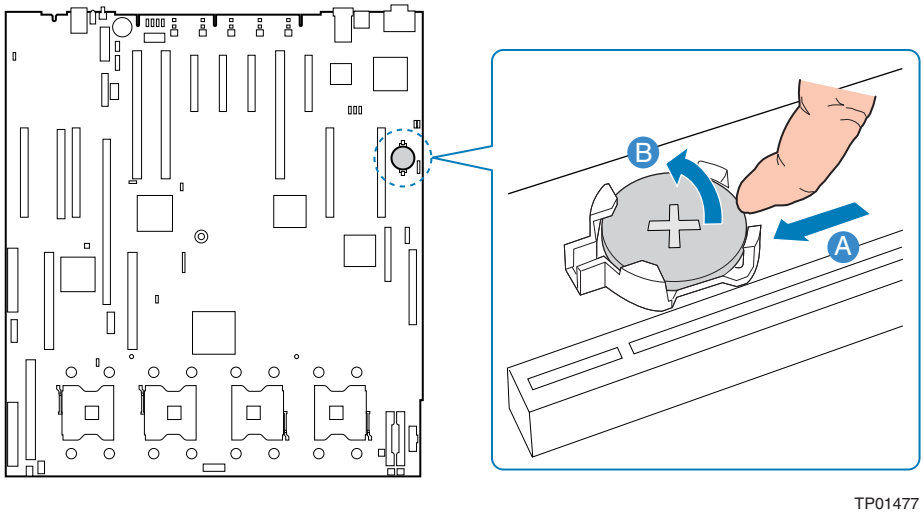


Figure 132. Removing the Battery

9. Dispose of the battery according to local ordinance.
10. Remove the new lithium battery from its package.
11. Being careful to observe the correct polarity, insert the battery at an angle into the battery socket with the edge of the battery under the larger prongs in the battery socket.
12. Push the battery toward the larger prongs while pushing down on the raised edge of the battery until it clicks into place under all four prongs.
13. Install the memory board or the memory board air baffle into slot A. For instructions, see “Cold Insertion of a Memory Board”.
14. Install the top cover. For instructions, see “Installing the Top Cover”.

Technical Reference

Creating DOS-bootable USB Flash Memory Device

This section provides instructions for creating a DOS-bootable USB flash memory device using the Intel® Server Platform SR4850HW4 and SR4850HW4/M. This process depends on the BIOS and EFI correctly detecting both a USB floppy disk drive and the USB flash memory device.

CAUTION

This process formats the media and deletes all content from the media. This process also requires you to detach hard disk drives from the server before beginning. Before beginning, backup data on all devices attached to the server and test the backup.

NOTE

Devices from some manufacturers may not be compatible with this system. For a link to a list of tested hardware, see the *Intel® Server Platform SR6850HW4 Tested Hardware and Operating System List*.

Before Beginning

To create a DOS-bootable USB flash memory device on the Intel® Server Platform SR4850HW4 and SR4850HW4/M, you need the following:

- Intel® Server Platform SR4850HW4 and SR4850HW4/M
- USB floppy disk drive
- USB flash memory device
- Bootable DOS floppy disk that contains the files FDISK.EXE and FORMAT.COM

Verify the following:

- Attach the USB flash memory device to a different computer to ensure it can be detected
- Attach the USB floppy disk drive to a different computer to ensure it can be detected
- Make sure the floppy disk drive can boot to the bootable floppy disk that contains the FDISK.EXE and FORMAT.COM files
- Make sure the FDISK.EXE and FORMAT.COM files will successfully partition and format a hard disk drive.

CAUTION

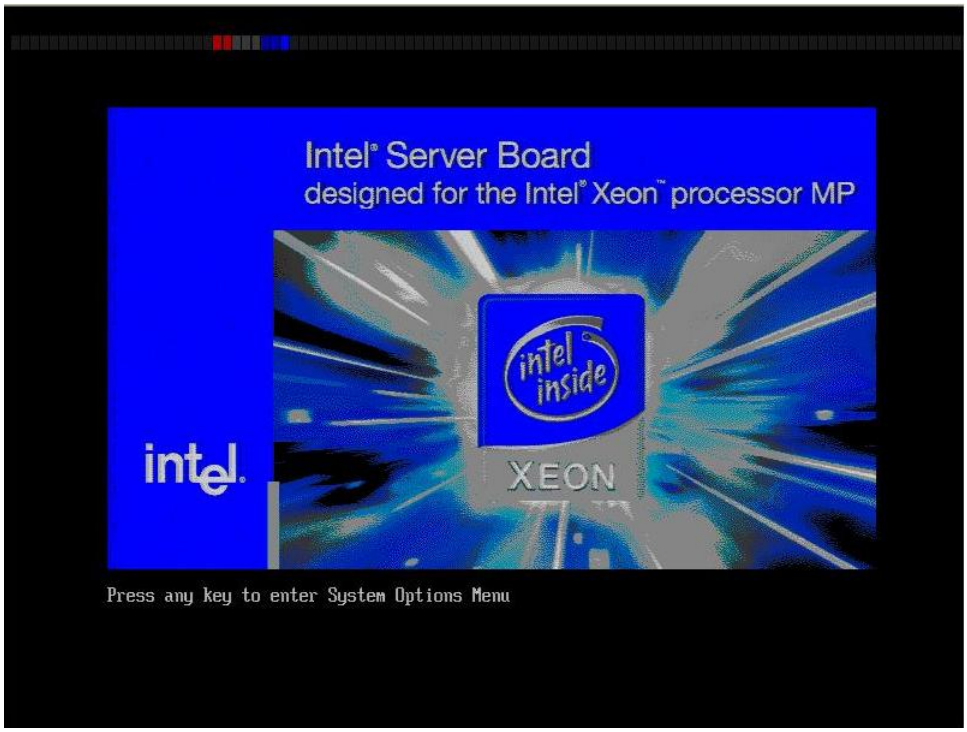
This process formats the hard disk drive and deletes all content from the drive.

Remove all media from the Intel® Server Platform SR4850HW4 and SR4850HW4/M:

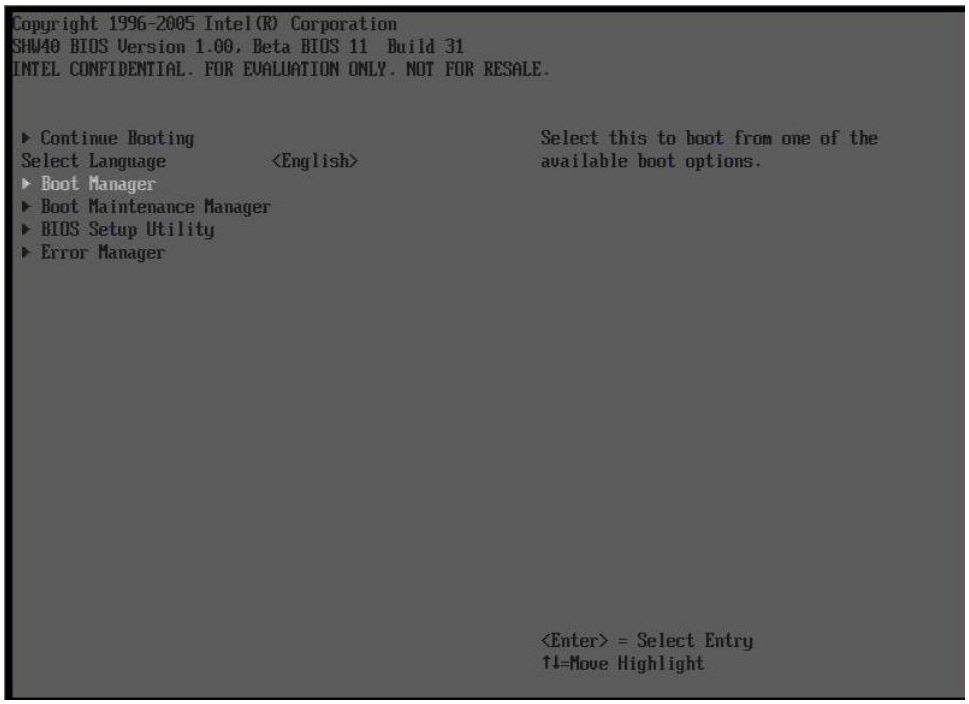
- Disconnect/remove all hard disk drives
- Make sure the CD-ROM/DVD-ROM drive does not contain a disk

Create the DOS-bootable USB Flash Memory Device

1. Power off the server.
2. Attach the USB floppy disk drive to a USB connector on the server.
3. Attach the USB flash memory device to a USB connector on the server.
4. Power on the server.
5. When you see the following screen, press any key to enter the System Option Menu.



