



# **RS720-E7/RS12** **RS720-E7/RS12-E**

## *Configuration Guide*



E7521

First Edition V1

June 2012

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## Revision history

Revision	Revision history	Date
V1	First release of RS720-E7/RS12; RS720-E7/RS12-E 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, make sure 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.



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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.

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### 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.

### 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 RS720-E7/RS12; RS720-E7/RS12-E. It includes the product overview and general specifications.

# Product introduction

## 1.1 Key features

### High Performance 2U Storage Server

Based on the Intel® Socket R E5-2600 processor platform, the ASUS RS720-E7/RS12; RS720-E7/RS12-E server offers customers an extensive feature set: mass storage, high memory capacity, outstanding power efficiency, quad LAN connectivity, comprehensive server management, and flexible RAID. It is an ideal choice for customers who demand high performance and mass storage on one product.

### Mass Storage Capacity in a 2U Chassis

The RS700-E7/RS12 is built with 12 SAS/SATA 3.5" hard drive bays to support up to 36TB storage capacity. The hot-swappable design provides non-stop high availability, with easy maintenance and servicing.

### 6+1 Expansion

The RS720-E7/RS12; RS720-E7/RS12-E has high expandability with six expansion slots, including two PCI Express 3.0 x16 slots (x8 link) or one PCI Express 3.0 x16 slot (x16 link), three PCI Express 3.0 x16 slots, and one PCI Express 3.0 x16 slot (x8 link), meeting the demands of future expansion. In addition, a dedicated slot for ASUS PIKE SAS RAID upgrade kits is included.

### Up to 92% Power Efficiency

The use of 1+1 redundant 770W 80Plus Gold power supplies offers high power efficiency for HPC applications. Also hot-swappable, power supplies can be serviced individually without shutting down the server.

### Quad LAN Support

Quad LAN teaming ports provide high networking bandwidth with load balance and fault tolerance functions. The server supports ASUS-made and most market-available 10Gb LAN cards for fast networking.

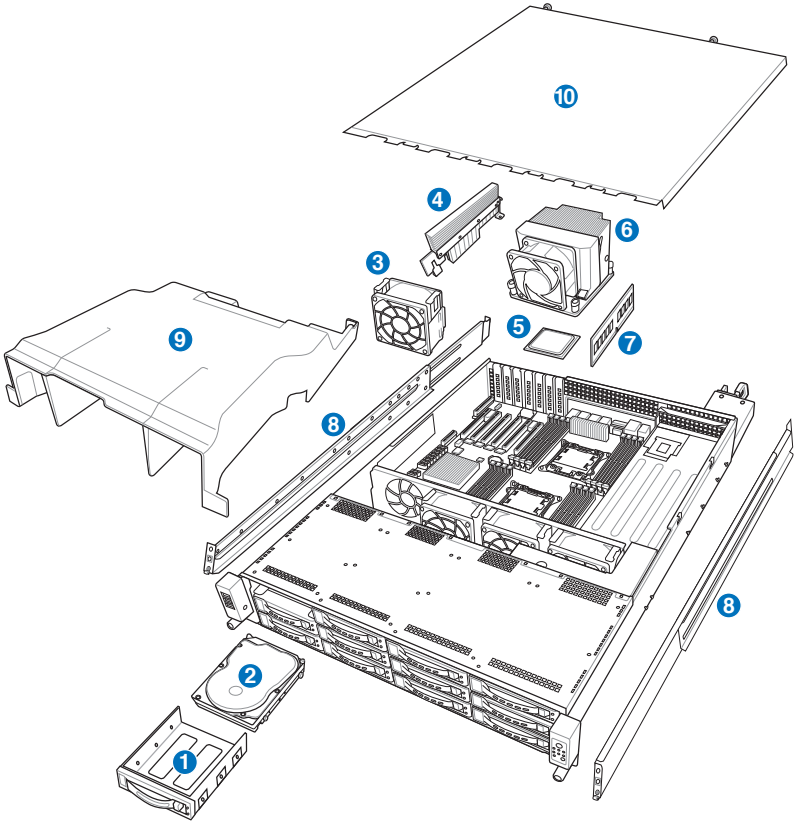
### Comprehensive RAID

The RS720-E7/RS12; RS720-E7/RS12-E supports ASUS RAID PIKE RAID Solution. Users may upgrade the server from SATA to SAS storage by re-connecting the cable from the onboard SATA to the PIKE riser card's SAS port, creating multiple storage options!

