RS500A-E6/PS4

Configuration Guide

E7600

First Edition V1
August 2012

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Revision history

Revision	Revision history	Date
V1	First release of RS500A-E6/PS4 configuration guide	July 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 RS500A-E6/PS4. It includes the product overview and general specifications.

Product introduction

1.1 Key features

Mainstream High Computing Node with AMD G34 Solution

Outstanding Performance with Latest Technologies

The RS500A-E6/PS4 delivers outstanding performance with up-to-date AMD Opteron 6200 series processors, with triple HT3 links between CPUs to provide up to 25.6GB/s bandwidth, achieving extremely fast transfer rate.

High Scalability

With 16 DIMM slots inside, the RS500A-E6/PS4 provides maximum memory capacity up to 256GB. Meanwhile, with PIKE add-on cards, the server will offer scalable and flexible storage options in system.

Super Reliability with PIKE Upgrade Kit

RS500A-E6/PS4 has four 3.5” hot-swap HDD bays to support SATA or SAS HDDs up to 4TB, meeting the demand of mass storage, and offers users a complete RAID solution (together with PIKE) for data protection.

The ASUS optional upgrade kit PIKE SAS2 6G will provide cost-effective storage interface upgrade solution and flexible choices for multiple storage option.

Green Design

Energy-saving with 80+ (Gold) Power Efficiency

With 80+ PFC high efficiency power supply, RS500A-E6/PS4 is able to reduce the power loss and save power bill for users.

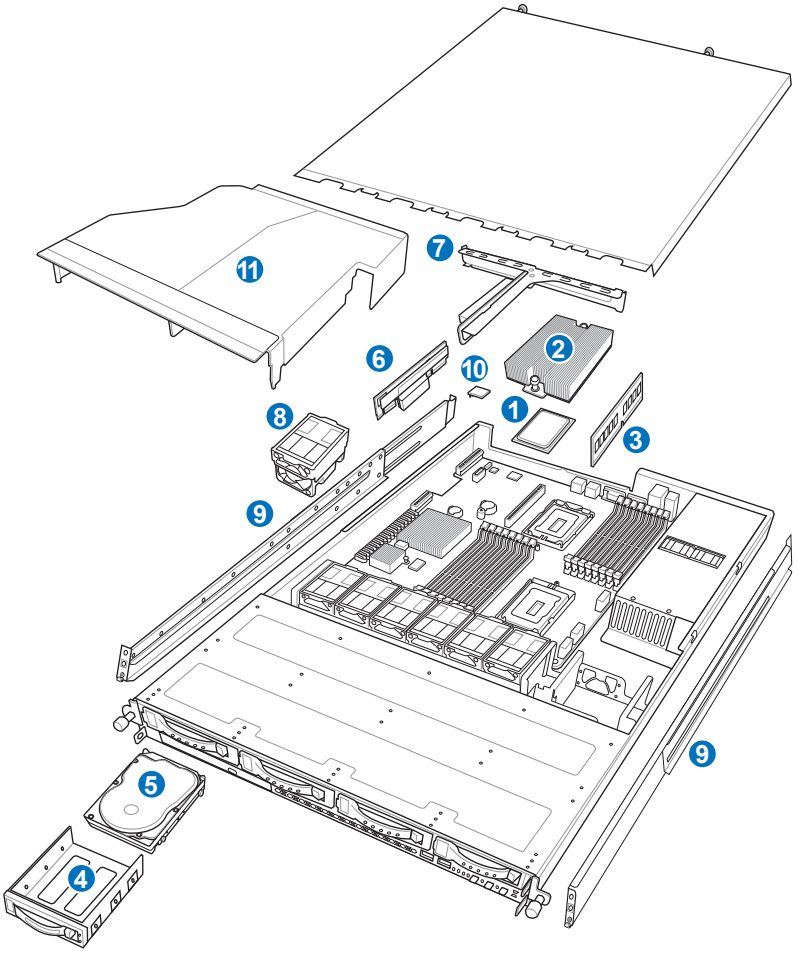
Real-time and Out-of-band Server Management

The optional ASMB4-iKVM module offers real-time web-based management and remote system control (KVM-over-IP) to the system from any local computer anywhere, anytime.

