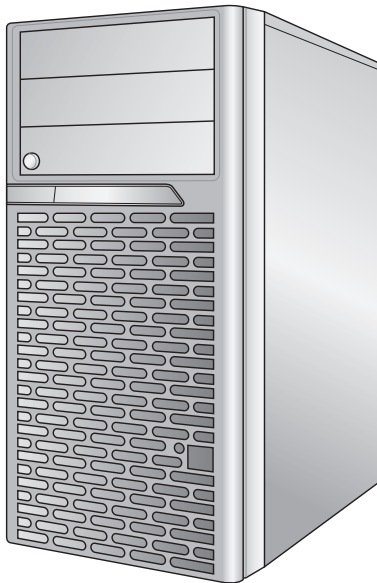


ASUS[®]

ESC2000

Configuration Guide



E5930

First Edition
August 2010

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Revision history

Revision	Revision history	Date
V1	First release of ESC2000 configuration guide	July 2010

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.



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 ESC2000. It includes the product overview and general specifications.

Product introduction

1.1 Key features

ASUS ESC2000 is not only a server with flexible expandability and high-capacity storage but also a dual processor personal super computer supporting dual GPU computing cards.

Versatile Applications

- Cost-performance 2-way Intel Xeon system for small & medium business
- PCI-E 2.0 x16 slot reserved for professional graphic card usage
- Optional ASUS unique MIO audio card support

Expandable for Growing Business

- Up to four SAS/SATA HDDs for storage demanding applications
- Hot-swap storage bay design for online expansion

Quiet & Power-saving

- Adopt 80+ high efficiency power supply
- Support DDR3 has higher transfer speed and lower power consumption
- Intelligent fan technology has low acoustic and effective system cooling

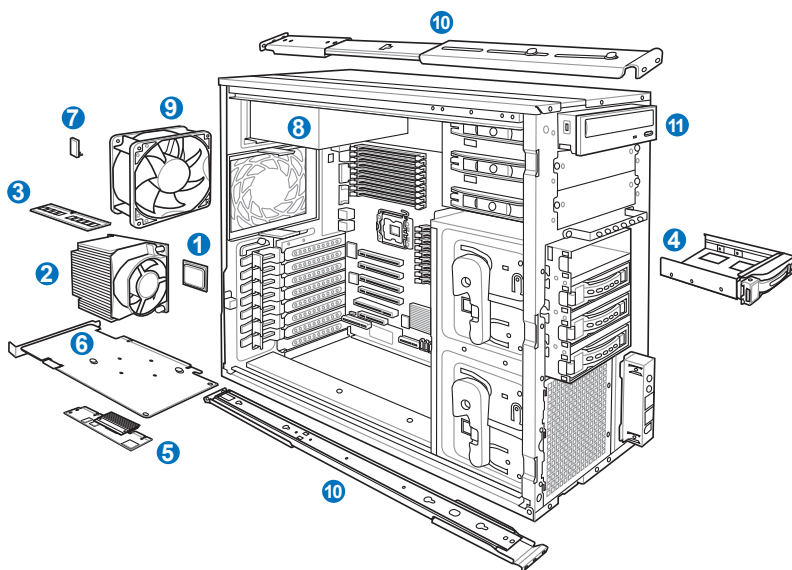
Wide Memory Choices

- 18-DIMM slots support latest DDR3 1333/1066 Reg./Unbuffered ECC memory modules

ASUS PIKE Technology & Flexible I/O Expansion

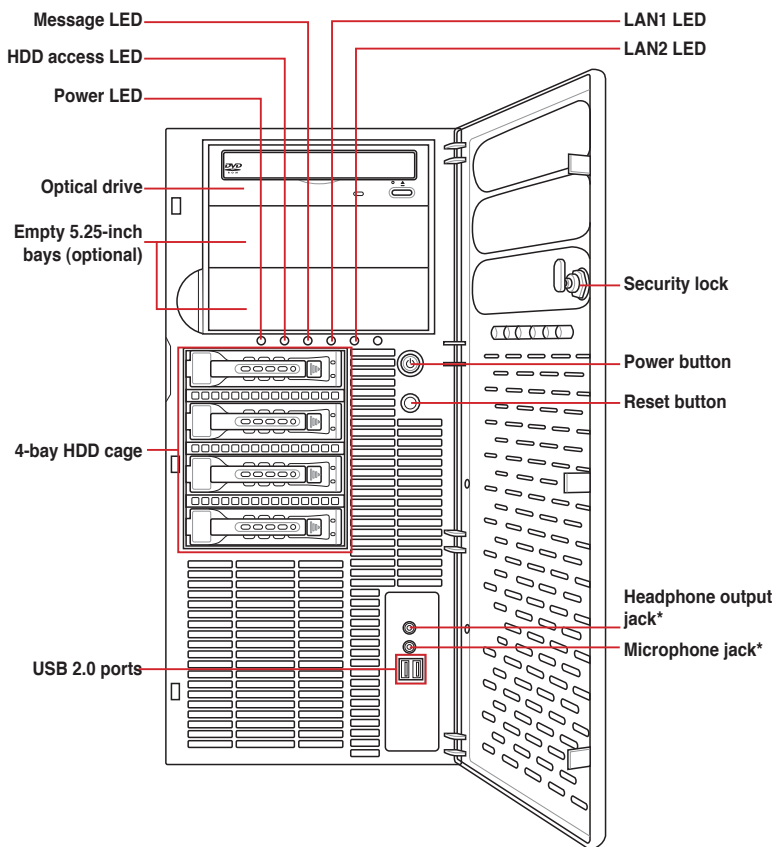
- Easily upgradable to support SAS storage for better I/O performance
- Total RAID solution without additional effort for verification