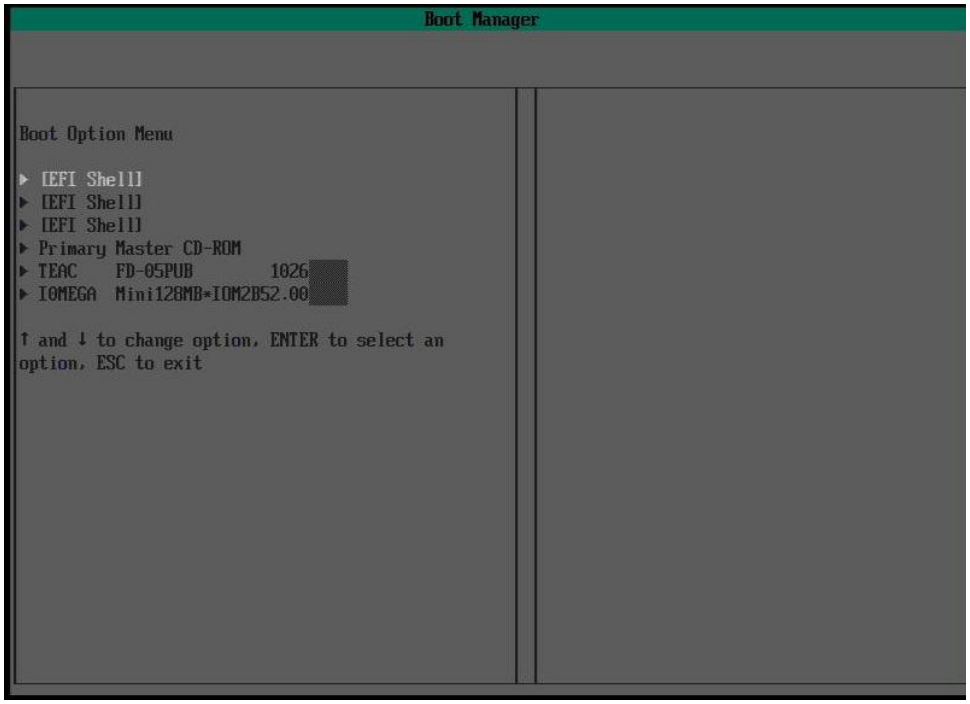
6. You will see the System Options Menu shown below.



7. Use the down arrow key to select “Boot Manager”. Press <Enter>.
8. Review the Boot Option Menu for the list of boot devices.

   In the example below, both the USB floppy disk drive and the USB flash memory device are detected. These are the TEAC* FD-05PUB 1026 and the IOMEGA* Mini128MB+IOM2B52.00.

   If the devices are not detected, see “Troubleshooting a USB Flash Memory Device”.



9. Insert the bootable floppy disk into the USB floppy disk drive.
10. Using the arrow key select the USB floppy drive. Press <Enter>. The system will boot to the floppy disk.
11. After DOS is booted, type FDISK and complete the following operations:
12. Delete existing paritions
13. Create a new partition
14. Make sure the partition is active
15. Reboot
16. After the system rebooted to the floppy disk, type FORMAT C: /S/U to format the created partition
17. Reboot the server.
18. Enter the System Options Menu, as you did in step 5.
19. Select the “Boot Manager”. Press <Enter>.
20. Select the USB flash memory drive as the boot device. The system boots to DOS on the USB memory device.

Troubleshooting a USB Flash Memory Device

Problems detecting the USB flash memory device:

1. Check to see if the USB flash memory device is displayed in the Boot Maintenance Manager.
2. Make sure the USB flash memory device is correctly inserted into the USB connector and reset the server. Do not remove the USB flash memory device. While the system reboots check the Boot Manager again
3. Create a small FAT partition (less than 64MB) on a system that is running the Windows* XP operating system.
4. Format the partition as FAT.
5. Use DOS FDISK to delete all of the partition and create a small partition for DOS – make sure the partition created is set to “active”.
6. Power cycle the server.
7. Remove all other bootable media from the server.

Problems booting to the USB flash device that has a partition and is formatted correctly:

1. Run FDISK /MBR
2. Make sure the partition is active.
3. Make sure the partition has been correctly formatted as a bootable partition.
4. Use the Boot Manager to select the boot device.

NOTE

The USB flash memory device will only be present in the Boot Manager only while it is plugged in. Once the USB flash device is removed and the system is rebooted the USB flash memory device will no longer be seen in the Boot Manager.

The system boots to EFI when trying to boot to a USB floppy disk drive or to the USB flash memory device:

This is typically an indication that no key was pressed when prompted to enter the System Option Menu or that the first boot device is EFI.

1. At the Shell command prompt, type EXIT to return to the System Option Menu.
2. Select “Boot Manager”
3. Select the correct boot device.

System Interconnection

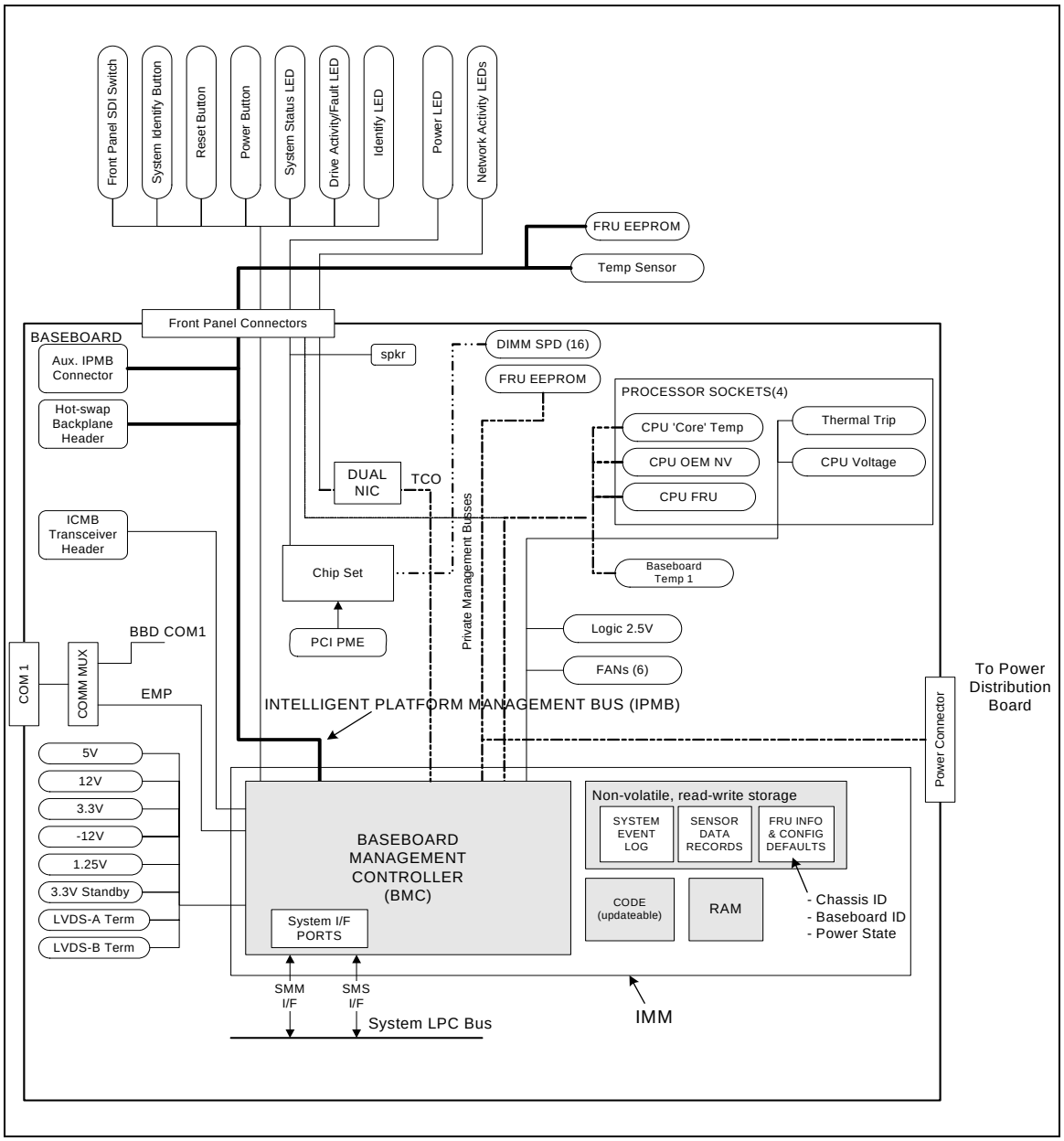


Figure 133. Interconnect Block Diagram

Table 12 lists the system connectors. The system connectors are used to connect to mains power, supply power, and signals throughout the board set, and to provide interface with external components.