On-board USB for Easy Virtualization Deployment

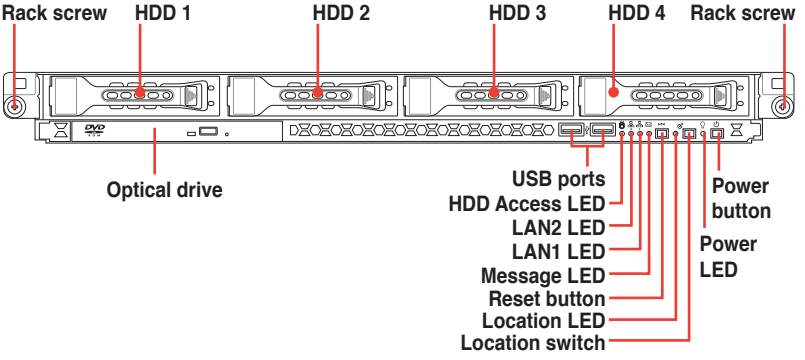
The RS500A-E6/PS4 provides excellent virtualization applications with VMWare supported. The onboard vertical USB connector is designed for integrated hyperviser for easy deployment, allowing the full use of system resources and reducing TCO and IT expenses.

1.2 System overview

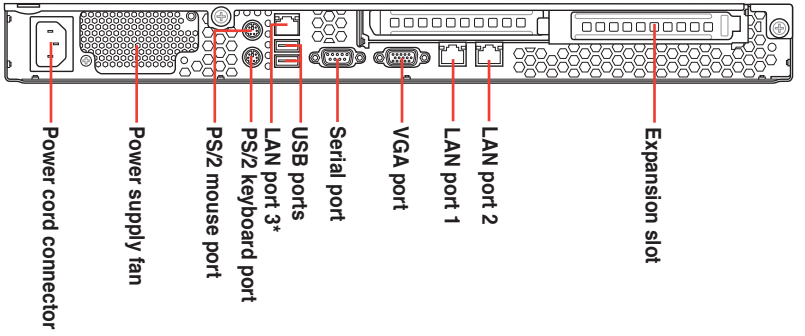


Items	Items
1. Central processing unit (CPU)	7. Riser card bracket
2. CPU heatsink	8. System fans
3. System memory	9. Friction rackmount rail kit
4. HDD trays	10. ASUS Server management board (optional)
5. Hard disk drive	11. FAN Duct
6. ASUS PIKE SAS RAID card (optional)	

1.3 Front panel features



1.4 Rear panel features



- The ports for the PS/2 keyboard, PS/2 mouse, USB, VGA, and Gigabit LAN do not appear on the rear panel if motherboard is not present.
- *The port is for ASUS ASMB4-iKVM controller card only.

1.5 System specifications

Model Name		RS500A-E6/PS4
Processor Support / System Bus		2 x Socket G34 (LGA 1944)
		8/12/16 Core AMD® Opteron™ 6200 Series (ACP<=80W)
		HyperTransport™ Technology 3.0, 6.4 GT/s per link (triple link)
Core Logic		AMD® SR5650 AMD® SP5100
Memory	Total Slots	16 (4-channel per CPU)
	Capacity	Maximum up to 256GB (RDIMM) Maximum up to 64GB (UDIMM)
	Memory Type	DDR3 1066/1333/1600 RDIMM with ECC DDR3 1066/1333/1600 UDIMM with ECC
	Memory Size	1GB, 2GB, 4GB, 8GB, 16GB (RDIMM) 1GB, 2GB, 4GB (UDIMM)
Expansion Slots	Total PCI/PCI-X/ PCI-E Slots	1
	Slot Type	**Default Riser Card:** 1 x PCI-E G2 x16 slot (G2 x16 link) (Full-Height/ Half-Length)
	Additional Slot	1 x PIKE Slot for Storage Enhancement
Storage	SATA Controller	**AMD® SP5100:** 6 x SATA2 300MB/s ports **PROMISE® SW RAID (For Linux/Windows)** Supports software RAID 0, 1, 10 & 5
	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 will be hot-swappable	4 x Hot-Swap 3.5” SAS/SATA2 HDD Bays
Networking	LAN	2 x Intel® 82574L + 1 x Mgmt LAN per Node
Graphic	VGA	Aspeed AST2050 8MB

(continued on the next page)

