



RS300-E7 / RS4

Configuration Guide



E7412

First Edition V1

June 2012

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Revision history

Revision	Revision history	Date
V1	First release of RS300-E7/RS4 configuration guide	June 2012

Safety information

Electrical Safety

- Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing any additional devices to or from the system, contact a qualified service technician or your dealer. Ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you service.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your dealer.

Operation Safety

- Servicing of this product or units is to be performed by trained service personnel only.
- Before operating the server, carefully read all the manuals included with the server package.
- Before using the server, ensure all cables are correctly connected and the power cables are not damaged. If any damage is detected, contact your dealer as soon as possible.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Place the server on a stable surface.



This product is equipped with a three-wire power cable and plug for the user's safety. Use the power cable with a properly grounded electrical outlet to avoid electrical shock.

Lithium-Ion Battery Warning

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

CD-ROM Drive Safety Warning

CLASS 1 LASER PRODUCT

Heavy System

CAUTION! This server system is heavy. Ask for assistance when moving or carrying the system.

Chapter 1

This chapter describes the key features of RS300-E7/RS4. It includes the product overview and general specifications.

Product introduction

1.1 Key features

Green 1U Rack-Mount Server with More Expandability & Flexibility

The ASUS RS300-E7/RS4 is a 1U rack-mount server based on new generation Intel® Xeon® Ivy Bridge processor, providing immediate performance up-scaling, high expandability and upgradability. It also features quad LAN networking, 1+1 redundant 80 PLUS Gold power supplies, and remote management, offering customers assured quality of service with ultimate networking security, outstanding power efficiency, and comprehensive server management.

New Generation Intel® Xeon® Ivy Bridge Processor

This new processor offers faster performance and better output/watt compared to previous generation technology. In addition, ASUS proprietary CPU heat pipes deliver superior cooling for more stable computing without blocking or restricting expansion slots.

Great Expandability in UP 1U

The RS300-E7/RS4 provides 2+1 expansion slots in a 1U chassis for higher expandability. Two PCI Express slots support full-height/half-length cards, with a dedicated slot designed for optional ASUS PIKE RAID cards with no additional verification needed.

Quad LAN for Extra Reliable Networking

Built with quad Intel® Gigabit LAN controllers with teaming capabilities, the RS300-E7/RS4 provides higher bandwidth and improves virtualization performance with more networking resources. Quad LAN also improves load balance for far more reliable connections, offering the ultimate in network security and virtualization.

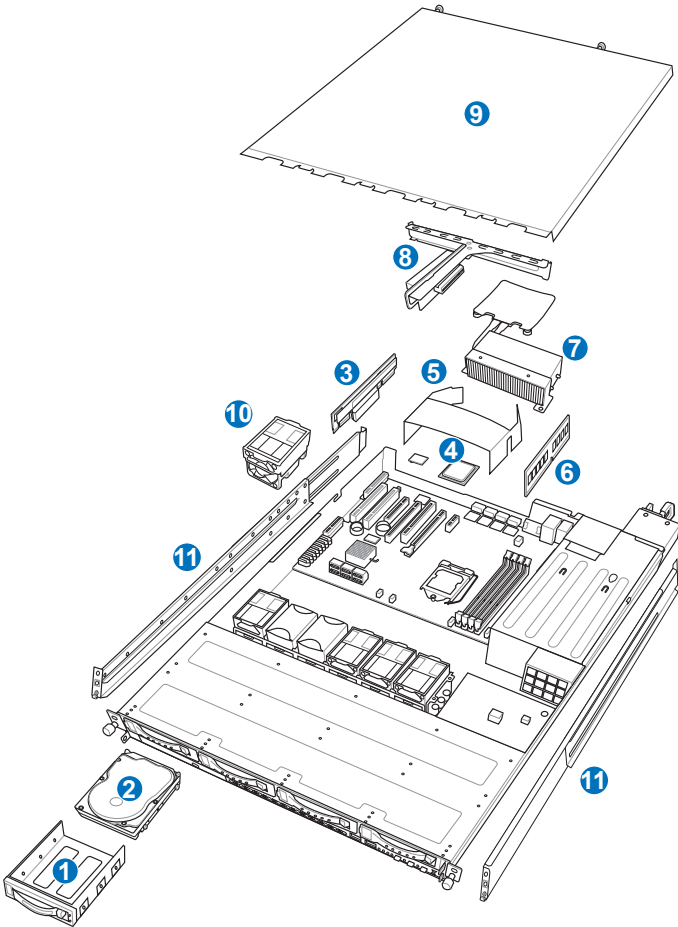
Up to 92% Power Efficiency

Maintaining the ASUS commitment to environmental protection, the RS300-E7/RS4 utilizes 1+1 redundant 450W 80 PLUS Gold power supplies to reduce power loss and consumption. As such, it lowers power bills to save users money with up to 92% power efficiency.