### Complete Remote Server Management

By installing an optional web GUI-based ASMB6-iKVM module, users get full control of the server with out-of-band management (IPMI 2.0 standard) and 24/7 real-time remote monitoring. Meanwhile, ASWM Enterprise software provides one-to-multiple centralized management, including BIOS flashing, remote control, power control, and asset management through a user-friendly interface. This gives users an effective tool for remote server management.

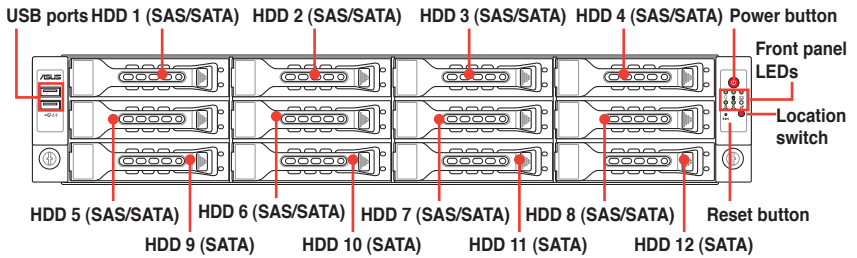
# 1.2 System overview



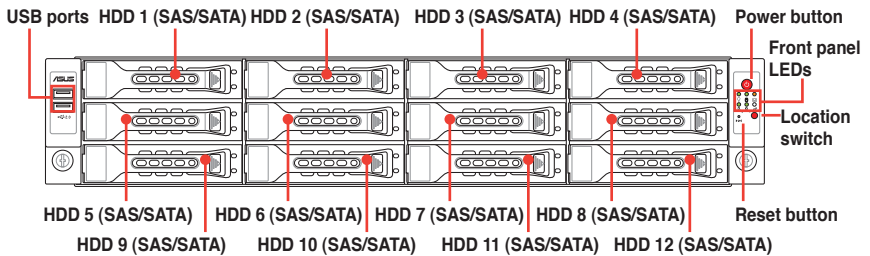
Items	Items
1. HDD tray	2. Hard disk drives
3. System FAN	4. PIKE card
5. Central processing unit (CPU)	6. CPU heatsink
7. System memory	8. Friction rackmount rail kit
9. Fan Duct	10. Top cover

# 1.3 Front panel features

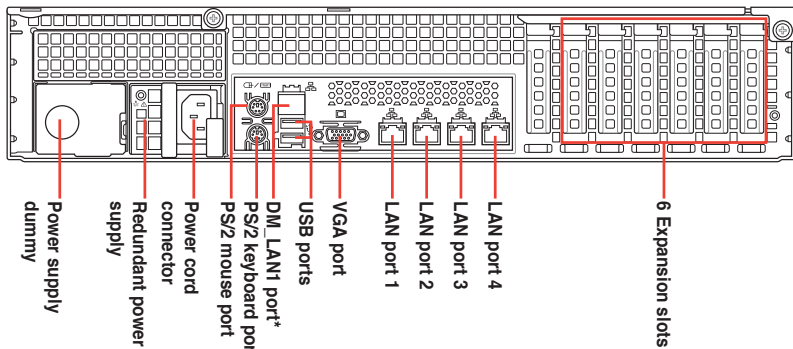
## RS720-E7/RS12



## RS720-E7/RS12-E



# 1.4 Rear panel features



\* The port is for ASUS ASMB6-iKVM controller card only.