Table 12. Cable and Connector Descriptions

Type	Quantity	From	To	Cable Description
Signal	1	Main board	Front panel I/O board	100-pin (Multi-Signal Function)
Signal	1	SCSI backplane board	Front panel I/O board	34-pin (Multi-Signal Function)
SCSI	1	Main board	SCSI backplane board	68-pin Internal SCSI
SCSI	1	Main board	Rear Panel	68-pin VHDCI SCSI
SCSI	1	Main board	Tape Backup	68-pin Tape Backup
SATA	1	Main board	SATA-to-IDE Converter	7-pin SATA
DC Power	1	SCSI backplane board	SATA-to-IDE Converter Tape Backup	4-pin Power 4-pin Power
Signal	1	Front Panel	Front Panel Control Module	50-pin Connector

Table 13. Connector Descriptions

System Component	Type	Quantity	From	To	Interconnect Description
Main board	Processors	4	Main board	Processor	604-pin ZIF Socket
	Memory	4	Main board	Memory board connector	164-pin Card Edge connector
	Memory	1	Main board	ROMB DIMM	240-pin Card Edge connector
	Fibre Channel	1	Main board	Fibre Channel Module	164-pin Card Edge connector (Performance board only)
	VRM	1	Main board	VRM9.1 Module	62-pin Card Edge connector
	VRM	2	Main board	VRM10.2LD Module	54-pin Power Connector
	PCI-X*	3	Main board	PCI-X* connector	188-pin Card Edge connector
	PCI Express*	4	Main board	PCI Express* connector	98 -pin Card Edge connector
	XDP	1	Main board	XDP	60-pin Header connector
	Intel® Management Module	1	Main board	Intel® Management Module	120-pin connector
	ICMB	1	Main board	Internal interface	1 x 5 Header Connector

System Component	Type	Quantity	From	To	Interconnect Description
	IPMB	1	Main board	Internal interface	1 x 3 Header Connector
	Chassis intrusion	1	Main board	Top Cover	1 x 3 Header Connector
	USB	1	Main board	Rear panel	1x4 pin Double Stacked USB connector
	USB	1	Main board	Internal interface	1 x 4 pin connector
	Video	1	Main board	Rear panel	15-pin, monitor device
	COM1/EMP	1	Main board	Rear panel	DB9 Pin Emergency Management Port
	COM2	1	Main board	Internal Interface	2 x 5 pin header
	Ethernet	2	Main board	Rear panel	Dual RJ45 connector ports
	SCSI	2	Main board	Internal SCSI Channels	68-pin SCSI
	SM NIC	1	Main board	External Interface	RJ45 connector port
	RAID Smart Battery	1	Main board	RAID Smart Battery	2 x 10-pin connector
	SATA Signal	1	Main board	SATA to IDE adapter board	1 x 7 SATA Signal
	DC Power	2	Main board	Power Distribution	1 x 12 Power connector
	DC Signal	1	Main board	Power Distribution	2 x 15 signal connector
Memory board	Memory	1	Memory board	Mainboard	164-pin card edge contacts
	Memory	4	Memory board	DDRII DIMMs	240-pin Card Edge connector (four per board)
SCSI backplane board	Hot-swap SCSI HDD	5	SCSI backplane board	Hot-swap SCSI HDD	80-pin SCS-2 connectors
	SCSI Channels	1	SCSI backplane board	Main board	68-pin SCSI
	Fan	2	SCSI backplane board	2 Fan Module	(2) 2 x 14 header, power and signal
	DC Power	1	SCSI backplane board	SATA to IDE Converter, Tape Back Up	1 x 4 industry power disk drive header
	Signal	1	SCSI backplane board	Front Panel	34-pin Signal

System Component	Type	Quantity	From	To	Interconnect Description
	DC Power	1	SCSI backplane board	Power distribution board	1 x 12 Power Header
Front Panel	Signal	1	Front Panel	SCSI backplane board	34-pin, header
	Video	1	Front Panel	External Access	15-pin, monitor device
	USB	1	Front Panel	External Access	(3) 1 x 4 pin module
	LCD	1	SCSI backplane board	LCD or Non LCD Module	50-pin header
	Signal	1	SCSI backplane board	Main board	100-pin (Multi-Signal Function)
SATA to IDE Adapter	Signal	1	SATA Adapter	CD ROM/DVD-ROM	SFF 50-pin JAE
	SATA	1	SATA Adapter	Main board	1 x 7 SATA signal
	DC Power	1	SATA Adapter	SCSI backplane board	1 x 4 power header
Fan Module	DC Power and Signal	2	Fan Module	SCSI backplane board	2 x 7 header
Non LCD/LCD Module	Signal	1	Non LCD/LCD Module	Front Panel	50-pin header
Power distribution board	DC Power	1	Power distribution board	Power Supplies	Power blade docking connector with signals
	DC Power	2	Power distribution board	Main board	1 x 12 pin, power
	Signal	1	Power distribution board	Main board	2 x 15 pin signal
	DC Power	1	Power distribution board	SCSI backplane board	1 x 12 pin, power
Power Supply	DC Power	1	Power Supply	Power distribution board	Power blade docking connector with signals
	AC Power	1	Power Supply	External interface	IEC filtered 15A receptacle

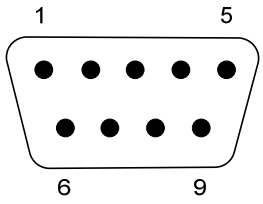
User Accessible Interconnects

Serial Port

The main board provides a rear panel DB9 serial port.

The COM serial port can be used either as an EMP or as a serial port. As an EMP, the connector is used by the server management RS-232 connection to the Intel® Management Module. This provides the ability to perform emergency management through an external modem. The RS-232 connection can be monitored by the BMC when the system is in a powered down (standby) state.

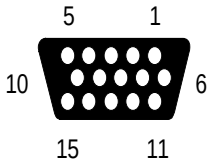
Table 14. COM1/EMP Serial Connector Pin-out

Pin	Signal Name	COM1/EMP Serial Connector
1	RP_RTS_CONN_N	
2	RP_RXD_CONN	
3	RP_TXD_CONN	
4	RP_DTR_CONN_N	
5	Ground	
6	RP_DSR_CONN_N	
7	RP_RTS_CONN_N	
8	RP_CTS_CONN_N	
9	RP_RI_CONN_N	

Video Port

The main board and front panel I/O board provide a video port interface with a standard VGA-compatible, 15-pin connector. Onboard video is supplied by the Radeon* 7000M component with 16MB of on-chip memory.

Table 15. Video Connector Pin-out

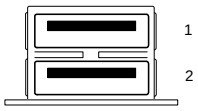
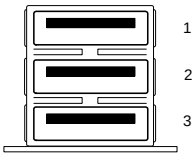
Pin	Signal	Video Connector
1	VID_R (analog color signal red)	
2	VID_G (analog color signal green)	
3	VID_B (analog color signal blue)	
4	No connection	
5	GND	
6	GND	
7	GND	
8	GND	
9	No connection	
10	GND	
11	No connection	
12	MONID1 (to support DDCx, Display Data Channel* Standard)	
13	VID_HSYNC (horizontal sync)	
14	VID_VSYNC (vertical sync)	
15	MONID2 (to support DDCx, Display Data Channel* Standard)	

Universal Serial Bus (USB) Interface

The main board provides a double-stacked USB port at the rear panel and one vertical USB port located in the middle of the main board. The front panel I/O board provides three stacked USB port connectors via a USB hub controller. These built-in USB ports permit the direct connection of six USB peripherals without an external hub. If more devices are required, an external hub can be connected to any of the built-in ports.

The pinout for the dual USB connector is listed in Table 16. The pinout for the triple USB connector on the front panel I/O board is listed in Section 8.

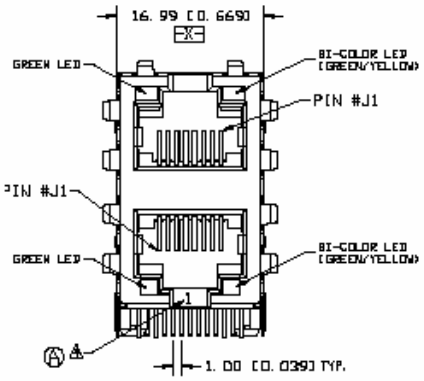
Table 16. Dual USB Connector Pinout

Pin	Signal	Dual Stacked USB Connector on Rear Panel	Triple Stacked USB Connector on Front Panel
A1	Fused Voltage Controlled Current (VCC) (+5 V with over-current monitoring)		
A2	USBPxM (differential data line)		
A3	USBPxP (differential data line)		
A4	GND (ground)		
B1	Fused VCC (+5 V with over-current monitoring)		
B2	USBPxM (differential data line)		
B3	USBPxP (differential data line)		
B4	GND (ground)		

Ethernet Connector

The main board provides a dual-RJ45 connector for Ethernet connection. Below are the pin descriptions.