Remote Management

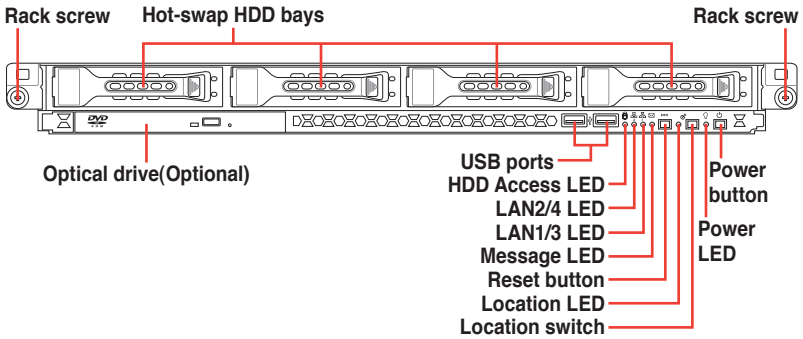
The optional web-based, GUI-driven ASMB5-iKVM upgrade kit provides integrated control of server functions with dedicated hotkeys and remote on-screen server management. Virtual media-over-LAN helps share local devices with target servers, enabling fast troubleshooting and operating system installation. Furthermore, ASUS ASWM Enterprise provides easy deployment and management with a user friendly interface while delivering centralized management, asset supervision, notification mechanisms, and integrated BMC BIOS updates.

1.2 System overview



Items	Items
1. HDD trays	7. CPU heatsink
2. Hard disk drives	8. PCI-E riser card
3. PIKE card	9. Top cover
4. CPU	10. System FAN
5. FAN Duct	11. Friction rackmount rail kit
6. Central processing unit (CPU)	

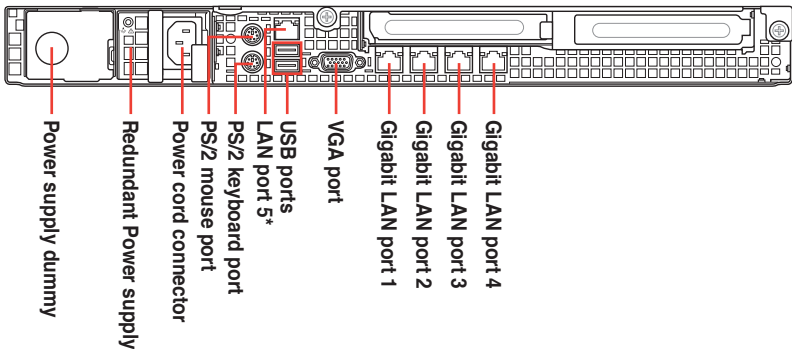
1.3 Front panel features



1.4 Rear panel features



- The rear I/O ports do not appear on the rear panel if motherboard is not present.
- The port is for ASUS ASMB6-iKVM controller card only.



* This LAN is for ASMB5-iKVM controller card only.