Model Name		RS500A-E6/PS4
Auxiliary Storage CD / DVD		1 x Slim-type Optical Device Bay Options: DVD-RW/DVD-ROM (DVD-RW default for North America)
Onboard I/O		3 x RJ-45 ports (One for ASMB4-iKVM) 4 x USB 2.0 ports (Front x 2, Rear x 2) 1 x External Serial Port 1 x VGA port 1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x Internal A Type USB port
OS Support		Windows® Server 2008 R2 Windows® Server 2008 Enterprise 32/64-bit Windows® Server 2003 R2 Enterprise 32/64-bit RedHat® Enterprise Linux AS5.0 32/64-bit SuSE® Linux Enterprise Server 10 32/64-bit (Subject to change without any notice)
Anti-virus Software		Optional Trend Micro Server Protect (For Linux/Windows)
Management Solution	Software	ASWM 2.0
	Out of Band Remote Management	Optional ASMB4-iKVM for KVM-over-IP support
Dimension (HH x WW x DD)		615mm x 444mm x 43.6mm (1U)
Net Weight Kg (CPU, DRAM & HDD not inclu ded)		15 Kg
Power Supply		500W 80+ Single Power Supply (Gold Level)
Environment		Operation temperature: 10°C — 35°C / Non operation temperature: -40°C — 70°C Non operation humidity: 20% — 90% (Non-condensing)

Note: Specifications are subject to change without notice.

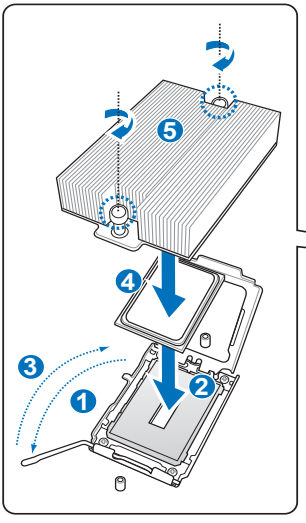
Chapter 2

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

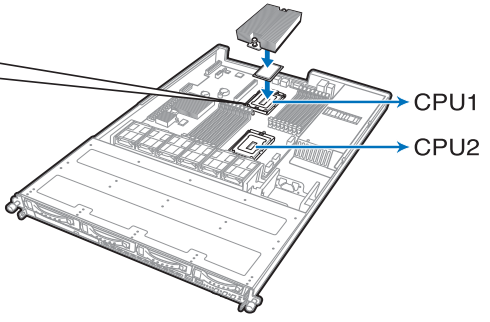
Components

2.1 Upgrading CPU and CPU heatsink

The motherboard comes with dual surface mount LGA 1944 Socket designed for the AMD® Opteron™ 6200 series CPU in the Land Grid Array (LGA) package.



The CPU fits in only one correct orientation. Do not force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.



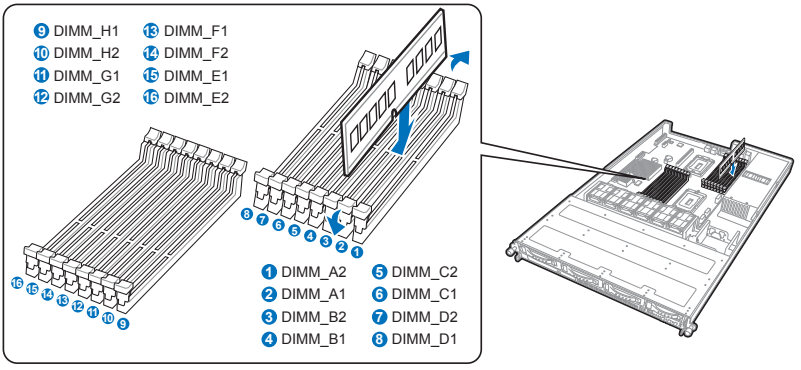
- If you wish to install two (2) CPUs, make sure that you sequentially install a CPU from CPU socket 1 first, then on CPU socket 2.
- When installing only one (1) CPU, make sure to install it on the CPU1 socket.

Twist each of the two screws with a Philips (cross) screwdriver just enough to attach the heatsink to the motherboard. When the two screws are attached, tighten them one by one to completely secure the heatsink.

