

NEC

NEC EXPRESS PRODUCT GUIDE



NEC Express5800/120Lh

NEC Corporation

PRODUCT OVERVIEW

NEC Express5800/120Lh



Designed for medium-sized and enterprise-class business networks, and serve as a file/printer server or application server that offers superior dependability, scalability, and costeffectiveness.

NEC Express5800/120Lh server is an efficient solution for workgroup users looking for a file/print server or application server at a competitive price.

*NEC Express5800/120Lh build on the **E7520 chipset** from INTEL supporting **800MHz Front Side Bus**, the Express5800/120Lh takes full benefits of the **latest Xeon processors** with high-performance **SDRAM PC2700 memories**.*

*NEC Express5800/120Lh is a bi-processor design supporting **64-bit Intel® Xeon™ Processors 3.60GHz/3.20GHz** with a 800MHz system bus and 1MB 2nd cache (2MB on the 3.60GHz model). It supports **Intel Extended Memory 64 Technology**, the industry's latest enhancement that allows Intel's IA-32 processors to run 64-bit code and to access large memory amounts.*

*NEC Express5800/120Lh delivers up to **16GB DDR333 SDRAM memory** (8 DIMM sockets) with ECC capability.*

*In addition, NEC Express5800/120Lh supports up to **9 hot-swap drives (2.7TB max) with Ultra 320 technology**, enabling **on-board RAID 0/1 as standard**, without a separate mirroring controller.*

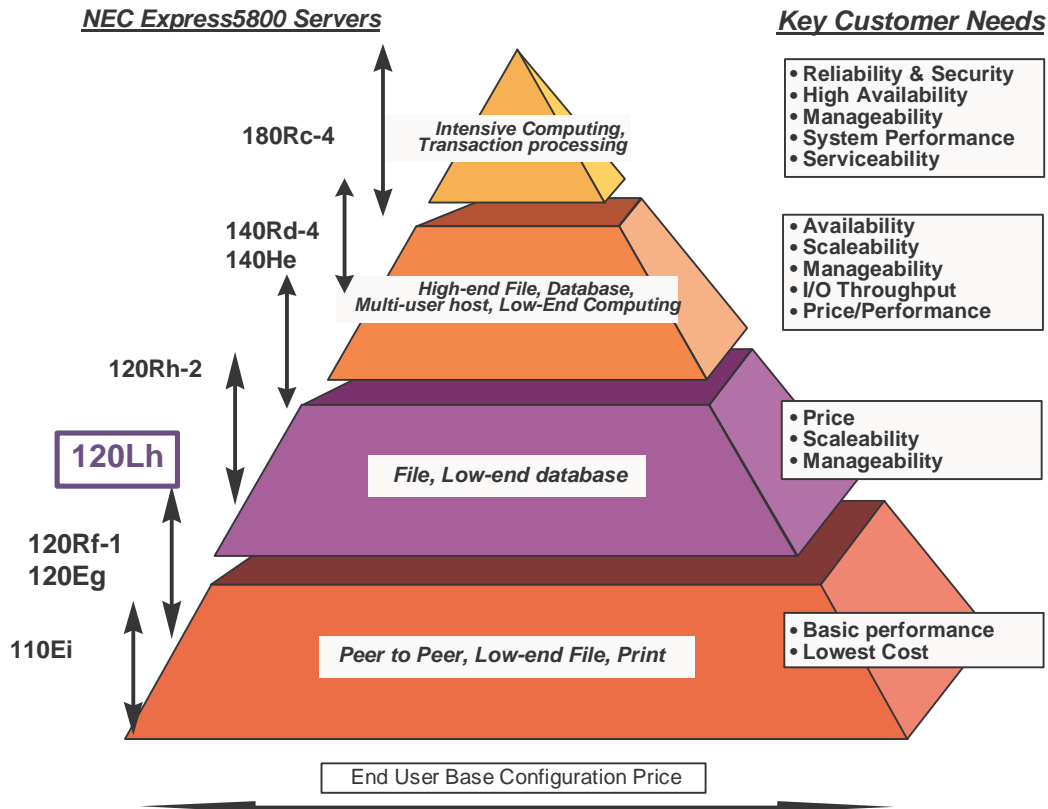
This prevents loss of important data and allows higher system availability in the event of a disk failure, while reducing the cost for the extra device.