1.2 System overview



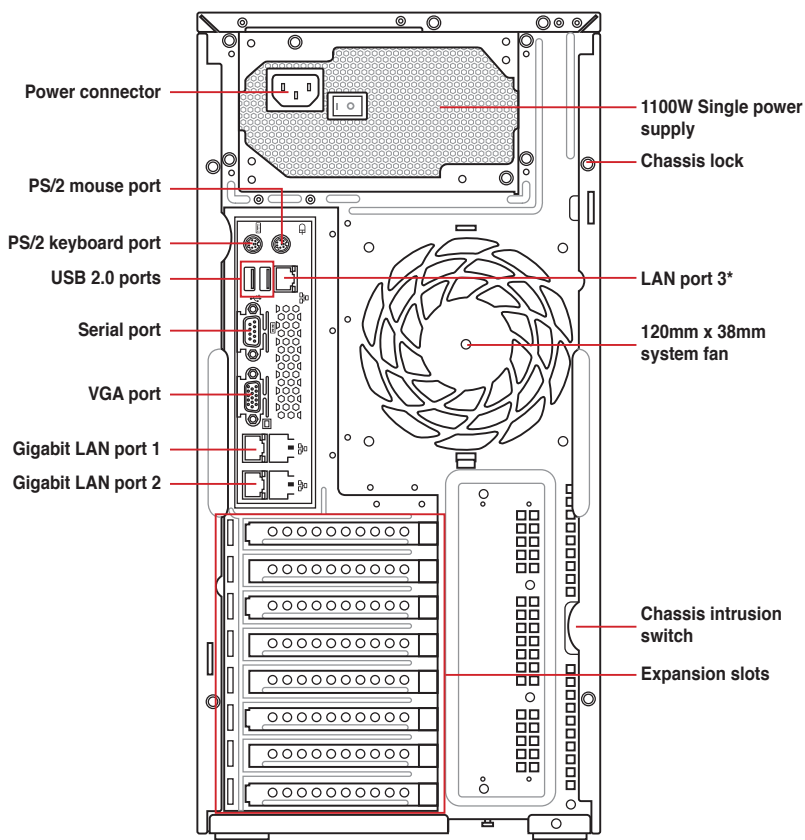
Items	
1.	Central processing unit (CPU)
2.	CPU heatsink and fan
3.	System memory
4.	Hard disk drives
5.	PIKE 1064E/1068E/1078/6480/2008/2008 IMR module (optional)
6.	Graphics card
7.	ASUS Server management board (optional)
8.	Single power supply
9.	System fan
10.	Rackmount rail kit (optional)
11.	Optical drive (optional)

1.3 Front panel features



*The audio jacks function only with an optional MIO audio card.