P/N	Description
90-S000U0CV0T	AMD OPTERON 6276 2.3GHZ W/HEATS (16C/TDP<=115W/Socket G34)
90-S000U0CW0T	AMD OPTERON 6274 2.2GHZ W/HEATS (16C/TDP<=115W/Socket G34)
90-S000U0CX0T	AMD OPTERON 6272 2.1GHZ W/HEATS (16C/TDP<=115W/Socket G34)
90-S000U0CY0T	AMD OPTERON 6238 2.6GHZ W/HEATS (12C/TDP<=115W/Socket G34)
90-S000U0CZ0T	AMD OPTERON 6234 2.4GHZ W/HEATS (12C/TDP<=115W/Socket G34)
90-S000U0D00T	AMD OPTERON 6220 3.0GHZ W/HEATS (8C/TDP<=115W/Socket G34)
90-S000U0D10T	AMD OPTERON 6212 2.6GHZ W/HEATS (8C/TDP<=115W/Socket G34)
90-S000U0D20T	AMD OPTERON 6204 3.3GHZ W/HEATS (4C/TDP<=115W/Socket G34)
90-S000U0D30T	AMD OPTERON 6262HE 1.6GHZ W/HEATS (16C/TDP<=85W/Socket G34)

2.2 Upgrading system memory

The motherboard comes with sixteen (16) Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.



Memory population table

For UDIMM (Single Rank, Dual Ranks)

CPU1 Configuration																
	A2	A1	B2	B1	C2	C1	D2	D1								
2 DIMMs	V				V											
4 DIMMs	V		V		V		V									
6 DIMMs	V	V	V		V	V	V									
8 DIMMs	V	V	V	V	V	V	V	V								

CPU1 + CPU2 Configuration																
	A2	A1	B2	B1	C2	C1	D2	D1	E2	E1	F2	F1	G2	G1	H2	H1
2 DIMMs	V								V							
4 DIMMs	V				V				V				V			
6 DIMMs	V		V		V				V		V		V			
8 DIMMs	V		V		V		V		V		V		V		V	
10 DIMMs	V	V	V		V		V		V	V	V		V		V	
12 DIMMs	V	V	V		V	V	V		V	V	V		V	V	V	
14 DIMMs	V	V	V	V	V	V	V		V	V	V	V	V	V	V	
16 DIMMs	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V

For RDIMM (Single Rank, Dual Ranks & Quad Ranks)

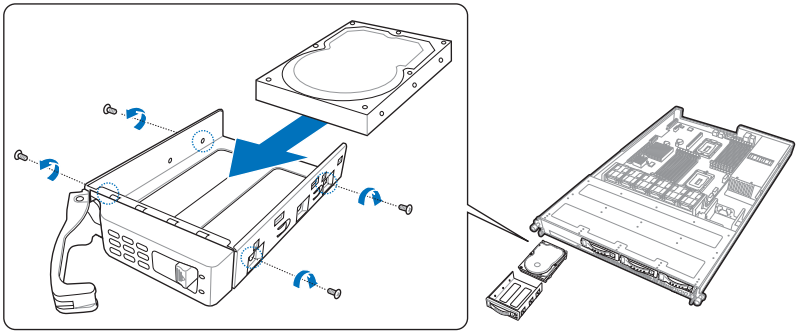
CPU1 Configuration																
	A2	A1	B2	B1	C2	C1	D2	D1								
2 DIMMs	V				V											
4 DIMMs	V		V		V		V									
6 DIMMs	V	V	V		V	V	V									
8 DIMMs	V	V	V	V	V	V	V	V								

CPU1 + CPU2 Configuration																
	A2	A1	B2	B1	C2	C1	D2	D1	E2	E1	F2	F1	G2	G1	H2	H1
2 DIMMs	V								V							
4 DIMMs	V				V				V				V			
6 DIMMs	V		V		V				V		V		V			
8 DIMMs	V		V		V		V		V		V		V		V	
10 DIMMs	V	V	V		V		V		V	V	V		V		V	
12 DIMMs	V	V	V		V	V	V		V	V	V		V	V	V	
14 DIMMs	V	V	V	V	V	V	V		V	V	V	V	V	V	V	
16 DIMMs	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V

Order P/N	Description
90-S000I0620T	DDR3 1600 ECC REG 16G 240P
90-S000I0610T	DDR3 1600 ECC REG 8G 240P
90-S000I0600T	DDR3 1600 ECC REG 4G 240P

2.3 Upgrading hard disk drives

The system supports four hot-swap SATAII/SAS hard disk drives. The hard disk drive installed on the drive tray connects to the motherboard SATAII/SAS ports via the SATAII/SAS backplane.