*For optimal I/O expandability, NEC Express5800/120Lh offers 6 expansion slots; **two x8 PCI Express slots**, one 64bit/133MHz PCI-X slot, two 64bit/100MHz PCI-X slots and one 32bit/33MHz PCI slot.*

*To ensure continuous system operation, optionally **hot-swap redundant power supply and cooling fans** are supported.*

*Designed with simplicity for easy installation and manageability, NEC Express5800/120Lh comes standard with **NEC EXPRESSBUILDER** set-up and configuration software and **NEC ESMPRO** management software. In addition, it incorporates unique integrated remote management capabilities providing remote emergency access and control of server resources (via LAN or modem connection) in any situation.*

TARGET AUDIENCES



HIGHLIGHTS

- Up to 2 Intel 64-bit Xeon processors for powerful computing
- Up to 16GB of DDR333 SDRAM memory with ECC for great scalability
- Maximum internal storage capacity of 2.7TB through 6 hot-swap disk bays and 2 device bays with HDD Adapter Kit for Device Bay
- Enhanced disk performance via integrated support of Ultra 320 SCSI technology
- Six expansion slots (including two PCI Express(x8) slots) for maximum expandability.
- High availability through redundant hot-swap power supplies and cooling fans
- Available in tower or rack-mount (5U) form factor

KEY PRODUCT FEATURES & USER BENEFITS

Next-generation Xeon Processing and Enhanced System Architecture

NEC Express5800/120Lh is built to take full advantage of the latest Xeon processors. The new Xeon processor incorporates Extended Memory 64 Technology (EM64T). By supporting EM64T, memory addressing has been extended to run 64-bit code, allowing traditional processors to access larger memory amounts of higher than 4GB.

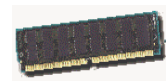


The design of NEC Express5800/120Lh is built upon a 800MHz Front Side Bus (FSB), the E7520 chipset from Intel and PC2700 SDRAM memory. The E7520 chipset offers higher processor speeds for dual-processor allows increased throughput and enhanced overall system performance through the high-performance 800MHz FSB.

The I/O subsystem of NEC Express5800/120Lh provides concurrency of data transfers between the different high speed I/O channels and CPU or memory.

Improved Memory Architecture

NEC Express5800/120Lh offers 8 DIMM sockets for industry-standard 256MB, 512MB, 1GB and 2GB SDRAM PC2700 DIMM. The Express5800/120Lh allows easy expansion of system's capabilities to memory-intensive environments (scalability up to 16GB) and comes standard with DDR 333MHz SDRAM for maximum data integrity.



NEC Express5800/120Lh supports chipkill memory, memory mirroring and on-line spare memory to ensure continuous system operation.

High-performance Ultra 320 Disk Drives

NEC Express5800/120Lh supports the advanced disk drives with Ultra320 SCSI technology (10Krpm or 15Krpm), giving data rates of up to 320MBps for excellent throughput. The system is equipped with 6 hot-swap disk bays. In addition, three more hard disk drives can be added by installing the HDD Adapter Kit for Device Bay in the 5-inch device bays. (two device bays are occupied)



Integrated Ultra 320 I/O Controller with Integrated RAID0/1

NEC Express5800/120Lh system board features an integrated two-channel SCSI controller, providing Ultra320 SCSI interfaces to support Ultra320 hard-disk drives and SCSI media devices such as DAT and AIT.

This SCSI controller supports RAID 0/1 as standard. This prevents loss of important data and allows higher system availability in the event of a disk failure, while reducing the cost for the extra device.



The system board also includes a single-channel EIDE controller, providing support for the internally mounted CD-ROM drive.

Optional RAID Controllers

NEC Express5800/120Lh comes with a complete range of optional high-performance Ultra 320 RAID controllers. These controllers give top levels of performance, maximum reliability and fault tolerance when running demanding server applications.

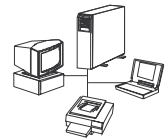
- The 2 channel Ultra320 SCSI 64bit RAID controller:
Intel GC80303 processor and 128MB of cache with battery backup unit are mounted.
- The 1 channel Ultra320 SCSI 64bit RAID controller:
Intel GC80302 processor and 64MB of cache are mounted. Optional battery backup unit can be installed.
- The 0 channel Ultra320 SCSI 64bit RAID controller:
Controls a standard-equipped internal SCSI controller and enables RAID0/1/5.
AIC-7930W processor and 48MB of cache are mounted.