1.4 Rear panel features



- The ports for the PS/2 keyboard, PS/2 mouse, serial port, 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		ESC2000
Processor / System Bus		2 x Socket LGA1366
		Intel® Xeon X5600 series processors (95W)
		Intel® Xeon E5600 series processors (80W)
		Intel® Xeon L5600 series processors (60W/40W)
		Intel® Xeon X5500 series processors (95W)
		Intel® Xeon E5500 series processors (80W)
		Intel® Xeon L5500 series processors (60W/38W)
		QPI 4.8 / 5.86 / 6.4 GT/s
Core Logic		Intel® AC5520 (36D) Intel® ICH10R I/O controller
Memory	Total Slots	18 (3-channel per CPU, 9 DIMM per CPU)
	Capacity	Maximum up to 144GB (RDIMM) Maximum up to 48GB (UDIMM)
	Memory Type	DDR3 800 / 1066 / 1333 / Reg DIMM / Unbuffered DIMM with ECC
	Memory Size	1GB, 2GB, 4GB and 8GB (RDIMM) 1GB, 2GB and 4GB (UDIMM)
Expansion Slots	Total PCI/PCI-X/PCI-E Slots	6
	Slot Type	- Slot 1: PCI-E x8 (G1 x4 link) (Auto disabled if PIKE slot is occupied)
		- Slot 2: PCI 32
		- Slot 3: PCI-E x16 (G2 x16 link) (Auto switch to x8 link if slot 4 is occupied)
		- Slot 4: PCI-E x16 (G2 x8 link)
		- Slot 5: PCI-E x16 (G2 x16 link)
- Slot 6: PCI-E x16 (Gen2 x16 link) (Auto disabled if slot 5 is occupied, MIO supported)		
Additional Slot 1	1 x PIKE slot for storage expansion	
Additional Slot 2	1 x MIO slot for Audio	
Graphics	Onboard VGA	Aspeed AST2050 8MB
	CUDA Support	Up to 2 x NVIDIA® Tesla™ C2050/C2070 or 1 x Tesla™ C1060 + 1 x Quadro™ Card
	Multi-GPU Support	Supports ATI® CrossFireX™ technology, up to Dual CrossFireX™

(continued on the next page)

Storage	SATA Controller	Intel® ICH10R: <ul style="list-style-type: none"> - 6 x SATA2 300MB/s ports - Intel® Matrix Storage (for Windows only) - Supports software RAID 0, 1, 5 & 10 LSI® MegaRAID (for Linux / Windows): <ul style="list-style-type: none"> - Supports software RAID 0, 1 & 10
	SAS Controller	Optional: ASUS PIKE 1064E 4-port SAS RAID card ASUS PIKE 1068E 8-port SAS RAID card ASUS PIKE 1078 8-port SAS HW RAID card ASUS PIKE 6480 8-port SAS RAID card ASUS PIKE 2008 8-port SAS2 6G RAID card ASUS PIKE 2008/IMR 8-port SAS2 6G RAID card
HDD Bays	I = internal A or S = hot-swappable	4 x Hot-swap 3.5" HDD Bays
Networking	LAN	1 x Dual Port Intel® 82576EB (VMDq) + 1 x Mgmt LAN
Auxiliary Storage FDD / CD / DVD		3 x 5.25" media bays (Option: NO ODD / DVD-ROM / DVD-RW)
Onboard I/O		1 x External serial port 3 x RJ-45 ports (1 for ASMB4-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® XP / Vista / 7 32 / 64-bit Windows® Server 2008 R2 Windows® Server 2008 Enterprise 32 / 64-bit Windows® Server 2003 R2 Enterprise 32 / 64-bit RedHat® Enterprise Linux AS5.4 / 5.5 32 / 64-bit SuSE® Linux Enterprise Server 11 32 / 64-bit (Subject to change without any notice)
Anti-virus Software		Optional anti-virus CD pack
Dimension (HH x WW x DD)		445mm x 217.5mm x 545mm
Net Weight Kg (CPU, DRAM & HDD not included)		20 Kg
Power Supply		1100W (80+ Gold) Single Power Supply
Power Rating		Input: 100-240Vac, 15-8A, 50-60Hz, Class I
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.

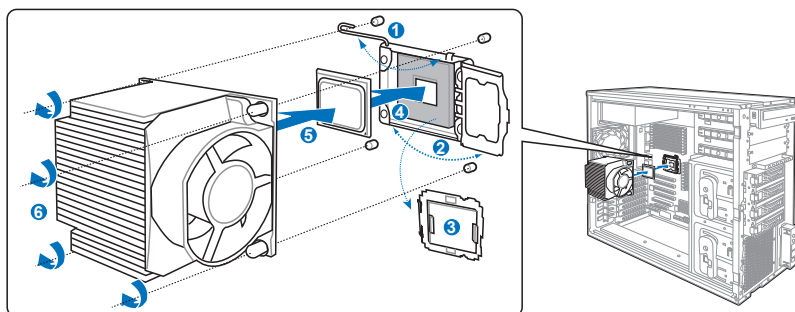
Chapter 2

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

Components

2.1 Upgrading CPU and CPU heatsink

The ASUS ESC2000 supports 1–2 Quad-core Intel® Xeon® X5500 / E5500 / L5500 series processor.