1.5 System specifications

Model Name		RS300-E7/RS4
Processor / System Bus		1 x Socket LGA1155
		- Intel® Xeon® E3-1200 v2 Processor Family
		- Intel® Xeon® E3-1200 Processor Family
		- Intel® Core™ i3-2100 Processor Family
		- Intel® Pentium™ G8X0 / G6X0 - Intel® Celeron™ G5X0 / G4X0
Core Logic		Intel® C204 chipset
ASUS Features	Smart Fan	√
	ASWM2.0	√
Memory	Total Slots	4 (2 Channels)
	Capacity	Maximum up to 32GB
	Memory Type	DDR3 1066 / 1333 / 1600 *ECC UDIMM *DDR3 1600 can only be supported with Intel® Xeon® E3-1200 v2 Processor Family
	Memory Size	1GB, 2GB, 4GB and 8GB
Expansion Slots	Total PCI/PCI-X/PCI-E Slots	2
	Slot Type	1 x PCI-E x16 (Gen3* / Gen2 x8 link) (Full-Height/HL) 1 x PCI-E x8 (Gen3* / Gen2 x8 link) (Full-Height/HL) *Gen3 link can only be supported with Intel® Xeon® E3-1200 v2 Processor
	Additional Slot 1	1 x PIKE slot for storage enhancement
Storage	SATA Controller	Intel® C204: 2 x SATA 6Gb/s ports 2 x SATA 3Gb/s ports Intel Rapid Storage Technology (for Windows only) - Supports software RAID 0, 1, 10 & 5 LSI® MegaRAID (for Linux / Windows) - Supports software RAID 0, 1 & 10
	SAS Controller	Optional: - ASUS PIKE 2008 8-port SAS2 6G RAID card - ASUS PIKE 2008/IMR 8-port SAS2 6G RAID card - ASUS PIKE 2108 8-port SAS2 6G H/W RAID card
HDD Bays	I = internal A or S = hot-swappable	4 x Hot-swap 3.5" HDD Bays

(continued on the next page)

Model Name		RS300-E7/RS4
Networking	LAN	4 x Intel 82574L + 1 x Mgmt LAN
Graphic	VGA	Aspeed AST2050 16MB
Auxiliary Storage Device Bay (Floppy / Optical Device)		1 x Slim-type optical Device Bay Options: No Device / DVD-RW
Onboard I/O		1 x External Serial Port 5 x RJ-45 ports (1 for ASMB5-iKVM) 4 x USB 2.0 ports (Front x 2, Rear x 2) 1 x VGA port 1 x PS/2 keyboard port 1 x PS/2 mouse port
OS Support		Windows® Server 2008 Foundation R2 Windows® Server 2008 Enterprise SP2 Windows® Server 2008 Enterprise R2 Windows® Server 2003 Enterprise R2 RedHat® Enterprise Linux AS 4.0 32/64 bit RedHat® Linux AS 5.0/6.0 32/64 bit SuSE® Linux Enterprise Server 10 SP3/11 SP1 32/64 bit CentOS 5.0 U5 32/64 bit (Subject to change without any notice)
Management Solution	Out of Band Remote Hardware	Optional ASMB5-iKVM for KVM-over-IP support
	Software	ASUS ASWM Enterprise
Dimension (HH x WW x DD)		615mm x 444mm x 43.4mm
Net Weight Kg (CPU, DRAM & HDD not included)		16 Kg
Power Supply		1+1 Redundant 450W (80+) Gold Power Supply
Power Rating		Input: 100—127/200—240 Vac, 8/4A, 47—63Hz Class1
Environment		Operation temperature: 10°C—35°C / Non operation temperature: -40°C—70°C Non operation humidity: 20%—90% (Non-condensing)

* Specifications are subject to change without notice.

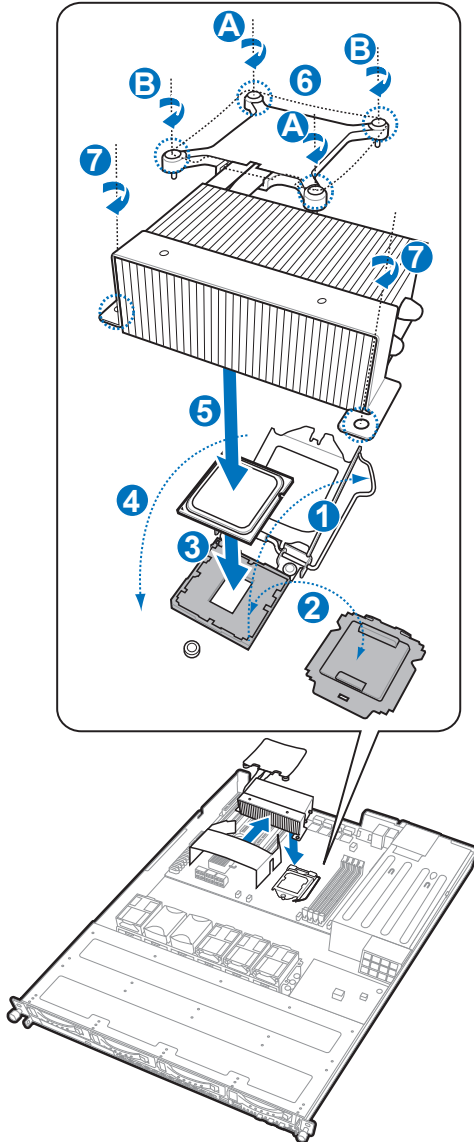
Chapter 2

This chapter lists the key components and optional accessories for the server system.