Embedded Auto-sensing Dual-channel 10/100/1000Mbps Ethernet

NEC Express5800/120Lh's system board includes dual channel 10/100/1000Mbps network controller (based on the Intel 82541GI Ethernet Controller) optimizing server performance and providing immediate network-readiness. It can also auto-detect and auto-switch for 10M, 100M or 1000Mbps network speeds and supports Wake-on-LAN.

NEC Express5800/120Lh provides high-availability (load balancing, fault tolerance) and top performance features for the most demanding networking environments.



Integrated Graphic Chip

NEC Express5800/120Lh has an integrated ATI Radeon 7000 high-performance SVGA sub-system that supports 8MB onboard SGRAM (Synchronous Graphics Memory) and resolutions up to 1280 x 1024 allowing high-quality images display.

6 Free Expansion Slots

The server's expansion capabilities meet the needs of workgroup and department servers for high-performance I/O by providing two x8 PCI-Express slots, one 64-bit/133MHz PCI-X slot, two 64-bit/100MHz PCI-X and one 32-bit/33MHz PCI slots.

External Device Connectors

The external I/O connectors of NEC Express5800/120Lh are two 480Mbps USB2.0 Connectors, a PS/2-compatible mouse and a keyboard, connectors for VGA monitor, two serial port connectors (D-sub 9pin) and one parallel port connector (D-Sub 25pin).

Redundant Hot-Swap Power Supplies and Cooling Fans

NEC Express5800/120Lh(redundant power supply model) supports redundant hot-swap power supplies to ensure system operation even if one of the power supplies fails. The system comes standard with one 570W power supply and a second one is optional for redundancy. NEC Express5800/120Lh(non-redundant power supply model) comes standard with one 600W power supply.

Also, NEC Express5800/120Lh supports optional redundant hot-swap cooling fans.

Optional Backup Devices

NEC Express5800/120Lh can accommodate optional high-performance internal tape drive for local data backup. DAT(DDS-4/20GB and DAT-72/36GB), LTO(100GB and 200GB) and AIT(AIT-1 Turbo/40GB, AIT-2 Turbo/80GB and AIT-3/100GB) are supported.



Supported Operating Systems

NEC Express5800/120Lh is certified for the following operating systems:
Microsoft Windows 2000 Server, Windows 2000 Advanced Server,
Windows Server 2003 Standard Edition, Windows Server 2003 Enterprise Edition,
Red Hat Linux.



Optional Tower-to-Rack Conversion Kit

A tower-to-rack conversion kit is available that provides rack conversion (5U) for NEC Express5800/120Lh

Optional Remote Management Card

2 types of remote management cards are available to significantly enhance such RAS functions as monitoring and remote control. Either one of the two cards may be selected.

- Remote Management Card
- Advanced Remote Management Card



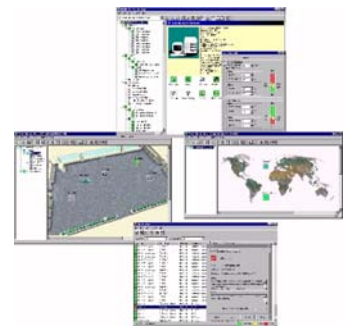
NEC ESMPRO Server Management Software

NEC Express5800/120Lh includes NEC ESMPRO Server Management Software that allows network administrators to monitor, control and manage NEC Express5800 servers and desktops across a network from a management console or any PC with an Internet browser.

NEC ESMPRO enables:

- Local or remote management (via your network or the Web)
- Comprehensive real-time fault management
- Performance and load monitoring
- Broad configuration and asset management

It allows system administrators to optimize server operations through an easy-to-use Windows-based graphical user interface.