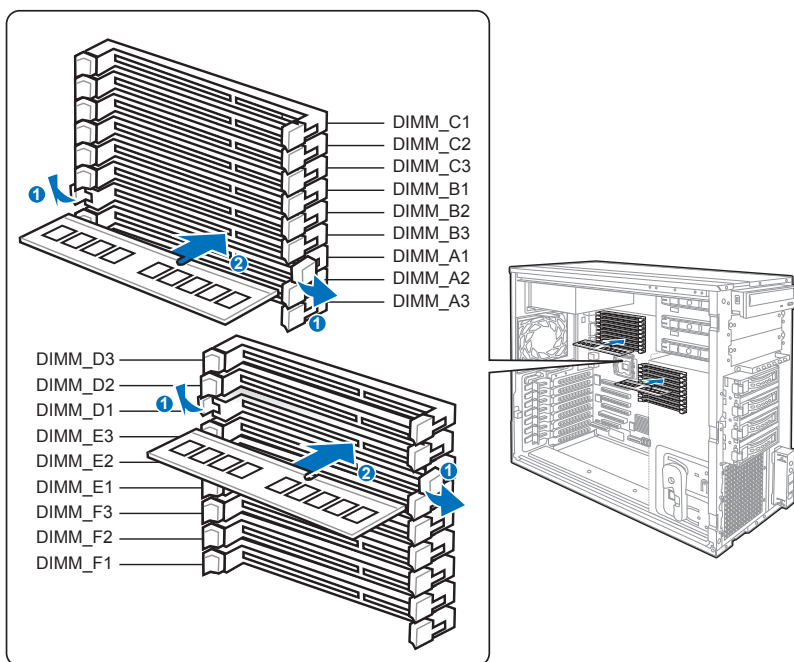


We recommend to install CPUs with the same frequency.

Order P/N	Description
90-S000U08Y1T	Six-Core Intel Xeon X5670, 2.93G, QPI 6.4GT/s, 12MB L2 (with Heatsink)
90-S000U08X1T	Six-Core Intel Xeon X5660, 2.80G, QPI 6.4GT/s, 12MB L2 (with Heatsink)
90-S000U08W1T	Six-Core Intel Xeon X5650, 2.66G, QPI 6.4GT/s, 12MB L2 (with Heatsink)
90-S000U08V1T	Quad-Core Intel Xeon E5640, 2.66G, QPI 5.86GT/s, 12MB L2 (with Heatsink)
90-S000U08U1T	Quad-Core Intel Xeon E5630, 2.53G, QPI 5.86GT/s, 12MB L2 (with Heatsink)
90-S000U08T1T	Quad-Core Intel Xeon E5620, 2.40G, QPI 5.86GT/s, 12MB L2 (with Heatsink)
90-S000U0740T	Quad-Core Intel Xeon X5570, 2.93G, QPI 6.4GT/s, 8MB L2 (with Heatsink)
90-S000U0750T	Quad-Core Intel Xeon X5560, 2.80G, QPI 6.4GT/s, 8MB L2 (with Heatsink)
90-S000U0760T	Quad-Core Intel Xeon X5550, 2.66G, QPI 6.4GT/s, 8MB L2 (with Heatsink)
90-S000U0770T	Quad-Core Intel Xeon E5540, 2.53G, QPI 5.86GT/s, 8MB L2 (with Heatsink)
90-S000U0780T	Quad-Core Intel Xeon E5530, 2.40G, QPI 5.86GT/s, 8MB L2 (with Heatsink)
90-S000U0790T	Quad-Core Intel Xeon E5520, 2.26G, QPI 5.86GT/s, 8MB L2 (with Heatsink)
90-S000U07A0T	Quad-Core Intel Xeon E5506, 2.13G, QPI 4.8GT/s, 4MB L2 (with Heatsink)
90-S000U07B0T	Quad-Core Intel Xeon E5504, 2.00G, QPI 4.8GT/s, 4MB L2 (with Heatsink)
90-S000U07C0T	Dual-Core Intel Xeon E5502, 1.86G, QPI 4.8GT/s, 4MB L2 (with Heatsink)

2.2 Upgrading system memory

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



Memory population table

For UDIMM and Quad Ranks RDIMM:

CPU 1 Configuration									
	DIMM_A3	DIMM_A2	DIMM_A1	DIMM_B3	DIMM_B2	DIMM_B1	DIMM_C3	DIMM_C2	DIMM_C1
1 DIMM	--	--	●	--	--	--	--	--	--
2 DIMMs	--	--	●	--	--	●	--	--	--
3 DIMMs	--	--	●	--	--	●	--	--	●
4 DIMMs	--	●	●	--	--	●	--	--	●
5 DIMMs	--	●	●	--	●	●	--	--	●
6 DIMMs	--	●	●	--	●	●	--	●	●

CPU 2 Configuration									
	DIMM_D3	DIMM_D2	DIMM_D1	DIMM_E3	DIMM_E2	DIMM_E1	DIMM_F3	DIMM_F2	DIMM_F1
1 DIMM	--	--	●	--	--	--	--	--	--
2 DIMMs	--	--	●	--	--	●	--	--	--
3 DIMMs	--	--	●	--	--	●	--	--	●
4 DIMMs	--	●	●	--	--	●	--	--	●
5 DIMMs	--	●	●	--	●	●	--	--	●
6 DIMMs	--	●	●	--	●	●	--	●	●