Table 17. Dual Ethernet Stacked Connector

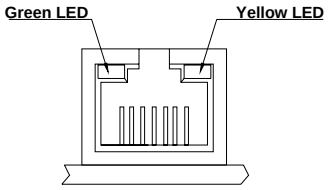
Pin	Signal	Description	Dual Stacked Ethernet Connector
LED Signals			
27	DNW_LINKB10_N	Lower (Port 1) green status LED cathode signal indicating Port 1 activity	
28	DNW1_ACT_N_R	Lower (Port 1) green status LED anode to 100-ohm pull-up to 3.3V Standby	
29	DNW_LINKB100_N	Lower (Port 1) green speed LED cathode, yellow LED anode	
30	LANB1000_N_R	Lower (Port 1) yellow speed LED cathode, green LED anode	
31	DNW_LINKA10_N	Upper (Port 2) green status LED cathode signal indicating Port 2 activity	
32	DNW0_ACT_N_R	Upper (Port 2) green status LED anode to 100-ohm pull-up to 3.3V Standby	
33	DNW_LINKA100_N	Upper (Port 2) green speed LED cathode, yellow LED anode	
34	LANA1000_N_R	Upper (Port 2) yellow speed LED cathode, green LED anode	
Ethernet Signals			
15	DNW_MDIB_DP<0>	Port 1 transceiver 0 positive of differential pair	
21	DNW_MDIB_DN<0>	Port 1 transceiver 0 negative of differential pair	
23	DNW_MDIB_DP<1>	Port 1 transceiver 1 positive of differential pair	
16	DNW_MDIB_DN<1>	Port 1 transceiver 1 negative of differential pair	
18	DNW_MDIB_DP<2>	Port 1 transceiver 2	

Pin	Signal	Description	Dual Stacked Ethernet Connector
		positive of differential pair	
24	DNW_MDIB_DN<2>>	Port 1 transceiver 2 negative of differential pair	
26	DNW_MDIB_DP<3>	Port 1 transceiver 3 positive of differential pair	
19	DNW_MDIB_DN<3>	Port 1 transceiver 3 negative of differential pair	
6	DNW_MDIA_DP<0>	Port 2 transceiver 0 positive of differential pair	
13	DNW_MDIA_DN<0>	Port 2 transceiver 0 negative of differential pair	
11	DNW_MDIA_DP<1>	Port 2 transceiver 1 positive of differential pair	
5	DNW_MDIA_DN<1>	Port 2 transceiver 1 negative of differential pair	
3	DNW_MDIA_DP<2>	Port 2 transceiver 2 positive of differential pair	
10	DNW_MDIA_DN<2>	Port 2 transceiver 2 negative of differential pair	
8	DNW_MDIA_DP<3>	Port 2 transceiver 3 positive of differential pair	
2	DNW_MDIA_DN<3>	Port 2 transceiver 3 negative of differential pair	
Power Signals			
4, 7, 9, 12, 14, 17, 22, 25	+1.8V Standby		
1, 20, 35, 36, 37, 38	Chassis ground	Ground	

Server Management LAN Connector (GCM)

The main board provides an RJ45 connector for Server Management connection. Below are the pin descriptions.

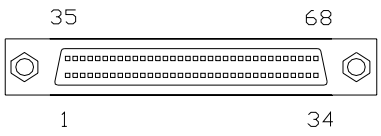
Table 18. Server Management Ethernet Connector

Pin	Signal	Description	Server Management Ethernet Connector
1	GCM_NIC_RDM		
2	GCM_NIC_RDP		
3		Magnetics Tap	
4		Magnetics Tap	
5		Magnetics Tap	
6		Magnetics Tap	
7	GCM_NIC_TDM		
8	GCM_NIC_TDP		
A1	TP_GMC_RJ45_YEL_LED_A	Yellow LED Anode	
C1	TP_GMC_RJ45_YEL_LED_C	Yellow LED Cathode	
A2	GMC_NIC_ACTLED_N	Green LED Anode	
C2	GMC_NIC_ACTLED_R_N	Green LED Cathode	

External Ultra 320 SCSI VHDCI Connector

As an option, the Server Platform can support a shielded external SCSI connection. This SCSI port is controlled by the SCSI controller component located on the main board. This interconnect is a VHDCI connector at the rear panel.

Table 19. Ultra 320 SCSI VHDCI Connector Pinout

Pin	Signal Name	Ultra 320 SCSI VHDCI Connector	Pin	Signal Name
1	+DB(12)		35	-DB(12)
2	+DB(13)		36	-DB(13)
3	+DB(14)		37	-DB(14)
4	+DB(15)		38	-DB(15)
5	+DB(P1)		39	-DB(P1)
6	+DB(0)		40	-DB(0)
7	+DB(1)		41	-DB(1)
8	+DB(2)		42	-DB(2)
9	+DB(3)		43	-DB(3)
10	+DB(4)		44	-DB(4)
11	+DB(5)		45	-DB(5)
12	+DB(6)		46	-DB(6)
13	+DB(7)		47	-DB(7)
14	+P_CRCA		48	+P_CRCA
15	GND		49	GND
16	DIFFSENS		50	GND
17	TERMPWR		51	TERMPWR
18	TERMPWR		52	TERMPWR
19	NC		53	NC
20	GND		54	GND
21	+ATN		55	-ATN
22	GND		56	GND
23	+BSY		57	-BSY
24	+ACK		58	-ACK
25	+RST		59	-RST
26	+MSG		60	-MSG
27	+SEL		61	-SEL
28	+C/D		62	-C/D
29	+REQ		63	-REQ
30	+I/O		64	-I/O
31	+DB(8)		65	-DB(8)
32	+DB(9)		66	-DB(9)
33	+DB(10)		67	-DB(10)
34	+DB(11)		68	-DB(11)

AC Power Input

An IEC320 C13 10A receptacle is located on each power supply. An appropriately-sized power cord and AC main power source are required. An external AC cord retention feature is supported by the chassis but is not supplied with the platform.

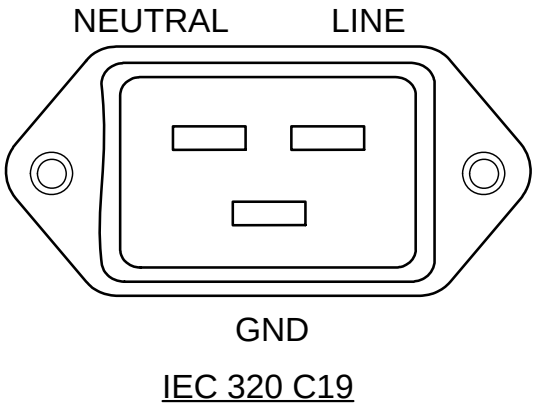


Figure 134. AC Power Input Connector

External Ultra320* SCSI Connector (Optional)

The Server Platform supports an optional shielded external SCSI connection on the back panel. This port is controlled by SCSI port 1 of the dual-channel LSI 53C1030 SCSI controller located on the I/O baseboard. To implement this feature, the optional External SCSI Cable must be installed.

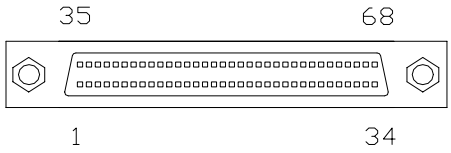


Figure 135. External SCSI Connector

Table 20. External SCSI Connector Pinout

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	+DB(12)	18	TERMPWR	35	-DB(12)	52	TERMPWR
2	+DB(13)	19	NC	36	-DB(13)	53	NC
3	+DB(14)	20	GND	37	-DB(14)	54	GND
4	+DB(15)	21	+ATN	38	-DB(15)	55	-ATN
5	+DB(P1)	22	GND	39	-DB(P1)	56	GND
6	+DB(0)	23	+BSY	40	-DB(0)	57	-BSY

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
7	+DB(1)	24	+ACK	41	-DB(1)	58	-ACK
8	+DB(2)	25	+RST	42	-DB(2)	59	-RST
9	+DB(3)	26	+MSG	43	-DB(3)	60	-MSG
10	+DB(4)	27	+SEL	44	-DB(4)	61	-SEL
11	+DB(5)	28	+C/D	45	-DB(5)	62	-C/D
12	+DB(6)	29	+REQ	46	-DB(6)	63	-REQ
13	+DB(7)	30	+I/O	47	-DB(7)	64	-I/O
14	+P_CRCA	31	+DB(8)	48	+P_CRCA	65	-DB(8)
15	GND	32	+DB(9)	49	GND	66	-DB(9)
16	DIFFSENS	33	+DB(10)	50	GND	67	-DB(10)
17	TERMPWR	34	+DB(11)	51	TERMPWR	68	-DB(11)

Jumper Information

This section provides general information on changing jumper settings as well as specific jumper configuration for individual boards in the system. The jumper block shown by the letter “A” in Figure 136 contains jumpers used to reset the password, write-protect and recover the BIOS, and reset the CMOS.