## 1.5 System specifications

Model Name		RS720-E7/RS12	RS720-E7/RS12-E
Processor / System Bus		2 x Intel® LGA 2011	
		Intel® Xeon® E5-2600 Processor Family	
		QPI 6.4 / 7.2 / 8.0 GT/s	
Core Logic		Intel® C602-A	
ASUS Features	Smart Fan	√	
	ASWM Enterprise	√	
Memory	Total Slots	16 DDR3 DIMM Slots (4-channel per CPU, 8 DIMMs per CPU)	
	Capacity	Maximum up to 128GB (UDIMM) Maximum up to 512GB (RDIMM) Maximum up to 512GB (LRDIMM)	
	Memory Type	DDR3 800/1066/1333/1600 RDIMM DDR3 1066/1333 ECC UDIMM/Non-ECC UDIMM DDR3 1066/1333 LR-DIMM	
	Memory Size	1GB, 2GB, 4GB, 8GB, 16GB and 32GB* (RDIMM) 1GB, 2GB, 4GB and 8GB* (UDIMM) 8GB, 16GB and 32GB* (LRDIMM)	
Expansion Slots	Total PCI/PCI-X/PCI-E Slots	6	
	Slot Type	Low-profile slots: - Slot 1: PCI-E x16 (X8 Gen3 link, MIO supported, White, from CPU 1) - Slot 2: PCI-E x16 (X16 Gen3 link, Auto switch to x8 link if PCIE 1 is occupied, White, from CPU 1) - Slot 3: PCI-E x16 (X16 Gen3 link, Black, from CPU 2) - Slot 4: PCI-E x16 (X16 Gen3 link, White, from CPU 1) - Slot 5: PCI-E x16 (X16 Gen3 link, Black, from CPU 2) - Slot 6: PCI-E x16 (X8 Gen3 link, Black, from CPU 2)	
	Additional Slot	1 x PIKE Slot for Storage expansion (White, from CPU 1)	
Storage	SATA Controller	Intel® C602-A : <AHCI> 2 SATA 6Gb/s ports; 4 SATA 3Gb/s ports Intel® RSTe (for Windows only) (Support software RAID 0, 1, 10 & 5) LSI® MegaRAID (for Linux/Windows) (Support software RAID 0, 1, 10)	N/A

(continued on the next page)

Model Name		RS720-E7/RS12	RS720-E7/RS12-E
Storage	SAS Controller	<b>Optional:</b> ASUS PIKE 2008 8-port SAS 6G RAID card (Support RAID 0, 1, 10 & 1E) ASUS PIKE 2008/IMR 8-port SAS 6G RAID card (Support RAID 0, 1, 10, 5, & 50) ASUS PIKE 2108 8-port SAS 6G HW RAID card (Support RAID 0, 1, 10, 5, 6, 50 & 60)	ASUS PIKE 2008 8-port SAS 6G RAID card (Support RAID 0, 1, 10 & 1E) ASUS PIKE 2108 8-port SAS 6G HW RAID card (Support RAID 0, 1, 10, 5, 6, 50 & 60)
	HDD Bays	I = internal A or S will be hot-swappable  8 x Hot-swap 3.5" SATA/SAS HDD Bays (available only when an optional ASUS PIKE SAS RAID card is installed)  4 x Hot-swap 3.5" SATA HDD Bays	12 x Hot-swap 3.5" SATA/SAS HDD Bays (when an ASUS PIKE SAS RAID card is installed)
Networking	LAN	1 x Quad Port Intel® Ethernet Controller i350 LAN	
Graphic	VGA	ASPEED® AST2300 + 16MB VRAM	
Onboard I/O		5 x RJ-45 ports (1 for ASMB6-iKVM) 4 x USB 2.0 ports (Front x 2, Rear x 2) 1 x Internal A Type USB Port 1 x VGA port 1 x PS/2 keyboard port 1 x PS/2 mouse port	
OS Support		Windows® Server 2008 R2 Windows® Server 2008 Enterprise 32 / 64-bit Windows® 7 32/64-bit RedHat® Enterprise Linux AS5.6/6.0 32 / 64-bit CentOS 5.6 32 /64-bit SuSE® Linux Enterprise Server 11.2 32 / 64-bit (Subject to change without any notice)	
Management Solution	Out of Band Remote Hardware	Default ASMB6-iKVM for KVM-over-IP	
	Software	ASUS ASWM Enterprise®	
Dimension (HH x WW x DD)		615mm x 444mm x 87mm (2U)	
Net Weight Kg (CPU, DRAM & HDD not included)		23 Kg	
Power Supply		1+1 Redundant 770W 80PLUS Gold Power Supply (following different configuration by region)	
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.