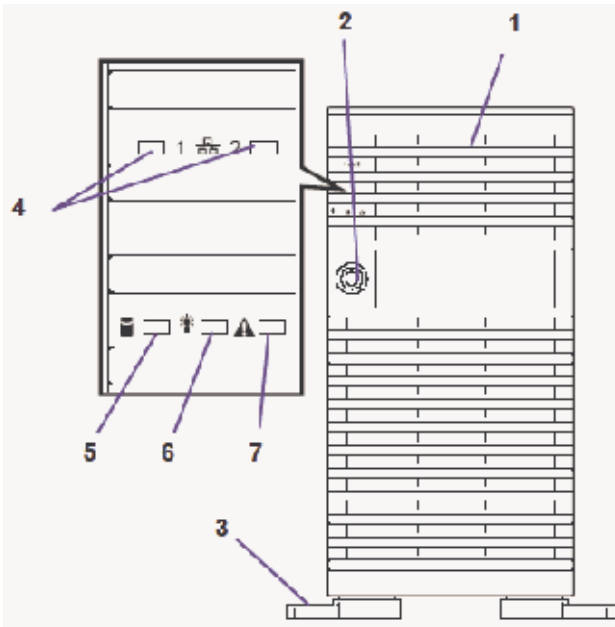


NEC EXPRESSBUILDER System Installation Software

NEC EXPRESSBUILDER makes your system installation simple. Just by inserting a single CD-ROM and following a series of user-friendly customization menus, a system administrator can set up and configure the system with ease.

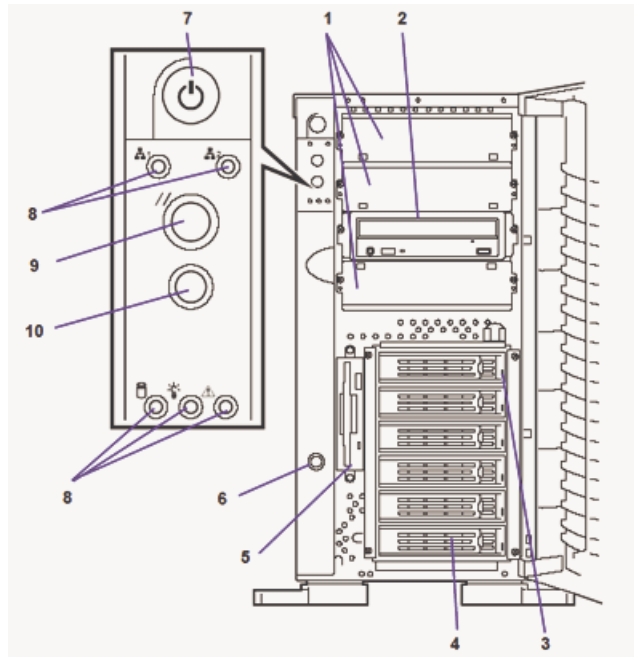
FRONT VIEW

FRONT VIEW



- 1: Front door
- 2: Key lock
- 3: Stabilizers (4)
- 4: LAN ACCESS LED (green)
- 5: DISK ACCESS LED (green/amber)
- 6: POWER/SLEEP LED (green)
- 7: STATUS LED (green/amber)

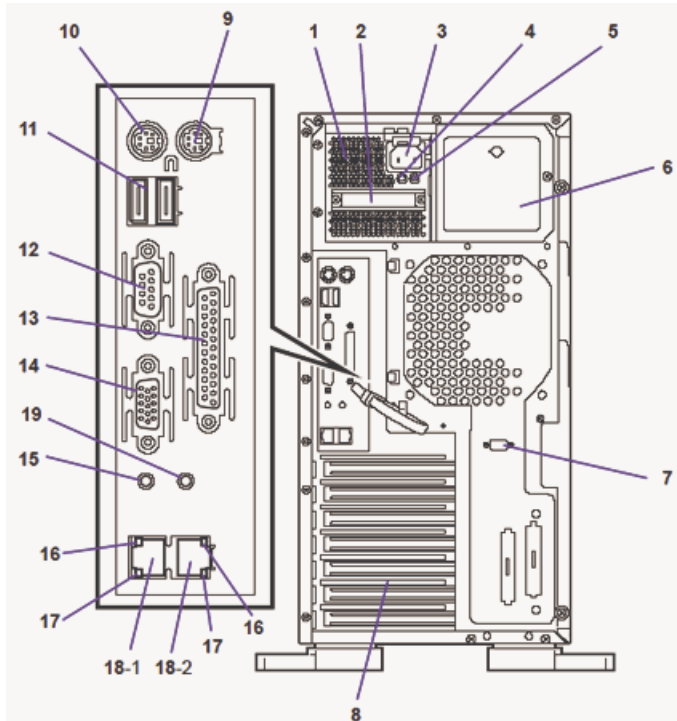
FRONT VIEW (Door Opened)