When two power supplies are installed, the required power is divided between them. By using both circuits, the server can draw more power than the threshold limit for a single power supply. The hardware reduces the amount of power consumed if one of the power supplies fails. This ensures the system consumes less power than the threshold from the single operating power supply. When a failed power supply is replaced, the system is again able to share the power load and operate at full performance.

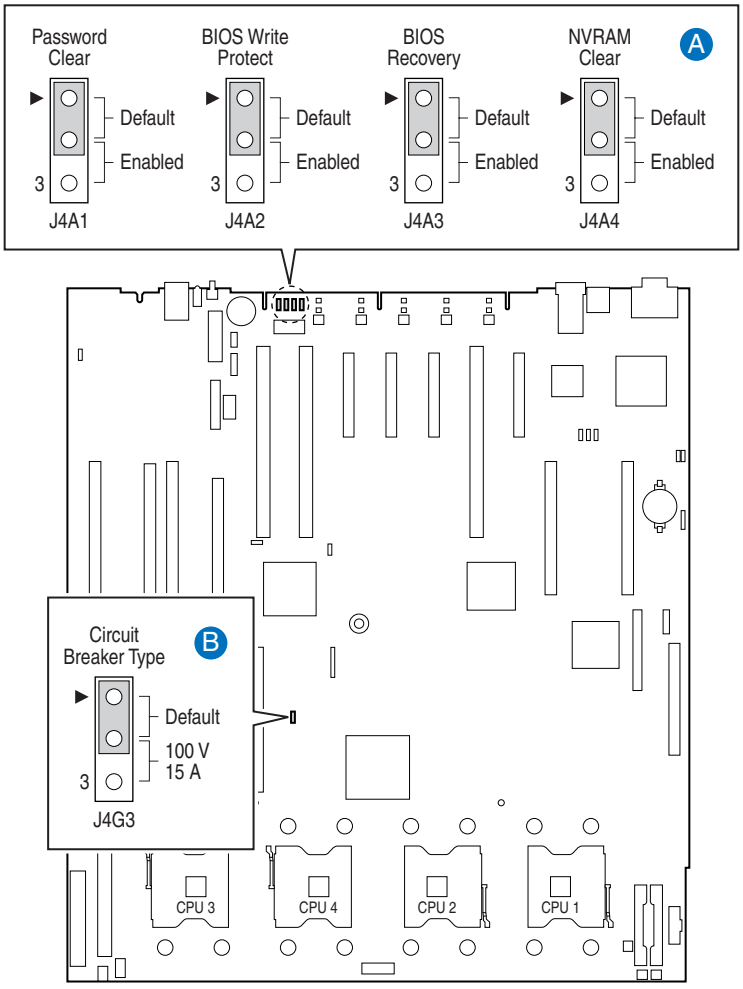
If the J4G3 jumper is set incorrectly, the following may occur:

- If the jumper is covering pins 1-2 on a 100/110VAC circuit, the server is allowed to consume up to 1350 watts. This setting may cause a circuit breaker to trip.
- If the jumper is covering pins 2-3 on a 115/120/127VAC circuit, the server power consumption threshold is set to 1100 watts. The lower power threshold may be exceeded, limiting system performance.

Changing Jumper Settings

To change a jumper setting:

1. Observe the safety and ESD precautions described in “Safety Information”.
2. Turn off all connected peripherals.
3. Power down the system and unplug both AC power cords.
4. Remove the top cover. For instructions, see “Removing the Top Cover”.
5. Move the jumper to pins specified for the required setting. For specific jumper block settings, see Figure 136.
6. Reinstall any boards or components that you removed in order to access jumper blocks.



TP01446

Name	Location	Default	Stuffed Jumper State (Default in Bold)
Password Disable or Clear	J4A1	Stuff Empty	1-2 = Password Enabled 2-3 = Password Disabled / Cleared
BIOS WP	J4A2	Stuff Empty	1 – 2 = BIOS Unprotected 2 – 3 = BIOS write protected
BIOS Recovery	J4A3	Stuff Empty	1-2 = Normal Boot 2-3 = BIOS Recovery
BIOS Clear CMOS	J4A4	Stuff Empty	1 – 2 = BIOS_CLR_CMOS 2 – 3 = Forced CMOS clear
CB_TYPE (circuit breaker type)	J4G3	Stuff Empty	1 – 2 = Circuit Breaker – Other 2 – 3 = Circuit Breaker – 100V 15Amp
PHPDIS	J4G5	Stuff Empty	1-2 = PHP Enabled 2-3 = PHP Disabled
FRB3 Disable	J8C1	Stuff Empty	1 – 2 = FRB3 timer enabled 2 – 3 = FRB3 timer disabled

Name	Location	Default	Stuffed Jumper State (Default in Bold)
BMC RESET	J8C2	Stuff	1 – 2 = BMC enabled
		Empty	2 – 3 = BMC Disabled
FWHID	J8C3	Stuff	1-2 = Enables BMC controls FWHID swap
		Empty	2-3 = Force FWHID swap

Figure 136. Main Board Jumper Locations

I²C POST Code Headers

The main board has a 5-pin header (with the fourth pin removed) for the I²C POST-code card. The headers are J3A1 on the I/O riser card and J6C1 on the Memory board. The I²C signals are from the SMB bus in the Intel® 82801EB I/O Controller Hub 5. The data and clock signals are pulled up to 3.3 V standby. Table 21 shows the pin assignments.

Table 21. J3A1 and J6C1 I²C POST Code Headers

Pin	Signal
1	12 V Standby
2	SMBDATA
3	SMBCLK
4	NC – pin removed
5	Ground

POST Codes

Error Messages and Error Codes

The system BIOS displays error messages on the video screen. Prior to video initialization, beep codes inform you of errors. POST error codes are logged in the event log. The BIOS displays POST error codes on the video monitor.

POST LEDs

Eight light emitting diodes are used to indicate the raw binary output of port 80 values. These LEDs are arranged such that a direct correlation to the binary equivalent can easily be read by you. Table 22 shows the correlation of port 80 post code bit to LED reference designator. This table also provided a snapshot of the LEDS on the board.

Table 22. Port 80 POST Code LED Definition

Port 80 POST Code Bit	LED Reference Designator	Port 80 POST LED Locations
7 (MSB)	DS7D2	
6	DS7D3	
5	DS7D4	
4	DS7D5	
3	DS7D6	
2	DS7E1	
1	DS7E2	
0 (LSB)	DS7E3	

POST Progress Codes and Messages

The BIOS will output the current boot progress on the POST progress LEDs.

Table 23. POST Progress Codes and Messages

Progress Code	Progress Code Meaning
Host Processor	
0x10	Power-on initialization of the host processor (Boot Strap Processor)
0x11	Host processor cache initialization (including AP)
0x12	Starting Application processor initialization
0x13	SMM initialization
Chipset	
0x21	Initializing a chipset component
Memory	
0x22	Reading configuration data from memory (SPD on DIMM)
0x23	Detecting presence of memory
0x24	Programming timing parameters in the memory controller
0x25	Configuring memory parameters in the memory controller
0x26	Optimizing memory controller settings
0x27	Initializing memory, such as ECC init
0x28	Testing memory
PCI Bus	
0x50	Enumerating PCI busses
0x51	Allocating resources to PCI busses
0x52	Hot-plug PCI controller initialization
0x53-0x57	Reserved for PCI Bus
USB	
0x58	Resetting USB bus
0x59	Reserved for USB devices
ATA/ATAPI/SATA	
0x5A	Resetting PATA/SATA bus and all devices
0x5B	Reserved for ATA
SMBUS	
0x5C	Resetting SMBUS
0x5D	Reserved for SMBUS
Local Console	
0x70	Resetting the video controller (VGA)
0x71	Disabling the video controller (VGA)
0x72	Enabling the video controller (VGA)
Remote Console	
0x78	Resetting the console controller
0x79	Disabling the console controller
0x7A	Enabling the console controller

Progress Code	Progress Code Meaning
Keyboard (PS2 or USB)	
0x90	Resetting the keyboard
0x91	Disabling the keyboard
0x92	Detecting the presence of the keyboard
0x93	Enabling the keyboard
0x94	Clearing keyboard input buffer
0x95	Instructing keyboard controller to run Self Test (PS2 only)
Mouse (USB)	
0x98	Resetting the mouse
0x99	Detecting the mouse
0x9A	Detecting the presence of mouse
0x9B	Enabling the mouse
Fixed Media	
0xB0	Resetting fixed media device
0xB1	Disabling fixed media device
0xB2	Detecting presence of a fixed media device (IDE hard drive detection, etcetera)
0xB3	Enabling/configuring a fixed media device
Removable Media	
0xB8	Resetting removable media device
0xB9	Disabling removable media device
0xBA	Detecting presence of a removable media device (IDE CDROM detection, etcetera)
0xBC	Enabling/configuring a removable media device
BDS	
0xDy	Trying boot selection y (where y = 0 to F)
PEI Core	
0xE0	Started dispatching early initialization modules (PEIM)
0xE2	Initial memory found, configured, and installed correctly
0xE1,0xE3	Reserved for initialization module use (PEIM)
DXE Core	
0xE4	Entered EFI driver execution phase (DXE)
0xE5	Started dispatching drivers
0xE6	Started connecting drivers
DXE Drivers	
0xE7	Waiting for user input
0xE8	Checking password
0xE9	Entering BIOS setup
0xEA	Flash Update
0xEE	Calling Int 19. One beep unless silent boot is enabled.
0xEF	Unrecoverable Boot failure/S3 resume failure
Runtime Phase/EFI OS Boot	
0xF4	Entering Sleep state
0xF5	Exiting Sleep state