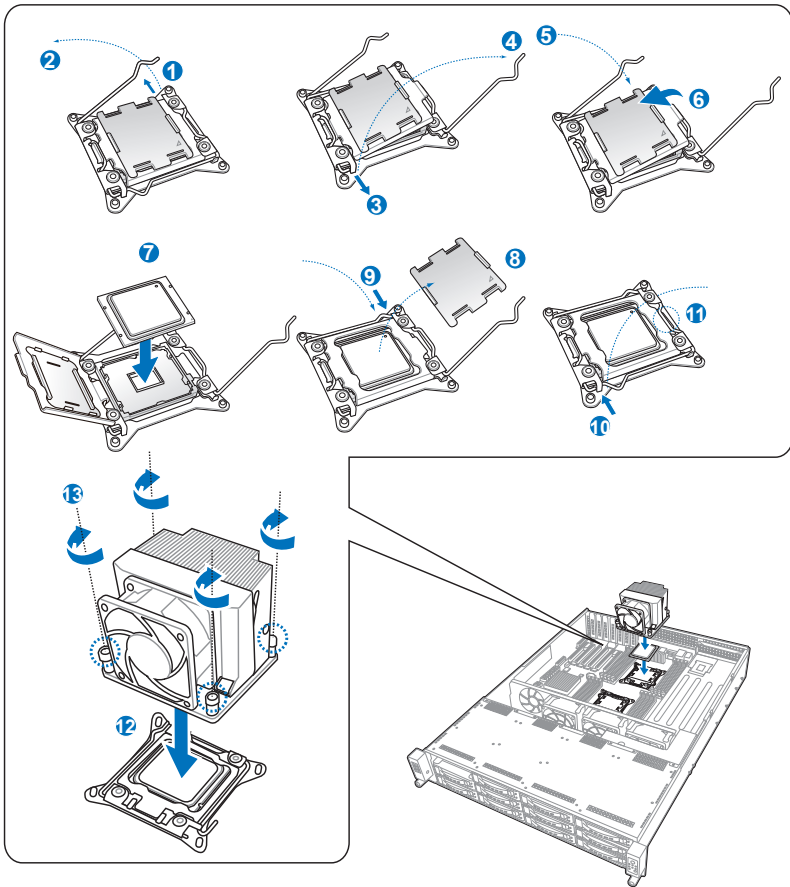
# Chapter 2

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 LGA2011 socket designed for the Intel® Xeon E5-2600 family processor.



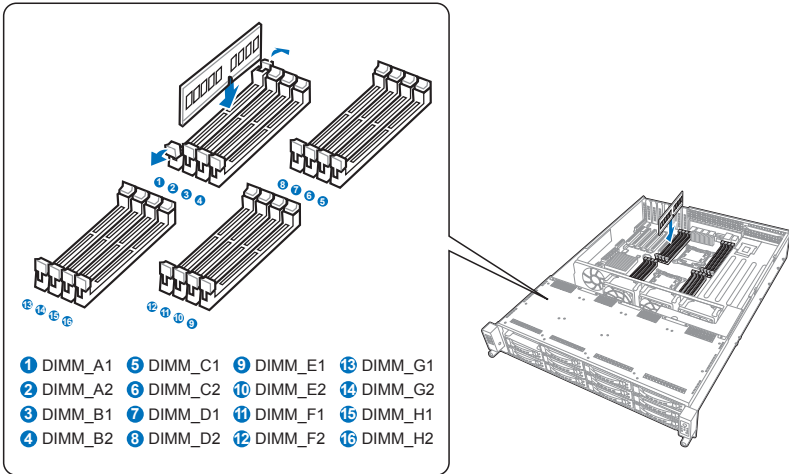
- To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.
- The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!
- To prevent contaminating the paste, DO NOT spread the paste with your finger directly.