Components

2.1 Upgrading CPU and CPU heatsink

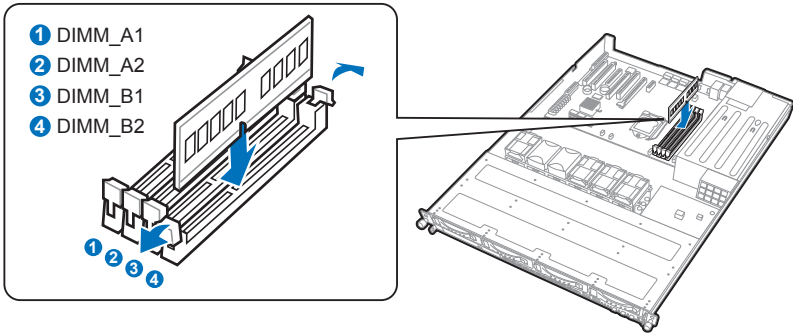
The motherboard comes with a surface mount LGA 1155 Socket designed for the Intel® Sandy Bridge and Ivy Bridge series processors.



Order P/N	Description
90-S000U09Y1T (single pack)	Intel Xeon E3-1220 3.1G
90-S000U0A21T (single pack)	Intel Xeon E3-1230 3.1G
90-S000U0A41T (single pack)	Intel Xeon E3-1240 3.1G
90-S000U0A71T (single pack)	Intel Xeon E3-1270 3.1G
90-S000U0A91T (single pack)	Intel Xeon E3-1280 3.1G
90-S000U0CG0T (single pack)	Intel Xeon E3-1290 V2 3.7G
90-S000U0CH0T (single pack)	Intel Xeon E3-1280 V2 3.6G
90-S000U0CI0T (single pack)	Intel Xeon E3-1270 V2 3.5G
90-S000U0CJ0T (single pack)	Intel Xeon E3-1240 V2 3.4G
90-S000U0CK0T (single pack)	Intel Xeon E3-1230 V2 3.3G
90-S000U0CL0T (single pack)	Intel Xeon E3-1220 V2 3.1G

2.2 Upgrading system memory

The motherboard comes with six (6) Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.



Recommended memory configurations

UDIMM				
DIMM Slot Per Channel	DIMM Populated per Channel	DIMM Type	Speed	Rank per DIMM
2	1	Unbuffered DDR3 ECC	1066/1333/1600*	Single Rank, Dual Rank
2	2	Unbuffered DDR3 ECC	1066/1333/1600*	Single Rank, Dual Rank

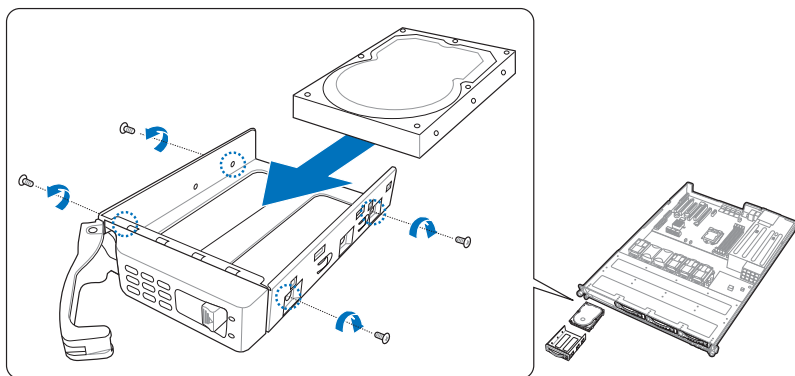


- DDR3 1600 can only be supported with Intel® Xeon E3-1200 V2 processor.
- Start installing the DIMMs from slot A2 and B2 (orange).
- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

Order P/N	Description
90-S000I05M0T	DDR3 1333 ECC UNB 2G Single Pack
90-S000I0570T	DDR3 1333 ECC UNB 4G Single Pack
90-S000I0630T	DDR3 1600 ECC UNB 2G Single Pack
90-S000I0640T	DDR3 1600 ECC UNB 4G Single Pack
90-S000I0650T	DDR3 1600 ECC UNB 8G Single Pack

2.3 Upgrading hard disk drives

The system supports four hot-swap SATAII/SAS hard disk drives.