Progress Code	Progress Code Meaning
0xF8	operating system has requested EFI to close boot services (ExitBootServices ( ) has been called)
0xF9	Operating system has switched to virtual address mode (SetVirtualAddressMap ( ) has been called)
0xFA	Operating system has requested a system reset (ResetSystem () has been called)
PEIM/Recovery	
0x30	Crisis recovery has been initiated because of a user request
0x31	Crisis recovery has been initiated by software (corrupt flash)
0x34	Loading crisis recovery capsule
0x35	Handing off control to the crisis recovery capsule
0x3F	Unable to complete crisis recovery.

POST Error Messages and Handling

Whenever possible, the BIOS will output the current boot progress codes on the video screen. Progress codes are 32-bit quantities plus optional data. The 32-bit numbers include class, subclass and operation information. The class and subclass fields point to the type of hardware that is being initialized, whereas the operation field represents the specific initialization activity. Based upon the data bit availability to display progress codes, a progress code can be customized to fit the data width. The higher the data bit width, the higher the granularity of information that can be sent on the progress port. The progress codes may be reported by system BIOS or option ROMs.

POST Errors have three possible severities:

- **Fatal** severity halts the system and requires the user to correct the problem and reboot the system.
- **Major** severity requires some user intervention and indicates a loss of functionality without which the system will not functional normally.
- **Minor** severity errors do not require user intervention or stop the booting of the system. The system can continue to boot in a degraded state.

POST Errors have three possible responses listed in the Respone column in the following table:

- **Warning** or **Not an error** – The message is displayed on the screen or in the Error Manager screen. An error record is logged to the SEL (for Standard or Sahalee BMC only). The system will continue booting with a degraded state. The user may want to replace the erroneous unit.
- **Pause** – The message is displayed in the Error Manager screen, an error is logged to the SEL, and user input is required to continue. The user can take immediate corrective action or choose to continue booting.
- **Halt** – The message is displayed in the Error Manager screen, an error is logged to the SEL, and the system cannot boot unless the error is resolved. The user needs to replace the faulty part and restart the system.

Table 24. BIOS Error Codes

Error Code	Error Message	Severity	Response
0012	CMOS Date/Time not set	Major	Pause
004C	Keyboard/Interface error	Major	Pause
5220	Configuration cleared by Jumper	Major	Pause
5221	Passwords cleared by Jumper	Major	Pause
5222	Configuration cleared by Front Panel	Major	Pause
5223	Configuration default loaded	Major	Pause
0048	Password check failed	Fatal	Halt
0141	PCI Resource Conflict	Major	Pause
0146	Insufficient Memory to Shadow PCI ROM	Major	Pause
8110	Processor 01 Internal error (IERR)	Major	Pause
8111	Processor 02 Internal Error (IERR)	Major	Pause
8112	Processor 03 Internal Error (IERR)	Major	Pause
8113	Processor 04 Internal Error (IERR)	Major	Pause
8120	Processor 01 Thermal Trip Error	Major	Pause
8121	Processor 02 Thermal Trip Error	Major	Pause
8122	Processor 03 Thermal Trip Error	Major	Pause
8123	Processor 04 Thermal Trip Error	Major	Pause
8130	Processor 01 Disabled	Minor	Warning
8131	Processor 02 Disabled	Minor	Warning
8132	Processor 03 Disabled	Minor	Warning
8133	Processor 04 Disabled	Minor	Warning
8140	Processor 01 Failed FRB-3 Timer	Minor	Warning
8141	Processor 02 Failed FRB-3 Timer	Minor	Warning
8142	Processor 03 Failed FRB-3 Timer	Minor	Warning
8143	Processor 04 Failed FRB-3 Timer	Minor	Warning
8160	Processor 01 unable to apply Microcode update	Major	Pause
8161	Processor 02 unable to apply Microcode update	Major	Pause
8162	Processor 03 unable to apply Microcode update	Major	Pause
8163	Processor 04 unable to apply Microcode update	Major	Pause
8170	Processor 01 failed BIST	Major	Pause
8171	Processor 02 failed BIST	Major	Pause
8172	Processor 03 failed BIST	Major	Pause
8173	Processor 04 failed BIST	Major	Pause
8180	BIOS does not support the current stepping for processor 1	Major	Pause
8181	BIOS does not support the current stepping for processor 2	Major	Pause
8182	BIOS does not support the current stepping for processor 3	Major	Pause
8183	BIOS does not support the current stepping for	Major	Pause

Error Code	Error Message	Severity	Response
	processor 4		
8190	Watchdog Timer Expired on Last Boot	Minor	Warning
8198	OS boot Watchdog Timer Expired On Last Boot	Major	Pause
0192	Cache size mismatch	Major	Pause
0193	CPUID, Processor stepping are different	Major	Pause
0196	CPUID, Processor Model are different	Major	Pause
81A0	Intel(R) Management Module firmware and FRUSDR update required.	Major	Pause
81B0	Processor Front Side Bus speed mismatch	Fatal	Halt
0197	Processor speeds mismatched	Major	Pause
8300	BaseBoard Management Controller failed Self Test	Major	Pause
84F2	BaseBoard Management Controller failed to respond	Major	Pause
84F3	BaseBoard Management Controller in Update Mode	Major	Pause
84F4	Sensor Data Record Empty	Major	Pause
84FF	System Event Log Full	Minor	Warning
86E0	Board: A Incompatible Memory board with Processor(s)	Fatal	Halt
86E8	Board: B Incompatible Memory board with Processor(s)	Fatal	Halt
86F0	Board: C Incompatible Memory board with Processor(s)	Fatal	Halt
86F8	Board: D Incompatible Memory board with Processor(s)	Fatal	Halt
8500	Board: A, DIMM: 1A Memory bad or missing	Major	Pause
8501	Board: A, DIMM: 1B Memory bad or missing	Major	Pause
8502	Board: A, DIMM: 2A Memory bad or missing	Major	Pause
8503	Board: A, DIMM: 2B Memory bad or missing	Major	Pause
8508	Board: B, DIMM: 1A Memory bad or missing	Major	Pause
8509	Board: B, DIMM: 1B Memory bad or missing	Major	Pause
850A	Board: B, DIMM: 2A Memory bad or missing	Major	Pause
850B	Board: B, DIMM: 2B Memory bad or missing	Major	Pause
8510	Board: C, DIMM: 1A Memory bad or missing	Major	Pause
8511	Board: C, DIMM: 1B Memory bad or missing	Major	Pause
8512	Board: C, DIMM: 2A Memory bad or missing	Major	Pause
8513	Board: C, DIMM: 2B Memory bad or missing	Major	Pause
8518	Board: D, DIMM: 1A Memory bad or missing	Major	Pause
8519	Board: D, DIMM: 1B Memory bad or missing	Major	Pause
851A	Board: D, DIMM: 2A Memory bad or missing	Major	Pause
851B	Board: D, DIMM: 2B Memory bad or missing	Major	Pause
8520	Board: A, DIMM: 1A Memory not configured.	Major	Pause