For RDIMM (Single Rank, Dual Ranks):

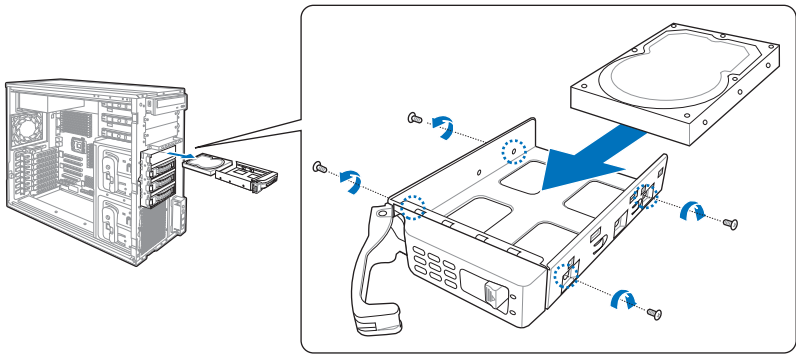
CPU 1 Configuration									
	DIMM_A3	DIMM_A2	DIMM_A1	DIMM_B3	DIMM_B2	DIMM_B1	DIMM_C3	DIMM_C2	DIMM_C1
1 DIMM	--	--	●	--	--	--	--	--	--
2 DIMMs	--	--	●	--	--	●	--	--	--
3 DIMMs	--	--	●	--	--	●	--	--	●
4 DIMMs	--	●	●	--	--	●	--	--	●
5 DIMMs	--	●	●	--	●	●	--	--	●
6 DIMMs	--	●	●	--	●	●	--	●	●
7 DIMMs	●	●	●	--	●	●	--	●	●
8 DIMMs	●	●	●	●	●	●	--	●	●
9 DIMMs	●	●	●	●	●	●	●	●	●

CPU 2 Configuration									
	DIMM_D3	DIMM_D2	DIMM_D1	DIMM_E3	DIMM_E2	DIMM_E1	DIMM_F3	DIMM_F2	DIMM_F1
1 DIMM	--	--	●	--	--	--	--	--	--
2 DIMMs	--	--	●	--	--	●	--	--	--
3 DIMMs	--	--	●	--	--	●	--	--	●
4 DIMMs	--	●	●	--	--	●	--	--	●
5 DIMMs	--	●	●	--	●	●	--	--	●
6 DIMMs	--	●	●	--	●	●	--	●	●
7 DIMMs	●	●	●	--	●	●	--	●	●
8 DIMMs	●	●	●	●	●	●	--	●	●
9 DIMMs	●	●	●	●	●	●	●	●	●

Order P/N	Description
90-S000I0310T	2GB DDR3 1333 Reg. ECC (10 in 1)
90-S000I0550T	4GB DDR3 1333 Reg. ECC (10 in 1)
90-S000I0560T	8GB DDR3 1333 Reg. ECC (10 in 1)
90-S000I0580T	4GB DDR3 1333 Reg. ECC (10 in 1)
90-S000I0590T	8GB DDR3 1066 Reg. ECC (100 in 1)

2.3 Upgrading hard disk drives

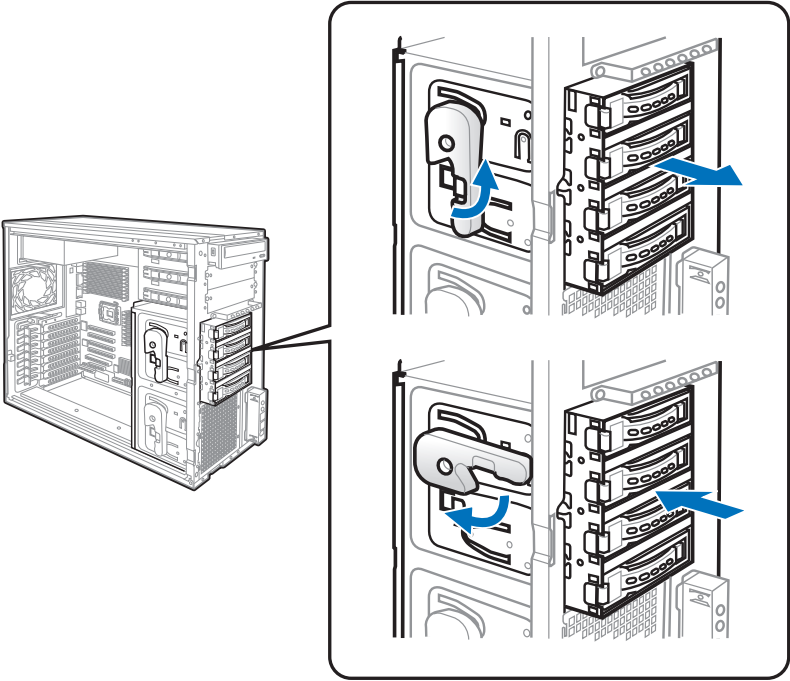
The system supports four hot-swap SATAII/SAS hard disk drives.