Order P/N	Description
90-S000U0CP1T	INT E5-2690 2.9G SINGLE PACK W/TS HEATSINK
90-S000U0C91T	INT E5-2680 2.7G SINGLE PACK W/TS HEATSINK
90-S000U0C80T	INT E5-2670 2.6G SINGLE PACK W/TS HEATSINK
90-S000U0C81T	INT E5-2665 2.4G SINGLE PACK W/TS HEATSINK
90-S000U0C82T	INT E5-2660 2.2G SINGLE PACK W/TS HEATSINK
90-S000U0C83T	INT E5-2650 2.0G SINGLE PACK W/TS HEATSINK
90-S000U0C84T	INT E5-2640 2.5G SINGLE PACK W/TS HEATSINK
90-S000U0C85T	INT E5-2630 2.3G SINGLE PACK W/TS HEATSINK
90-S000U0C86T	INT E5-2620 2.00G SINGLE PACK W/TS HEATSINK

\* >115W support with optional thermal upgrade kit.

## 2.2 Upgrading system memory

The motherboard comes with eight (per CPU) Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.



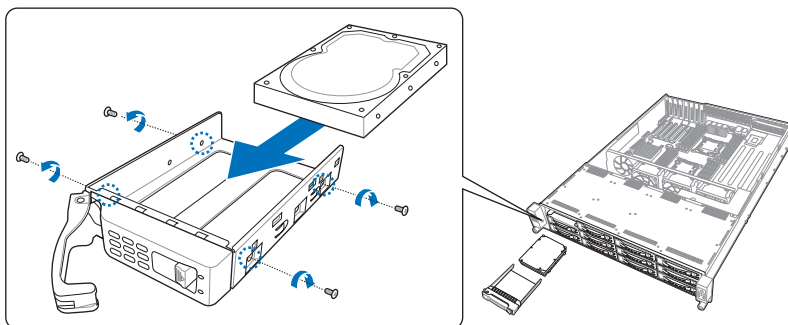
CPU1 Configuration								
	A2	A1	B2	B1	C2	C1	D2	D1
1 DIMM		✓						
2 DIMMs		✓		✓				
4 DIMMs		✓		✓		✓		✓
8 DIMMs	✓	✓	✓	✓	✓	✓	✓	✓

CPU1 + CPU2 Configuration																
	A2	A1	B2	B1	C2	C1	D2	D1	E2	E1	F2	F1	G2	G1	H2	H1
1 DIMM		✓														
2 DIMMs		✓								✓						
4 DIMMs		✓		✓						✓		✓				
8 DIMMs		✓		✓		✓		✓		✓		✓		✓		✓
12 DIMMs	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓		✓
16 DIMMs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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 hard disk drive installed on the drive tray connects to the motherboard SATA/SAS ports via the SATA/SAS backplane.