Error Code	Error Message	Severity	Response
8521	Board: A, DIMM: 1B Memory not configured.	Major	Pause
8522	Board: A, DIMM: 2A Memory not configured.	Major	Pause
8523	Board: A, DIMM: 2B Memory not configured.	Major	Pause
8528	Board: B, DIMM: 1A Memory not configured.	Major	Pause
8529	Board: B, DIMM: 1B Memory not configured.	Major	Pause
852A	Board: B, DIMM: 2A Memory not configured.	Major	Pause
852B	Board: B, DIMM: 2B Memory not configured.	Major	Pause
8530	Board: C, DIMM: 1A Memory not configured.	Major	Pause
8531	Board: C, DIMM: 1B Memory not configured.	Major	Pause
8532	Board: C, DIMM: 2A Memory not configured.	Major	Pause
8533	Board: C, DIMM: 2B Memory not configured.	Major	Pause
8538	Board: D, DIMM: 1A Memory not configured.	Major	Pause
8539	Board: D, DIMM: 1B Memory not configured.	Major	Pause
853A	Board: D, DIMM: 2A Memory not configured.	Major	Pause
853B	Board: D, DIMM: 2B Memory not configured.	Major	Pause
8540	Board: A, DIMM: 1A Memory disabled.	Major	Pause
8541	Board: A, DIMM: 1B Memory disabled.	Major	Pause
8542	Board: A, DIMM: 2A Memory disabled.	Major	Pause
8543	Board: A, DIMM: 2B Memory disabled.	Major	Pause
8548	Board: B, DIMM: 1A Memory disabled.	Major	Pause
8549	Board: B, DIMM: 1B Memory disabled.	Major	Pause
854A	Board: B, DIMM: 2A Memory disabled.	Major	Pause
854B	Board: B, DIMM: 2B Memory disabled.	Major	Pause
8550	Board: C, DIMM: 1A Memory disabled.	Major	Pause
8551	Board: C, DIMM: 1B Memory disabled.	Major	Pause
8552	Board: C, DIMM: 2A Memory disabled.	Major	Pause
8553	Board: C, DIMM: 2B Memory disabled.	Major	Pause
8558	Board: D, DIMM: 1A Memory disabled.	Major	Pause
8559	Board: D, DIMM: 1B Memory disabled.	Major	Pause
855A	Board: D, DIMM: 2A Memory disabled.	Major	Pause
855B	Board: D, DIMM: 2B Memory disabled.	Major	Pause
8560	Board: A, DIMM: 1A Memory mismatch.	Major	Pause
8561	Board: A, DIMM: 1B Memory mismatch.	Major	Pause
8562	Board: A, DIMM: 2A Memory mismatch.	Major	Pause
8563	Board: A, DIMM: 2B Memory mismatch.	Major	Pause
8568	Board: B, DIMM: 1A Memory mismatch.	Major	Pause
8569	Board: B, DIMM: 1B Memory mismatch.	Major	Pause
856A	Board: B, DIMM: 2A Memory mismatch.	Major	Pause
856B	Board: B, DIMM: 2B Memory mismatch.	Major	Pause
8570	Board: C, DIMM: 1A Memory mismatch.	Major	Pause
8571	Board: C, DIMM: 1B Memory mismatch.	Major	Pause
8572	Board: C, DIMM: 2A Memory mismatch.	Major	Pause
8573	Board: C, DIMM: 2B Memory mismatch.	Major	Pause

Error Code	Error Message	Severity	Response
8578	Board: D, DIMM: 1A Memory mismatch.	Major	Pause
8579	Board: D, DIMM: 1B Memory mismatch.	Major	Pause
857A	Board: D, DIMM: 2A Memory mismatch.	Major	Pause
857B	Board: D, DIMM: 2B Memory mismatch.	Major	Pause
8580	Board: A, DIMM: 1A Memory correctable ECC error.	Major	Pause
8581	Board: A, DIMM: 1B Memory correctable ECC error.	Major	Pause
8582	Board: A, DIMM: 2A Memory correctable ECC error.	Major	Pause
8583	Board: A, DIMM: 2B Memory correctable ECC error.	Major	Pause
8588	Board: B, DIMM: 1A Memory correctable ECC error.	Major	Pause
8589	Board: B, DIMM: 1B Memory correctable ECC error.	Major	Pause
858A	Board: B, DIMM: 2A Memory correctable ECC error.	Major	Pause
858B	Board: B, DIMM: 2B Memory correctable ECC error.	Major	Pause
8590	Board: C, DIMM: 1A Memory correctable ECC error.	Major	Pause
8591	Board: C, DIMM: 1B Memory correctable ECC error.	Major	Pause
8592	Board: C, DIMM: 2A Memory correctable ECC error.	Major	Pause
8593	Board: C, DIMM: 2B Memory correctable ECC error.	Major	Pause
8598	Board: D, DIMM: 1A Memory correctable ECC error.	Major	Pause
8599	Board: D, DIMM: 1B Memory correctable ECC error.	Major	Pause
859A	Board: D, DIMM: 2A Memory correctable ECC error.	Major	Pause
859B	Board: D, DIMM: 2B Memory correctable ECC error.	Major	Pause
85A0	Board: A, DIMM: 1A Memory uncorrectable ECC error.	Major	Pause
85A1	Board: A, DIMM: 1B Memory uncorrectable ECC error.	Major	Pause
85A2	Board: A, DIMM: 2A Memory uncorrectable ECC error.	Major	Pause
85A3	Board: A, DIMM: 2B Memory uncorrectable ECC error.	Major	Pause
85A8	Board: B, DIMM: 1A Memory uncorrectable ECC error.	Major	Pause
85A9	Board: B, DIMM: 1B Memory uncorrectable ECC error.	Major	Pause
85AA	Board: B, DIMM: 2A Memory uncorrectable	Major	Pause

Error Code	Error Message	Severity	Response
	ECC error.		
85AB	Board: B, DIMM: 2B Memory uncorrectable ECC error.	Major	Pause
85B0	Board: C, DIMM: 1A Memory uncorrectable ECC error.	Major	Pause
85B1	Board: C, DIMM: 1B Memory uncorrectable ECC error.	Major	Pause
85B2	Board: C, DIMM: 2A Memory uncorrectable ECC error.	Major	Pause
85B3	Board: C, DIMM: 2B Memory uncorrectable ECC error.	Major	Pause
85B8	Board: D, DIMM: 1A Memory uncorrectable ECC error.	Major	Pause
85B9	Board: D, DIMM: 1B Memory uncorrectable ECC error.	Major	Pause
85BA	Board: D, DIMM: 2A Memory uncorrectable ECC error.	Major	Pause
85BB	Board: D, DIMM: 2B Memory uncorrectable ECC error.	Major	Pause
85C0	Board: A, DIMM: 1A Memory invalid speed.	Major	Pause
85C1	Board: A, DIMM: 1B Memory invalid speed.	Major	Pause
85C2	Board: A, DIMM: 2A Memory invalid speed.	Major	Pause
85C3	Board: A, DIMM: 2B Memory invalid speed.	Major	Pause
85C8	Board: B, DIMM: 1A Memory invalid speed.	Major	Pause
85C9	Board: B, DIMM: 1B Memory invalid speed.	Major	Pause
85CA	Board: B, DIMM: 2A Memory invalid speed.	Major	Pause
85CB	Board: B, DIMM: 2B Memory invalid speed.	Major	Pause
85D0	Board: C, DIMM: 1A Memory invalid speed.	Major	Pause
85D1	Board: C, DIMM: 1B Memory invalid speed.	Major	Pause
85D2	Board: C, DIMM: 2A Memory invalid speed.	Major	Pause
85D3	Board: C, DIMM: 2B Memory invalid speed.	Major	Pause
85D8	Board: D, DIMM: 1A Memory invalid speed.	Major	Pause
85D9	Board: D, DIMM: 1B Memory invalid speed.	Major	Pause
85DA	Board: D, DIMM: 2A Memory invalid speed.	Major	Pause
85DB	Board: D, DIMM: 2B Memory invalid speed.	Major	Pause
85E0	Board: A Memory bad or missing	Major	Pause
85E8	Board: B Memory bad or missing	Major	Pause
85F0	Board: C Memory bad or missing	Major	Pause
85F8	Board: D Memory bad or missing	Major	Pause
85E1	Board: A Memory not configured.	Major	Pause
85E9	Board: B Memory not configured.	Major	Pause
85F1	Board: C Memory not configured.	Major	Pause
85F9	Board: D Memory not configured.	Major	Pause
85FC	System Memory bad or missing	Major	Pause
85FD	The memory component was not configured.	Major	Pause

Error Code	Error Message	Severity	Response
9024	Processor component was not configured	Minor	Warning
5224	Fatal error occurred on last Boot	Major	Pause

POST Error Beep Codes

The following table lists POST error beep codes. Prior to system video initialization, the BIOS uses beep codes to inform users on error conditions. The beep code is followed by a user visible code on POST Progress LEDs.

Table 25. Beep Codes

Beeps	Error Message	Description
1	Fatal error	System halted because of an unspecified fatal error that was detected.
2	Processor error	System halted because a fatal error related to a processor was detected.
3	Memory error	System halted because a fatal error related to the memory was detected.
4	Main board error	System halted because a fatal error related to the main board hardware was detected.
1-5-1-1		FRB3 failure (processor failure)
1-5-2-1		CPU: empty slot
1-5-2-2		CPU: no processors
1-5-2-3		CPU: configuration error (example VID mismatch)
1-5-2-4		CPU: Configuration error (example BSEL mismatch)
1-5-4-2		Power fault: DC power unexpectedly lost (power control failure)
1-5-4-3		Chipset control failure
1-5-4-4		Power control fault (Usually a VRM is not installed.)