We recommend that you install identical drives of the same model and capacity for RAID configuration.

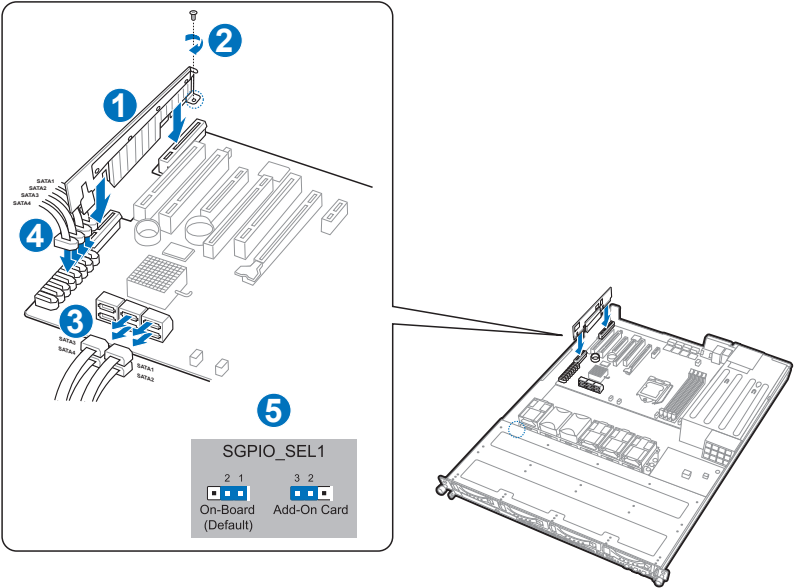
P/N	Description
90-S000H64R0T	300GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H64S0T	450GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H64T0T	600GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H65D1T	500GB SATA3 6Gb 7200 rpm with HDD Tray (Seagate)
90-S000H65B1T	1TB SATA3 6Gb 7200 rpm with HDD Tray (Seagate)
90-S000H65V0T	500GB SATA3 7200 rpm with HDD Tray (Seagate Enterprise)
90-S000H65U0T	1TB SATA3 7200 rpm with HDD Tray (Seagate Enterprise)
90-S000H65T0T	2TB SATA3 7200 rpm with HDD Tray (Seagate Enterprise)
90-S000H65E2T	3TB SATA3 7200 rpm with HDD Tray (Seagate Enterprise)



If you want to install an SAS HDD, install the ASUS PIKE RAID card first. For more details, refer to section **2.4 Installing ASUS PIKE RAID card**.

2.4 Installing ASUS PIKE RAID module

The barebone server comes with a riser card bracket. You need to remove the bracket if you want to install PCI Express x8 or x16 expansion cards.