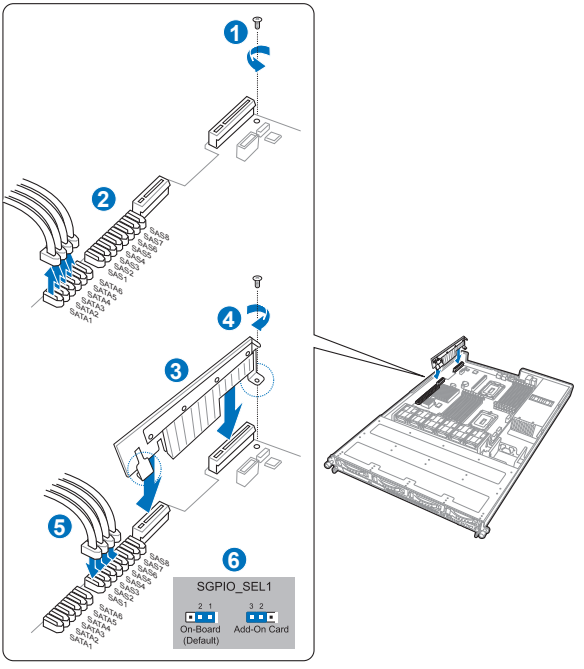
We recommend that you install identical drives of the same model and capacity for RAID configuration.

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

Note: For SAS upgrade, please refer to the ASUS PIKE card user guide.

2.4 Installing ASUS PIKE RAID module

Follow the steps below to install an optional ASUS RAID card on your motherboard. If you install the PIKE 1078 or PIKE 2008 Series SAS RAID card, follow steps 1 and 2 to remove the outer heatsink on RAID card.

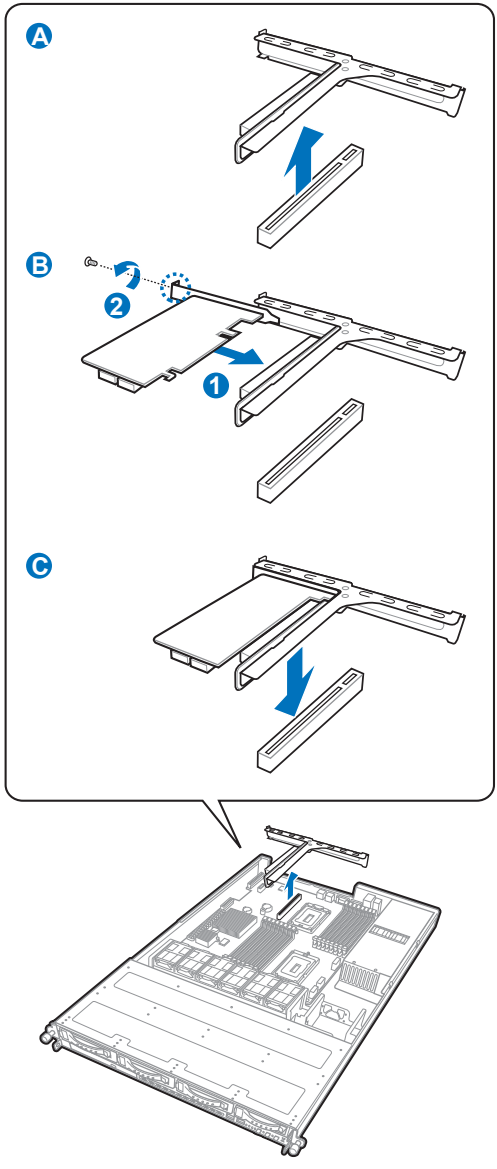


1. Locate the PIKE RAID card slot on the motherboard, then remove the screw beside the PIKE slot.
2. Disconnect the data cables from SATA1 ~ 4.
3. Align the golden fingers of the RAID card with the PIKE RAID card slot then insert the RAID card into the PIKE RAID card slot. Ensure that it is completely seated in place.
4. Secure the PIKE card with the screw you removed earlier.
5. Connect the data cables, by numerical order, to the SAS connectors labeled SAS 1 ~ 4 on the motherboard.
6. Move the SGPIO_SEL1 jumper on the SATA/SAS backplane to 2–3.