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

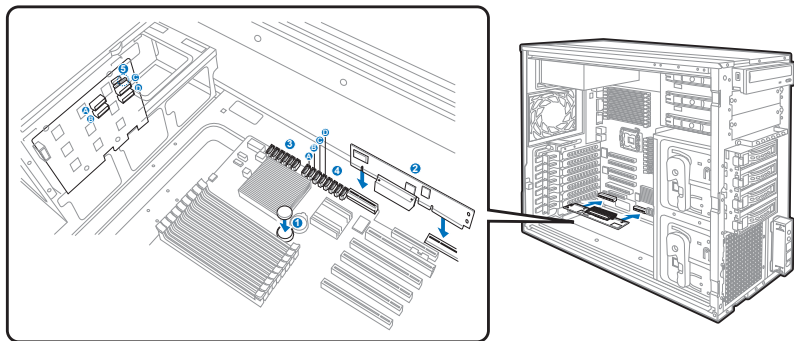
Order P/N	Description
90-S000H6230T	146GB SAS 15000 rpm with tray
90-S000H6220T	300GB SAS 15000 rpm with tray
90-S000H6440T	450GB SAS 15000 rpm with tray
90-S000H6260T	500GB SATAII 7200 rpm with tray
90-S000H6240T	1TB SATAII 7200 rpm with tray

2.4 Replacing hard disk drive cage



2.5 Installing ASUS PIKE SAS RAID card

The ASUS PIKE SAS RAID card allows users to create SAS RAID sets from SAS hard disk drives connected to the SAS connectors on the motherboard.

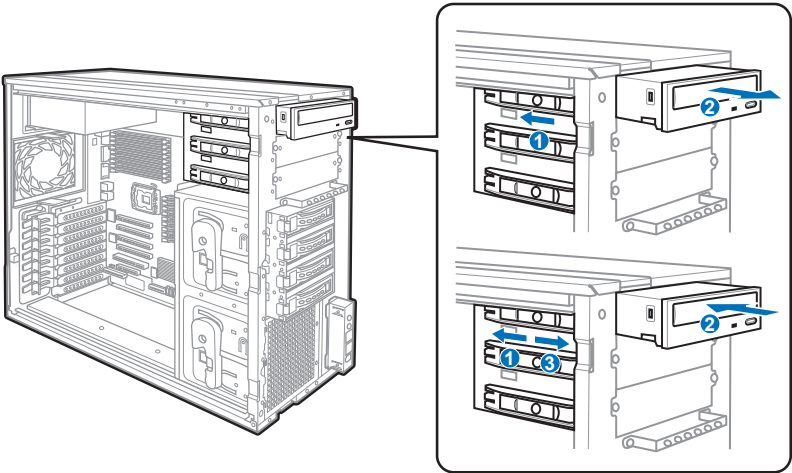


1. Install the iButton*.
2. Insert the PIKE SAS RAID card into the PIKE card slot.
3. Remove the SATAII/SAS cables from the onboard SATA connectors.
4. Connect the SATAII/SAS cables to the SAS1–4 connectors on the motherboard and the CON1–4 connectors on the SATAII/SAS backplane board*.
5. Move the **SGPIO_SEL1** jumper on the SATAII/SAS backplane to 2–3.

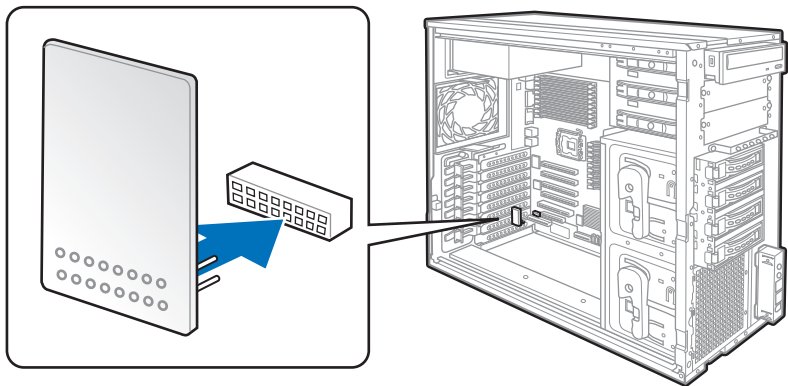
* PIKE 1078 module won't function if the iButton is not installed.