- 1: 5.25-inch device bay
- 2: CD-ROM drive
- 3: Disk LED (green/amber)
- 4: 3.5-inch hard disk drive bay
- 5: 3.5-inch floppy disk drive
- 6: Cover open sensor
- 7: Power switch
- 8: LEDs (see the figure on the previous page)
- 9: Reset switch
- 10: Dump switch (NMI switch)

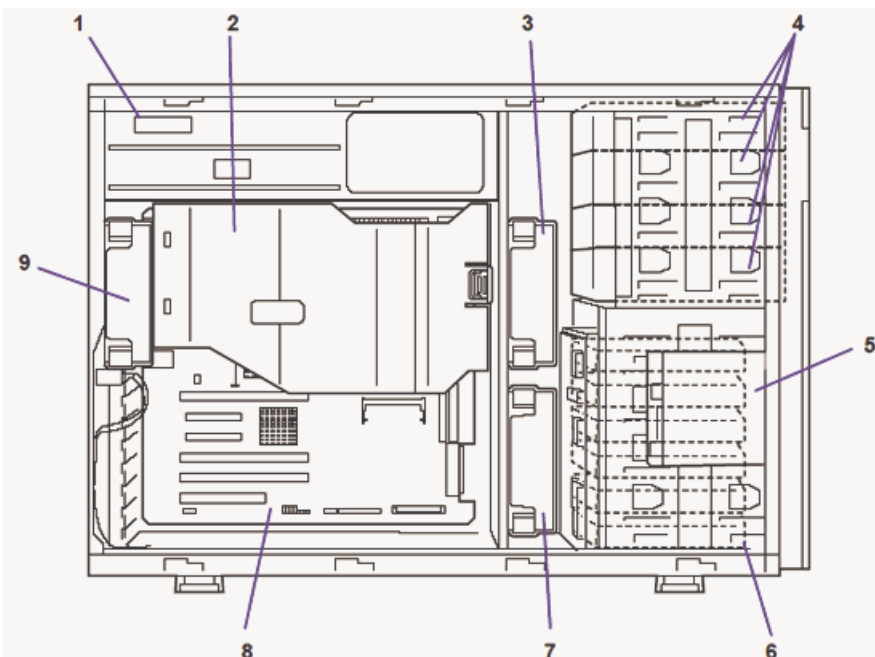
REAR VIEW

The following figure shows the redundant hot-plug power supply model. For the non-redundant power supply model (fixed power supply is installed), you cannot find the items 2, 4, 5, and 6.