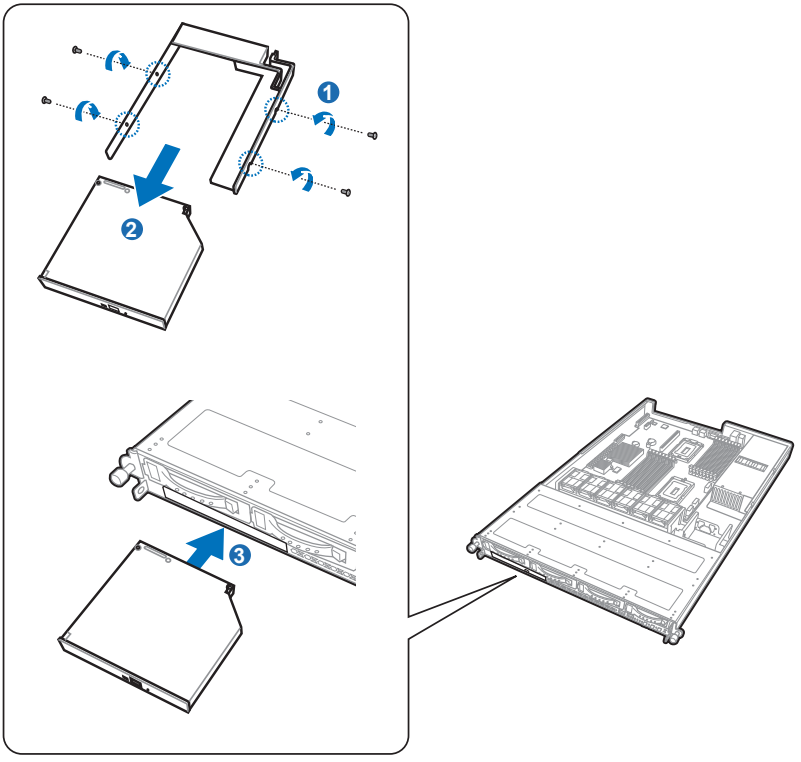
Order P/N	Description
90-S00CS0130T	PIKE2008 8-port SAS 6G card. RAID Kit (RAID 0, 1, 10, 1E)
90-S00CS0140T	PIKE 2008/IMR 8-port SAS 6G card. RAID Kit (RAID 0, 1, 10, 5, 50)
90-S00CS0150T	PIKE 2108 8-port SAS 6G card. RAID Kit (H/W RAID 0, 1, 10, 5, 6, 50, 60)