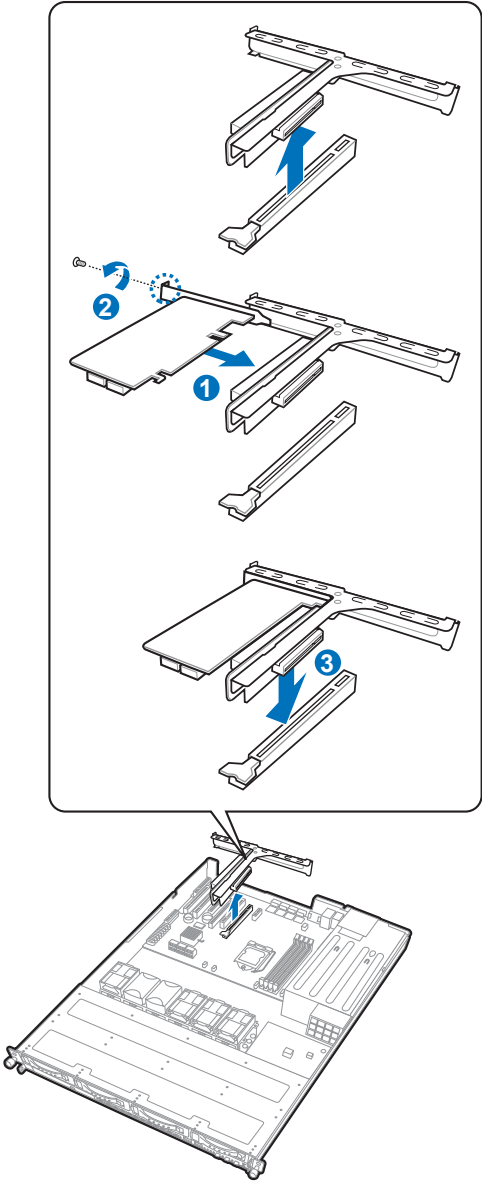


1. Locate the PIKE RAID card slot on the motherboard, then remove the screw at the end of the PIKE slot on the motherboard.
2. Tighten the screw to secure the PIKE card on the motherboard.
3. Remove the SATA/SAS cables from the onboard SATA1–4 connectors.
4. Connect the SATA/SAS cables to the onboard SAS1–4 connectors (blue).
5. Move the SGPIO_SEL1 jumper on the SATA/SAS backplane to 2–3.

P/N	Description
90-S00CS0150T	PIKE 2108 8-port SAS 6G card. RAID Kit (H/W RAID 0, 1, 10, 5, 6, 50, 60)
90-S00CS0140T	PIKE 2008/IMR 8-port SAS 6G card. RAID Kit (RAID 0, 1, 10, 5, 50)
90-S00CS0130T	PIKE2008 8-port SAS 6G card. RAID Kit (RAID 0, 1, 10, 1E)

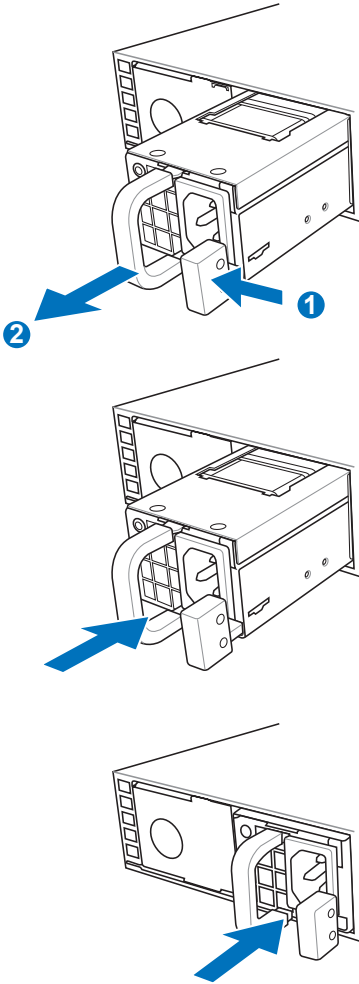
2.5 Installing an expansion card to the riser card bracket

Follow the steps below to install an optional ASUS RAID card on your motherboard.



2.6 Upgrading power supply unit

450W 1+1 hot-swap redundant power supply eliminate system and application downtime by redundancy power backup