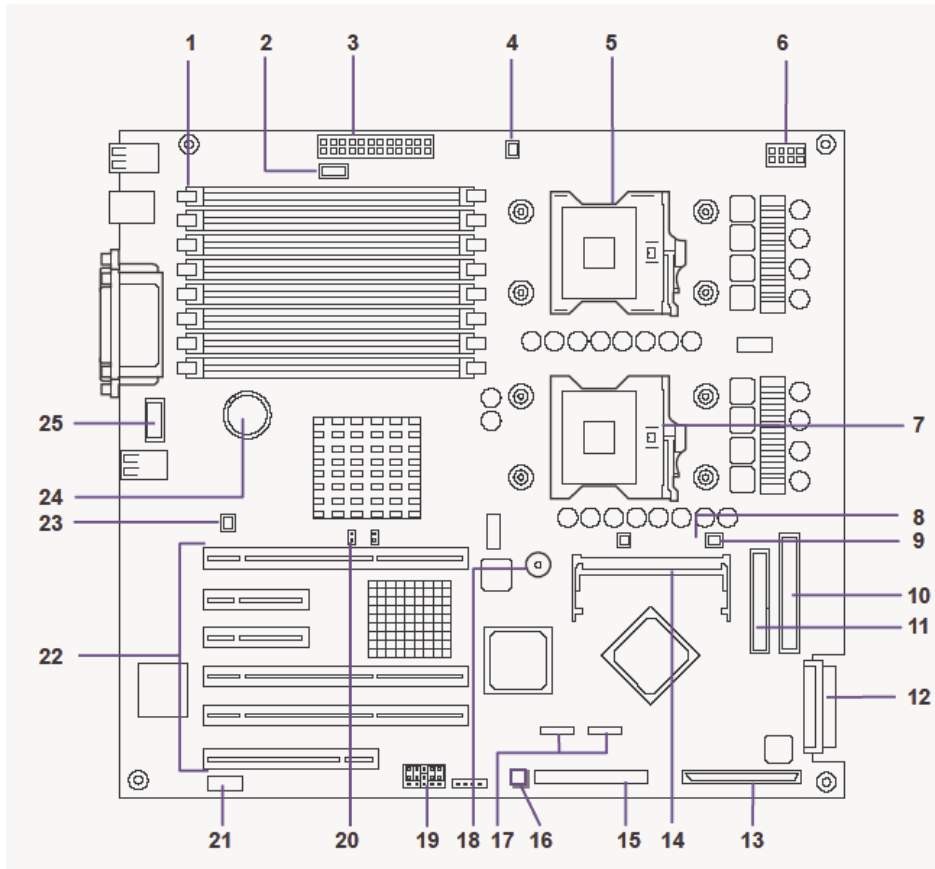
- 1: Power supply
- 2: Handle
- 3: AC inlet
- 4: Power LED
- 5: Power fail LED
- 6: Additional power supply slot
- 7: Serial port B connector
- 8: Additional PCI board slots
- 9: Mouse connector
- 10: Keyboard connector
- 11: USB-1 and USB-2 connectors
- 12: Serial port A connector
- 13: Printer port connector
- 14: Monitor connector
- 15: Unit ID switch
- 16: Link/ACT LED
- 17: Speed LED
- 18: LAN connector(s)
- 19: Dump switch (NMI switch)

INTERNAL VIEW



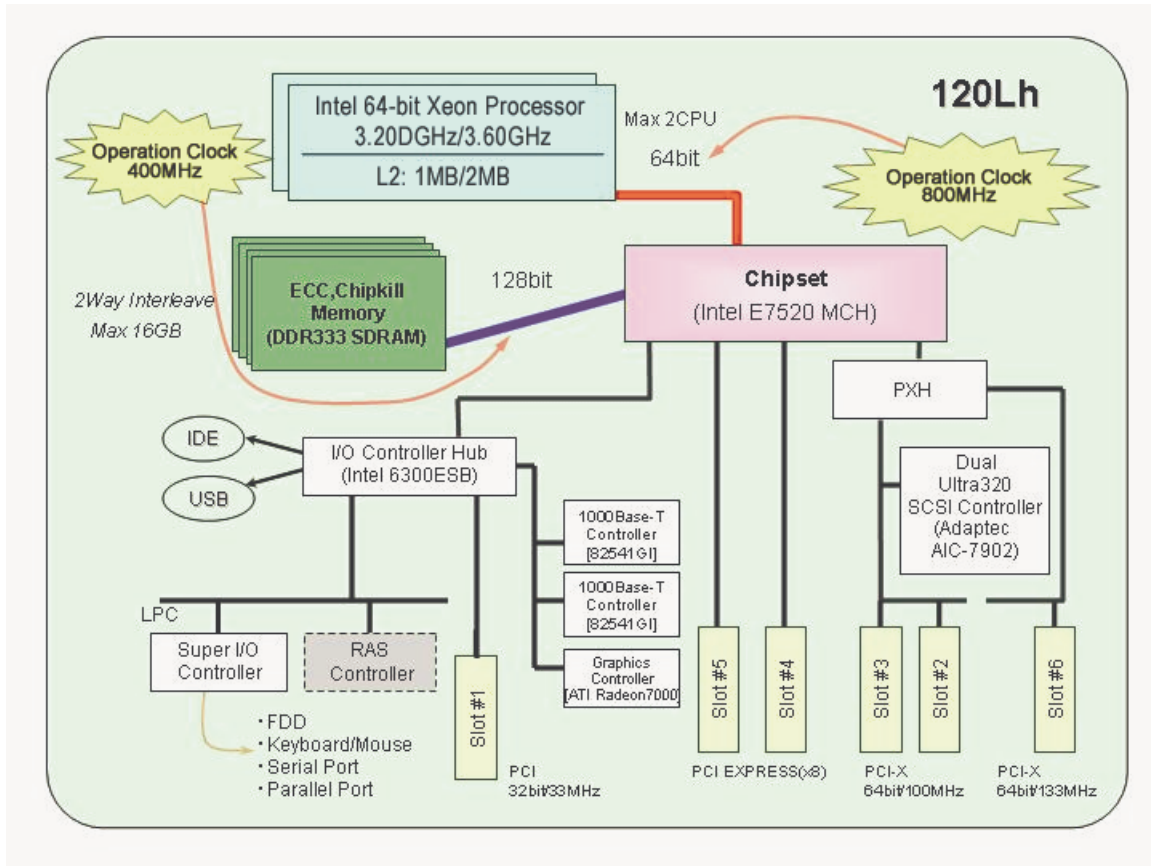
- 1: Power supply
- 2: Air duct
- 3: Front cooling fan (Fan 3)
- 4: 5.25-inch device bays (4 bays)
- 5: 3.5-inch floppy disk drive
- 6: 3.5-inch hard disk drive bay
- 7: Cooling fan (Fan 2: option)
- 8: Mother board
- 9: Rear cooling fan (Fan 5)