BIOS Recovery Beep Codes

Table 26. BIOS Recovery Beep Codes

Beeps	Error Message	POST Progress Code	Description
1	Recovery Started	E9h	Start of recovery process
2	Recovery Boot Error	Flashing series of POST codes: EFh, FAh, FBh, F4h, FCh, FDh, FFh	Unable to boot to floppy, ATAPI, or ATAPI CD-ROM. Recovery process will retry.
4 long high-pitched beeps	Recovery Complete	FFh	BIOS recovery succeeded, ready for power-down, reboot.

POST Error Pause Option

In case of POST error(s) which are listed with View equal to "Yes", the BIOS will enter the error manager and wait for user to press an appropriate key before booting the O/S or entering BIOS setup.

You can override this option by setting "POST Error Pause" to "disabled" in BIOS setup utility MAIN menu page. If "POST Error Pause" option is set to "disabled", the system will boot the O/S without user-intervention. The default value is set to "enabled".

Equipment Log

Use the blank equipment log provided here to record information about your system. You will need some of this information when you run BIOS Setup.

Table 27. Equipment Log

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
System			
Main board			
Memory board (A)			
Memory board (B)			
Memory board (C)			
Memory board (D)			
Power distribution board			
Intel® Management Module			
Front panel I/O board			
Control Module (with or without LCD)			
SCSI backplane board			
Processor Speed and Cache			
Monitor			
Keyboard			
Mouse			
CD-ROM/DVD-ROM Drive			
Tape drive			
Hard Disk Drive (0)			

Table 27. Equipment Log (continued)

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
Hard Disk Drive (1)			
Hard Disk Drive (2)			
Hard Disk Drive (3)			
Hard Disk Drive (4)			
Power Supply (P1)			
Power Supply (P2)			
Hot-plug PCI-Express* Slot (1)			
Hot-plug PCI-Express* Slot (2)			
Hot-plug PCI-Express* Slot (3)			
Hot-plug PCI-Express* Slot (4)			
Hot-plug PCI-X* 133MHz Slot (5)			
PCI-X* 100MHz Slot (6)			
PCI-X* 100MHz Slot (7)			
Fibre Channel Module (optional)			
VRM 9.1 Converter (cache)			
VRM 10.2LD Converter (core)			
VRM 10.2LD Converter (core)			

Regulatory Specifications and Disclaimers

Declaration of the Manufacturer or Importer

We hereby certify that this product is in compliance with European Union EMC Directive 89/336/EEC, using standards EN55022 (Class A) and EN55024 and Low Voltage Directive 73/23/EEC, Standard EN60950.

Safety Compliance

USA:	UL 1950 – 3rd Edition/CSA 22.2. No. 950-M93
Canada:	UL Certified – 3rd Edition/CSA 22.2. No. 950-M93 for Canada (product bears the single UL mark for U.S. and Canada)
Europe:	Low Voltage Directive, 73/23/EECTUV/GS to EN60950 2nd Edition with Amendments, A1 = A2 + A3 + A4
International:	TUV/CB to IEC 60950 3rd Edition, EN60 950 2nd Edition + Amd 1-4, EMKO-TSE (74-SEC) 207/94 plus international deviations
Australian / New Zealand:	CB Report to IEC 60950, 3rd Edition plus Australian deviations

Electromagnetic Compatibility (EMC)

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

FCC Electromagnetic Compatibility Notice (USA)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operating in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference. In this case, you are required to correct the interference at your own expense. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. You are 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 into an outlet on a circuit different from that 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.

FCC Declaration of Conformity

Product Type: Intel® Server Platform SR4850HW4 OR SR4850HW4/M

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
2800 Center Drive
DuPont, WA 98327 USA

Laser Compliance Notice

Intel® products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

Electromagnetic Compatibility Notices (International)

Europe (CE Declaration of Conformity)

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

Japan EMC Compatibility

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

English translation of the notice above:

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

ICES-003 (Canada)

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

English translation of the notice above:

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

BSMI (Taiwan)

The BSMI Certification number and the following warning are located on the product safety label which is located visibly on the external chassis.

警告使用者:

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

Troubleshooting

Symptom	Cause(s)	Solution(s)
System does not power up	▪ VRM converters not plugged in or bent pins. ▪ Cables not fully seated. ▪ Power cord(s) not plugged in.	▪ Check seating of cables on all boards and VRM converters. ▪ Ensure the power cord(s) is plugged into the wall and power supply. ▪ Ensure green light indicating AC is detected is on.
System powers on, but then turns off, often with fault light	▪ Bent pin on board or VRM converters. ▪ Short on one of the boards due to conductive item touching it. ▪ No memory found due to board not being fully inserted into connector.	▪ Check to make sure that a screw or other conductive item has not been dropped into the system. ▪ Check the connections on all cables and VRM converters. (Begin with those connections that gave you the most trouble during installation. That is typically where a pin may have gotten bent.) ▪ Ensure the memory boards and Intel® Management Module are fully seated. ▪ Check for bent pins on processors.
System powers up but does not complete POST	▪ Boards, VRMs, or processors not fully seated. ▪ Wrong stepping of processor in system for the BIOS. ▪ Memory not installed in documented order or unsupported/validated DIMMS used.	▪ Check seating on all boards, VRM converters, and processors. ▪ Check the BIOS release notes to ensure the BIOS installed on the platform supports the stepping and family of the processors currently installed. ▪ Check that you have populated the memory banks in the proper order. See system documentation for proper installation order. ▪ Use only validated DIMMS.
System does not recognize all of the processors installed	▪ Processors not fully seated. ▪ VRMs not added to support processors 3 and 4. ▪ Bent pin(s) on processor(s).	▪ Check seating on processors and VRMs. ▪ Verify that no processor pins are bent.
No video, LED on front panel indicates system is in reset mode.	▪ Processor, VRM converters, or cables not fully seated. ▪ Bad VRM converter.	▪ Check seating on all cables, VRM converters, and processors. Check for bent pins on all connectors. ▪ Replace VRMs.
No video, but the system is not stuck in reset	▪ Memory board or DIMM not functional.	▪ Check seating of all memory boards and DIMMs. ▪ Replace DIMMs. ▪ Ensure proper population of DIMM banks.
SCSI drives are not recognized during POST	▪ Drives not fully seated.	▪ Reinsert hard drives. ▪ Ensure SCSI cable is connected to the SCSI backplane board and the main board.
CD-ROM/DVD-ROM not recognized by BIOS/EFI	▪ IDE cable or power cable not connected to drives.	▪ Check seating of drive into adapter board. ▪ Check that BIOS setup has this device enabled.

Getting Help

World Wide Web

http://www.intel.com/support/motherboards/server/SR4850HW4/

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 "**Error! Reference source not found.**." A sample form is provided on the following pages. However, for the fastest service, please submit your form via the Internet.

In U.S. and Canada	1-800-404-2284		
In Europe			
UK	0870 6072439	Finland	9 693 79297
France	01 41 918529	Denmark	38 487077
Germany	069 9509 6099	Norway	23 1620 50
Italy	02 696 33276	Sweden	08 445 1251
Spain	91 377 8166	Holland	020 487 4562
Belgium	02 714 3182		
In Asia-Pacific region			
Australia	1800 649931	Indonesia	803 65 7249
Hong Kong	852 2 844 4456	Malaysia	1 800 80 1390
Korea	822 767 2595	New Zealand	0800 444 365
China	800 820 1100 (toll-free)	Pakistan	632 63684 15 (IDD via Philippines)
	8 621 33104691 (not toll-free)	Philippines	1 800 1 651 0117
Singapore	65 6213-1311	Thailand	1 800 631 0003
India	0006517 2 68303634 (manual toll-free. From India, you need an IDD-equipped telephone)	Vietnam	632 6368416 (IDD via Philippines)
		Myanmar	63 2 636 9796 (via Philippines)
		Cambodia	63 2 636 9797 (via Philippines)
Taiwan	2 2545-1640		
In Japan			
0120 868686 (Domestic)		81 298 47 0800 (outside country)	

In Latin America

Brazil	001-916 377 0180
Mexico	Contact AT&T USA at 001 800 462 628 4240. 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
Panama	Contact AT&T USA at 00 800 001 0109. Once connected, dial 800 843 4481
Chile (Easter Island)	Contact AT&T USA at 800 800 311. Once connected, dial 800 843 4481
Chile (Mainland and Juan)	Contact AT&T USA at 800 225 288. Once connected, dial 800 843 4481
Miami	1 800 621 8423
Ecuador (Andimate)	Contact AT&T USA at 1 999 119. Once connected, dial 800 843 4481
Ecuador (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
Venezuela	Contact AT&T USA at 0 800 2255 288. Once connected, dial 800 843 4481
Argentina	Contact AT&T USA at 0-800 222 1288. Once connected, dial 800 843 4481
Paraguay	001 916 377 0114
Peru	001 916 377 0114
Uruguay	001 916 377 0114

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

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.

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- **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.

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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://www.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.