2.5 Installing an expansion card to the riser card bracket

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

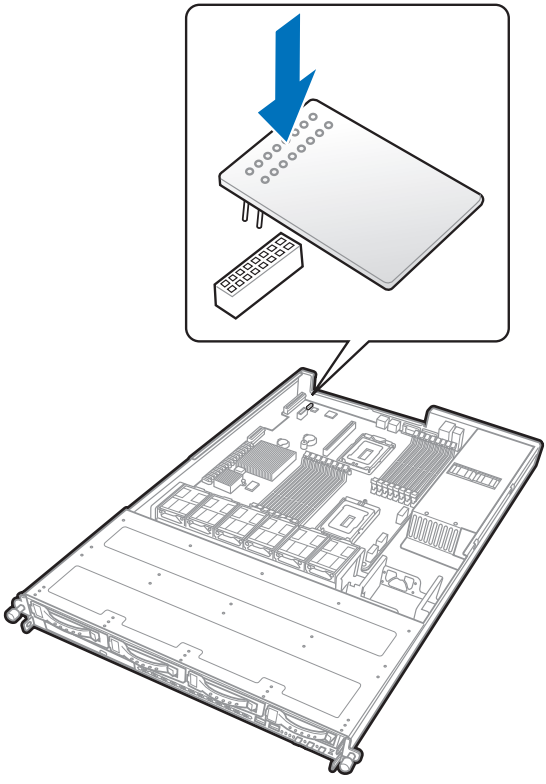


2.6 Installing optical drive



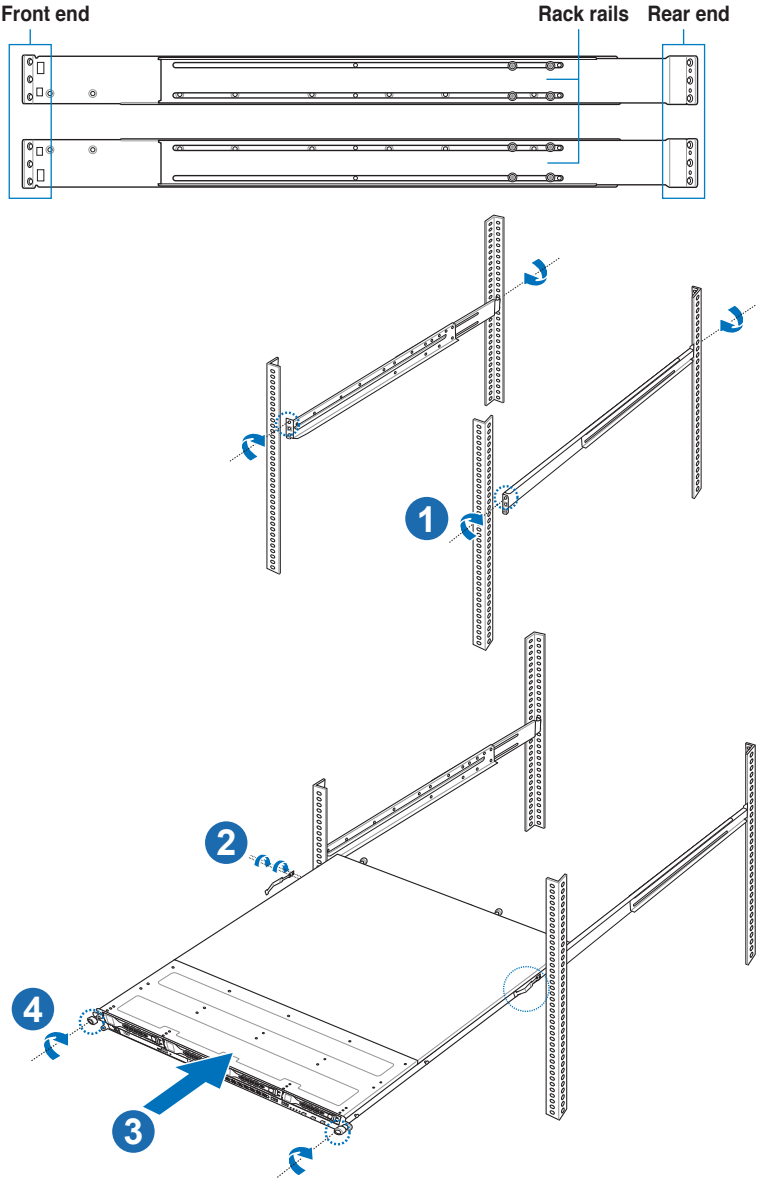
Order P/N	Description
90-S000C2000T	Slim DVD-RW Module (SATA)
90-S000C4000T	Slim DVD-ROM Module (SATA)

2.7 Installing ASUS Server Management Board



Order P/N	Description
90-S00CS0120T	ASMB4-IKVM GA R1.01(SINGLE PACK)

2.8 Friction rail kit



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

2.9 OS support list

OS support list
Windows Server 2008 Enterprise 32/64-bit
Windows Server 2008 Enterprise R2 64-bit
Windows 7 Ultimate 32/64-bit
RedHat RHEL AS 5.0 U7 32/64-bit
RedHat RHEL AS 5.0 U8 32/64-bit
RedHat RHEL AS 6.0 U1 32/64-bit
RedHat RHEL AS 6.0 U2 32/64-bit
Novell SuSE Enterprise 10 64-bit
Novell SuSE Enterprise 11 32/64-bit

Note: Subject to change without any notice.

P/N	Description
90-S00SW7151T	WINDOWS SERVER 2008 STD R2 64 (64-bit only)
90-S00SW8200T	WINDOWS SERVER 2008 R2 ENTERPRISE (1-8 CPU, 10CAL)