MOTHER BOARD



- | | |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 1: DIMM sockets (slots 1 to 8 from top to bottom) | 14: Remote management card slot |
| 2: Power signal connector
(redundant hot-plug power supply only) | 15: Front panel interface connector |
| 3: Power connector | 16: USB connector |
| 4: Front cooling fan connector (Fan 3) | 17: Serial ATA connectors |
| 5: Processor 1 socket | 18: Speaker |
| 6: Power connector | 19: Jumper switch for clearing CMOS |
| 7: Processor 2 socket | 20: Jumper switch for clearing BIOS password |
| 8: Cooling fan signal connector (Fan 2: option) | 21: Chassis intrusion connector |
| 9: Cooling fan connector (Fan 2: option) | 22: PCI board slots
(slots PCI #1, PCI #2, PCI #3, PCI #4, PCI #5,
and PCI #6 arranged from bottom to top) |
| 10: IDE connector (for CD-ROM drive) | PCI #6: 64-bit, 133MHz, PCI-X |
| 11: Floppy disk drive connector | PCI #5, #4: PCI EXPRESS (8-bus) |
| 12: Ultra320(B) connector (for internal file devices) | PCI #3, #2: 64-bit, 100MHz, PCI-X |
| 13: Ultra320 (A) connector (for built-in hard disk) | PCI #1: 32-bit, 33MHz, PCI |
| | 23: Rear cooling fan connector (Fan 5) |
| | 24: Lithium battery |
| | 25: Serial (COM B) connector |

SYSTEM BLOCK DIAGRAM



TECHNICAL SPECS

N-Code (N8100-)		1075F	1076F	1077F
CPU	Maker	Intel		
	Model	64-bit Intel Xeon Processor		
	Clock frequency	3.20DGHz	3.60GHz	
	No. of CPU	Standard	1	
		Maximum	2	
	CPU Package/Socket	FC-mPGA4/604pin socket		
	Hyper-Threading	Supported		
	EM64 Technology	Supported		
	CPU cooler	Heat sink		
Cache Memory	L1 Cash(/CPU)	12K uops + 16KB ^{*1}		
	L2 Cash(/CPU)	1MB	2MB	
Memory	Capacity	Standard	1GB (512MB x2)	
		Maximum	16GB ^{*2} (2GB x8)	
	Addtion increment	2		
	Number of slots	8		
	Memory access method	2Way Interleave		
	Error	ECC, Chipkill		
	Memory module	DDR333 SDRAM DIMM		
	Number of pins	184pin		
	Operating frequency	333MHz		
	Drive voltage(V)	2.5V		
Buffer	Present			
BIOS	Maker	Phoenix		
	Chip set manufacturer	Intel		
Bus	Chip set name	E7520		
	FSB frequency	800MHz		
	System bus width	data part	64bit	
		address part	32bit	
	Memory bus width	128bit		
	I/O bus width	PCI: 32bit, PCI-X: 64bit		
Video	Installation Type	On-board		
	Chip Manufacturer	ATI		
	Chip Type	RADEON 7000		
	Video RAM Capacity	8MB		
Storage	FDD	3.5" (2mode) x1		
	CD-ROM Drive	Tray load type x1 (Min. speed :x18, Max speed:x40)		
		HDD	Std. Capacity	Diskless
	Max. Capacity		Standard: 1.8TB (300GB x 6) Option: 2.7GB (300GB x 9) ^{*3}	
	Hot Plug		Supported	
Disk Array	RAID0, 1: standard RAID5: option			
Network	Installation Type	On-board		
	Interface	1000BASE-T x2		
	Maximum Transmission	1000/100/10Mbps		
	Chip Manufacturer	Intel		
	Chip Type	82541GI		
	AFT/ALB (by On Board I/Fs)	Supported		
	PXE boot	Supported		
IDE	Installation Type	On-board		
	Interface	Ultra ATA100		
	Bus Type	PCI		