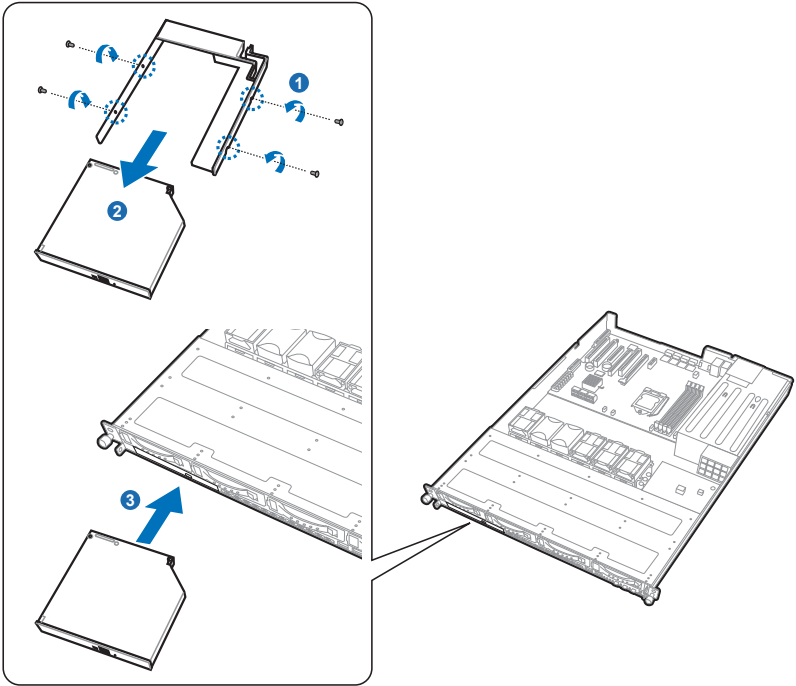


Order P/N	Description
90-S00PW0230T	1U RPS 450W Module



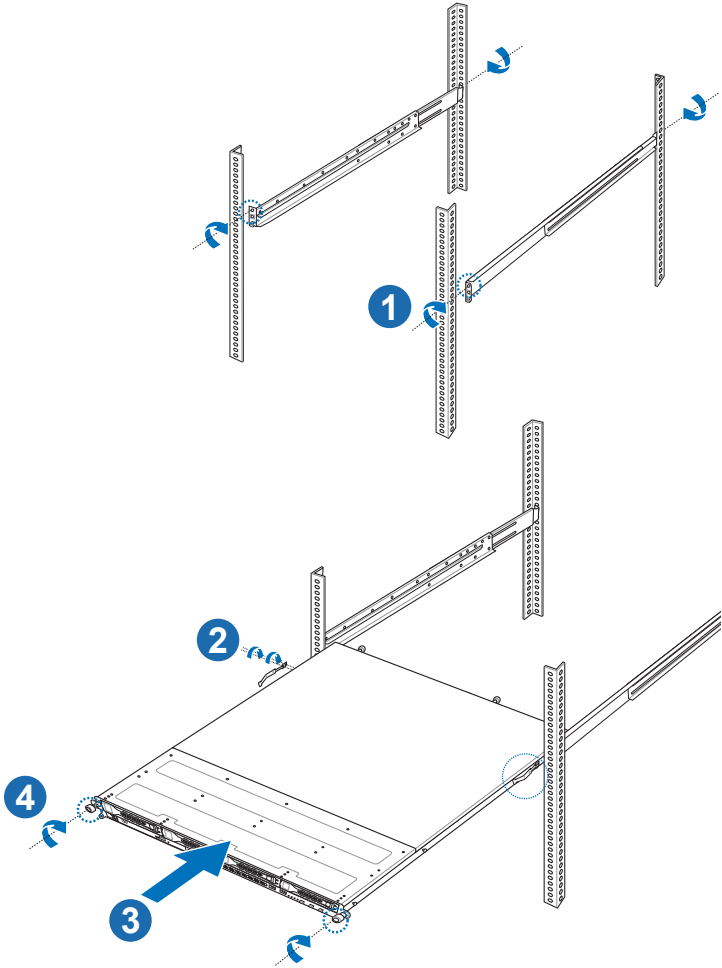
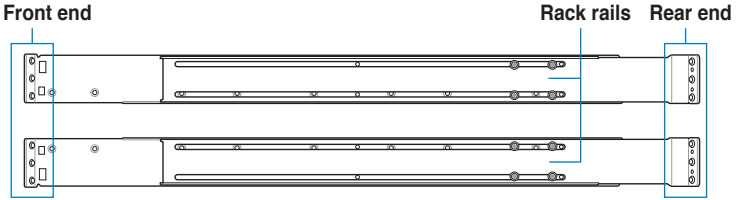
Remove the dummy power supply module before installing the second redundant power supply.

2.7 Installing optical drive



Order P/N	Description
90-S000C2000T	Slim DVD-RW Module (SATA)
90-S000C4000T	Slim DVD-ROM Module (SATA)

2.8 Friction rail kit



P/N	Description
90-S00SP1360T	FRICTION RAIL KIT V2.0

2.9 OS support list

Operating System	Version
Microsoft Windows	Windows Server 2008 Foundation R2 Windows Server 2008 Enterprise SP2 Windows Server 2008 Enterprise R2 Windows Server 2003 Enterprise R2 SP2 32/64 bit
Red Hat Enterprise Linux	RHEL Enterprise AS 4.0 UP8 32/64 bit RHEL AS 5.0 UP3 32/64 bit RHEL AS 6.0 32/64 bit
SuSE Linux Enterprise Server	SuSE Enterprise 10 SP3 32/64 bit SuSE Enterprise 11 32/64 bit SuSE Enterprise 11 SP1 32/64 bit
Linux	CentOS 5.0 U5 32/64 bit Free BSD 8.0 U1 32/64 bit
Virtualization	VMWare ESX4.0 VMWare ESX4.0i

* Subject to change without any notice.

Order P/N	Description
90-S00SW8200T	Windows® Server 2008 R2 Enterprise (1-8 CPU, 10CAL)