Order P/N	Description
90-C1SCM0-00UAY00Z	PIKE 1064E (4-port SAS support Firmware RAID 0,1,1E)
90-C1SCN5-00UAY10Z	PIKE 1078 (8-port SAS support Hardware RAID 0,1,10,5,50,6,60)
90-C1SDB0-00XBN00Z (10 in 1)	PIKE 6480 (8-port SAS support Firmware RAID 0,1,10,5)
90-C1SCU0-00UAY00Z	PIKE 1068E (8-port SAS support Firmware RAID 0,1,1E)
90-C1SE10-00UAY00Z	PIKE 2008 (8-port SAS 6G support Firmware RAID 0,1,1E)

2.6 Upgrading 5.25-in drives



2.7 Installing ASUS Server Management Board

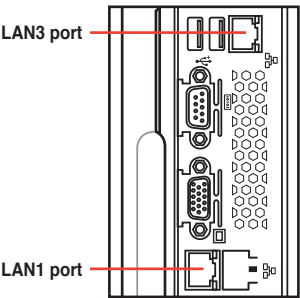


ASMB4-iKVM

- Monitor the running status of major components via LAN or Serial Port, such as CPU and memory utilization, storage capacity and networking transfer rate.
- Advanced server management functions including “remote power on/off/reset”, “remote control via SOL (Serial-over LAN)” and “remote SEL (system event log reading when the system is out-of-band)”.
- Support Dynamic Host Configuration Protocol (DHCP), which avoids manually assigning IP address by setting DHCP mode to receive IP address automatically.

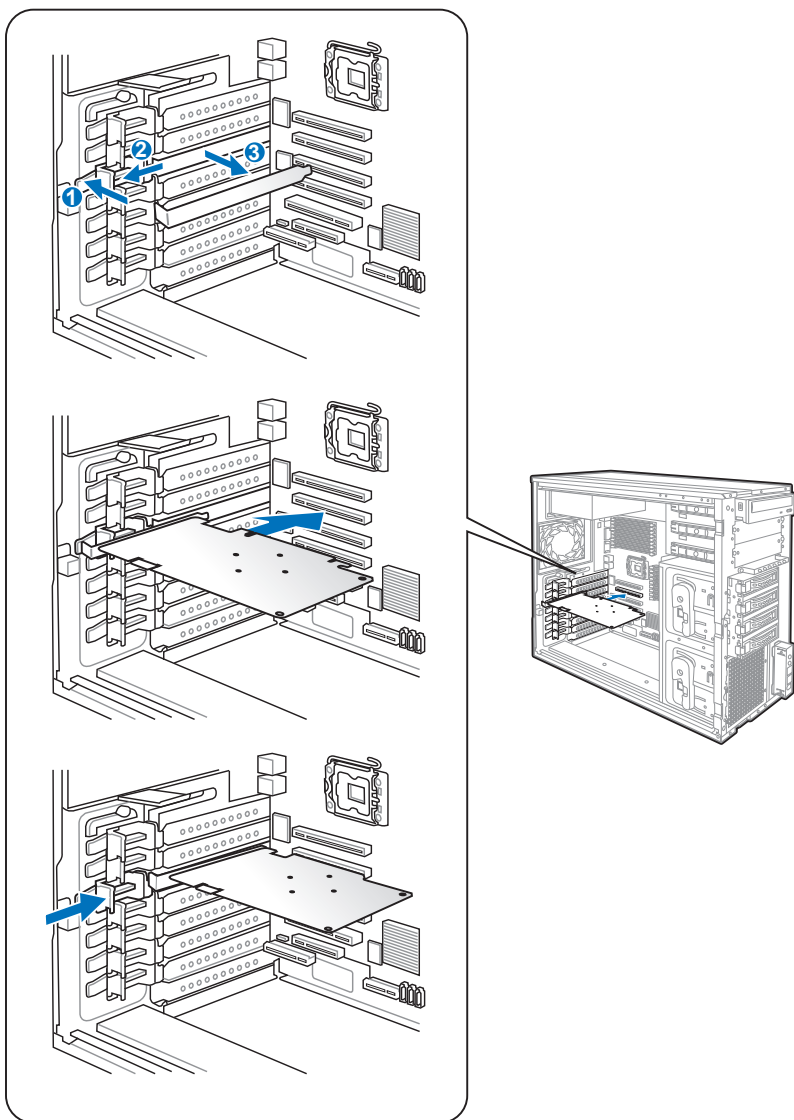


Use the LAN1 or LAN3 (dedicated) ports for server management.