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

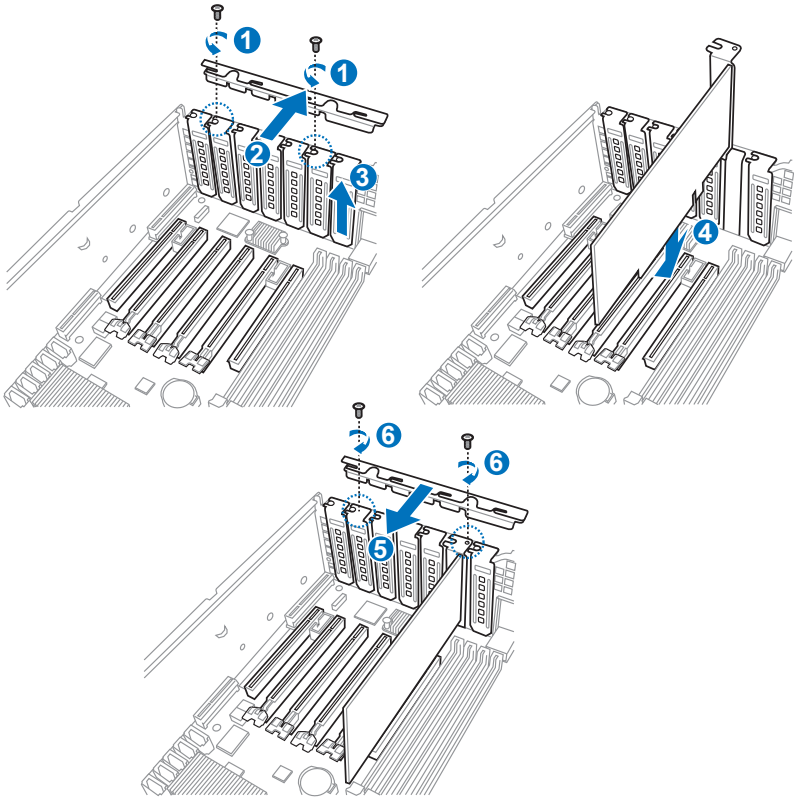
P/N	Description
90-S000H64R0T	300GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H64S0T	450GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H64T0T	600GB 6G SAS15Krpm with HDD Tray (Seagate)
90-S000H65D1T	500GB SATA3 6Gb 7200 rpm with HDD Tray (Seagate)
90-S000H65B1T	1TB SATA3 6Gb 7200 rpm with HDD Tray (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 **2.5 Installing ASUS PIKE RAID card**.

## 2.4 Installing PCI express cards

In the future, you may need to install expansion cards. The following subsections describe the slots and the expansion cards that they support.

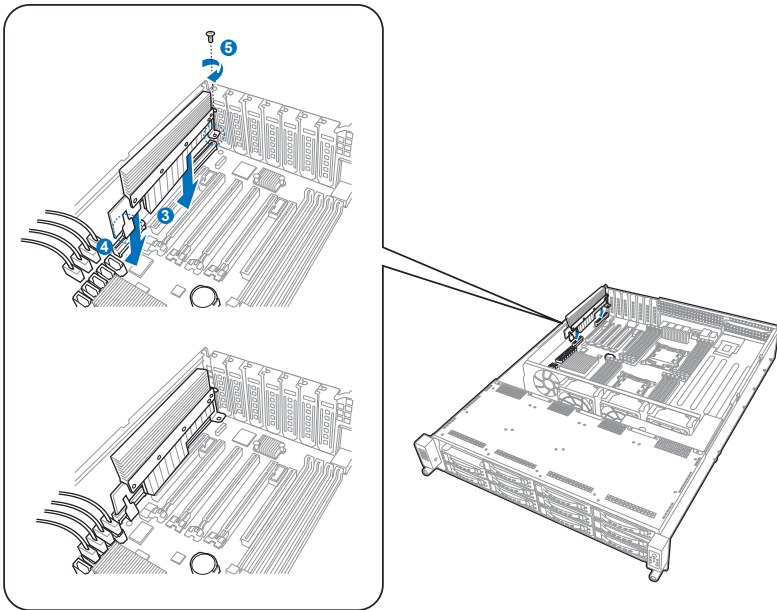


1. Locate the slot that you want to install expansion card on the motherboard.
2. Align the golden fingers of the expansion card with the slot you decided to use.
3. Insert the expansion card into the slot. Ensure that it is completely seated on the slot.
4. Reinstall the expansion card shield.



## 2.5 Installing ASUS PIKE RAID card

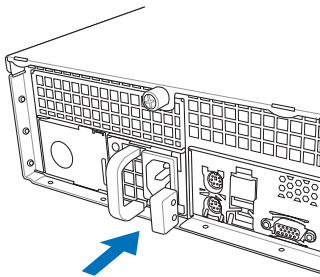
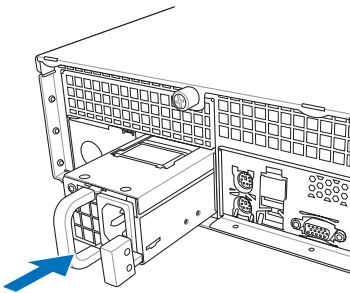
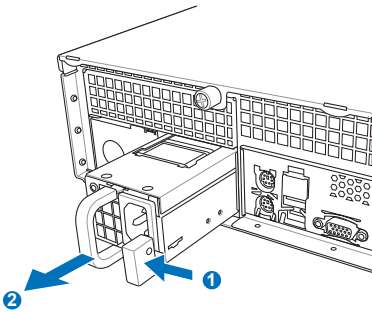
Follow the steps below to install an optional ASUS RAID card on your motherboard.



1. Locate the PIKE RAID card slot on the motherboard.
2. Remove the screw at the end of the PIKE slot on the motherboard.
3. Align the golden fingers of the PIKE RAID card with the PIKE RAID card slot.
4. Insert the PIKE RAID card into the PIKE RAID card slot. Ensure that it is completely seated on the PIKE RAID card slot.
5. Tighten the screw to secure the PIKE card on the motherboard.
6. Connect the data cables, by numerical order, to the SAS connectors labeled SAS1-8 on the motherboard.

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)

## 2.6 Replacing power supply unit

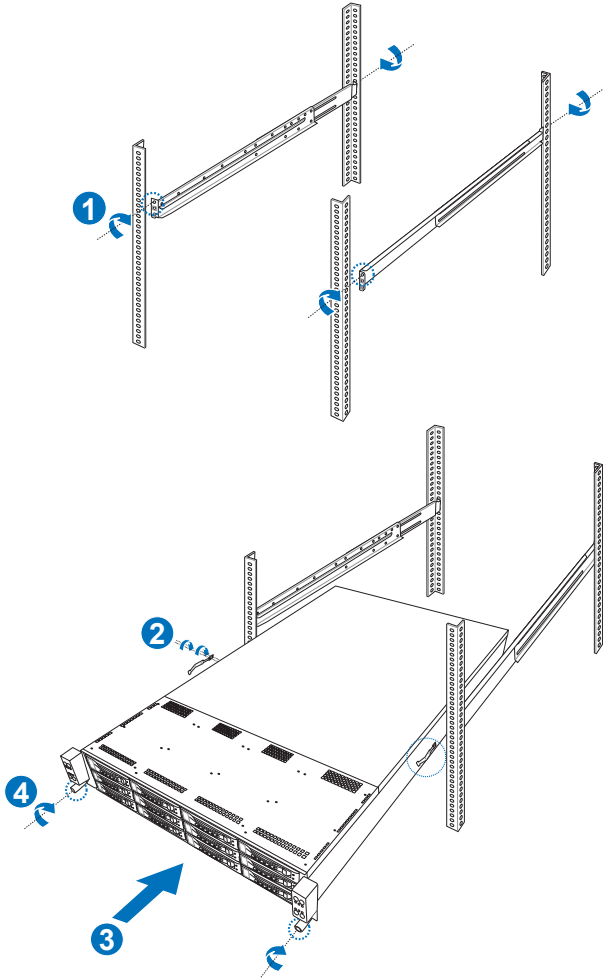
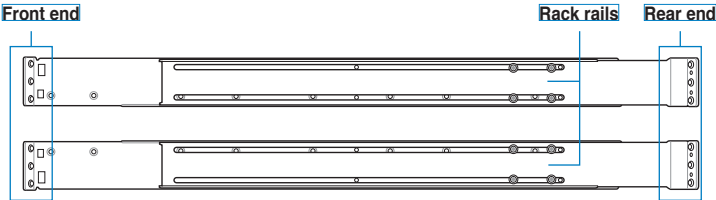


Order P/N	Description
90-S00PW0100T	RPS 770W Module



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

# 2.7 Friction rail kit



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

## 2.8 OS support list

OS support list
WindowsR Server 2008 R2
WindowsR Server 2008 R2 Enterprise
WindowsR Server 2008 Enterprise 32/64-bit
RedHatR Enterprise Linux AS5.6/6.0 32/64-bit
SuSER Linux Enterprise Server 11.2 32/64-bit
CentOS 5.6 32/64-bit
VMWare ESX4.1/ESXi4.1

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)