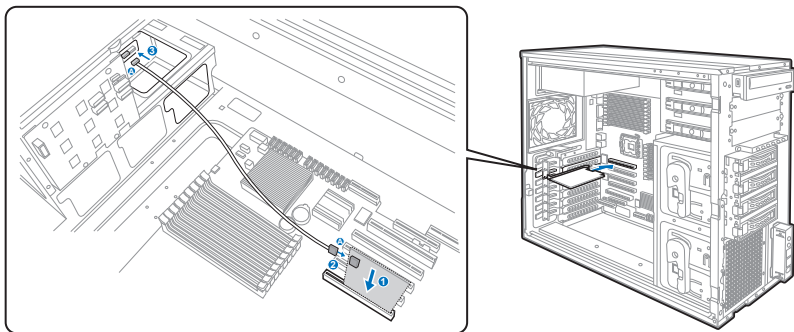
Order P/N	Description
90-C1SD80-00UAN00Z	ASMB4-iKVM Module (6 in 1)

2.8 Upgrading graphics card



Contact local distributors for workstation SKU.

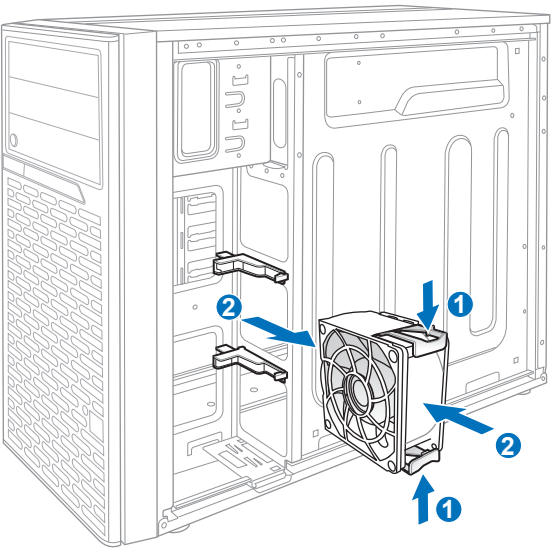
2.9 Installing MIO Audio card



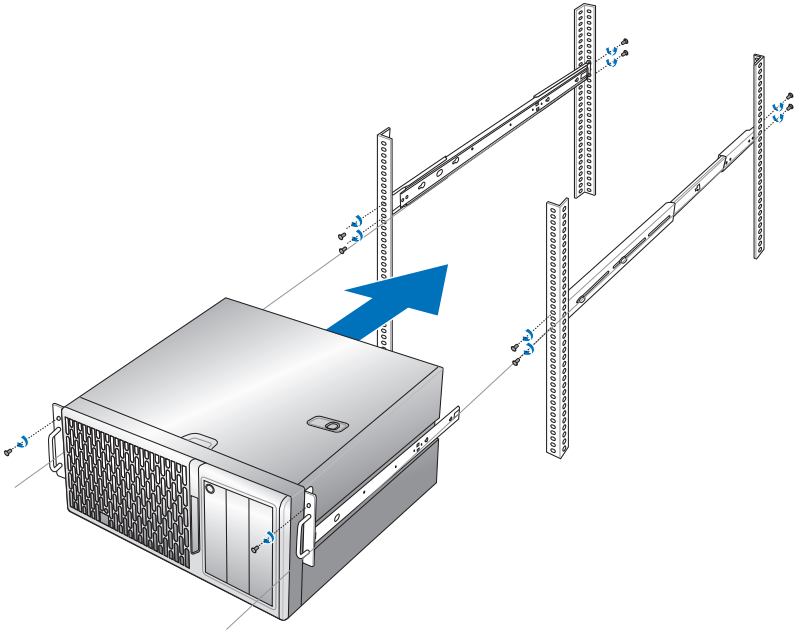
1. Install the MIO audio card to the onboard PCIe x16 slot (Slot 6).
2. Connect one end of the audio cable to the AAFP connector on the audio card.
3. Connect the other end of the audio cable to the front panel connector on the server chassis.

Order P/N	Description
90-C1SCG0-00XAY00Z	MIO (Audio Card)

2.10 Upgrading front system fan



2.11 Rackmount rail kit



Order P/N	Description
90-S00SP0280T	Rail Kit (Ball Bearing) for ESC2000 Series

2.12 OS support list

OS support list
Windows® XP / Vista / 7 32 / 64-bit
Windows® Server 2008 R2
Windows® Server 2008 Enterprise 32 / 64-bit
Windows® Server 2003 R2 Enterprise 32 / 64-bit
RedHat® Enterprise Linux AS5.4 / 5.5 32 / 64-bit
SuSE® Linux Enterprise Server 11 32 / 64-bit

Order P/N	Description
90-S00SW7150T	Windows® Server 2008 STD 64-bit
90-S00SW7151T	Windows® Server 2008 STD R2 64-bit