N-Code (N8100-)		1075F	1076F	1077F
SCSI	Installation Type	On-board		
	Bus Type	PCI		
	Number of Channels	1		
	Chip Manufacturer	Adaptec		
	Chip Type	AIC-7902		
Expansion bay	Interface	Ultra 320 SCSI x 2		
	Device Bay (5.25")	4 ^{*4*5}		
Expansion slot	Disk Bay (3.5")	1-inch height x6 (standard) + 1-inch height x3 (option) ^{*3}		
	Expansion slot	PCI EXPRESS (x8)	x2	
64bit/133MHz PCI-X		Long Size x1		
64bit/100MHz PCI-X		Long Size x2		
32bit/33MHz PCI (5V)		Long Size x1		
PCI EXPRESS		PCI EXPRESS 1.0a		
PCI-X standard		PCI-X 1.0b		
Input Device	Keyboard	104-key Keyboard		
	Mouse	2 button mouse		
External Interface	Serial Port	D-sub 9pin x 2		
	Parallel Port	D-sub 25pin x1		
	Display	MiniD-sub 15pin x 1		
	SCSI	-		
	Network	RJ-45 x2		
	Keyboard Port	Mini DIN 6pin x 1		
	Mouse Port	Mini DIN 6pin x 1		
	USB Port	A Series 4 pin x 2 (Ver2.0)		
ICMB Port	option			
Server Management	NEC ESM/PRO/Server Manager, Server Agent			
Cabinet design	Middle Tower			
External dimation (W x D x H)	220 x 671 x 453mm ^{*6}			
Weight (MAX)	22Kg (35kg)			
Power	Power module	600W x1	570W x1 (max.2)	
	Redundant	Not supported	Option	
	Hot swap	Not supported	Supported	
	Voltage	AC100V/200V±10%		
	Frequency	50/60±1Hz		
	AC inlet type	2-pole + earth		
Heat value	2376kJ/h			
Redundant fan	Redundant	Option		
	Hot swap	Supported		
Maximum power consumption (Apparent poewr/Active power)	670VA/660W			
Operation Condition (Temperature, Humidity)	10-35°C, 20-80%(no condensation)			
Supported OS	Windows 2000 Server Windows 2000 Advanced Server Windows Server 2003 Standard Edition Windows Server 2003 Enterprise Edition Red Hat Linux			

*1 As command cache "Execution Trace Cache" is 12K uops capacity, as data cache is 16KB capacity.

*2 When standard DIMMs are removed.

*3 Three more HDDs can be installed by installing the HDD Adapter Kit for Device Bay [N8154-02F] in the 5-inch device bays. (Two bays are occupied)

*4 Up to two backup devices can be installed to 5-inch device bays. When HDD Adapter Kit for Device Bay [N8154-02F] is installed to 5-inch device bays, only one backup device can be installed.

*5 One bay is occupied by CD-ROM Drive.

6 When stabilizer is included, 293 x 697 x 453mm. (*N8100-1075F is 683mm)

ACCESSORY LIST

	CODE	PRODUCT NAME	DESCRIPTION
ADDITIONAL CPU BOARDS (2nd CPU)			
	N8101-307	CPU Kit(X/3.20DG(1))	Xeon (3.20DG/800/1M)
	N8101-308	CPU Kit(X/3.60G(2))	Xeon (3.60G/800/2M)
ADDITIONAL MEMORY MODULES			
	N8102-193	Additional 512MB Memory Module set	DDR333, Registered, 256MB x2
	N8102-194	Additional 1GB Memory Module set	DDR333, Registered, 512MB x2
	N8102-195	Additional 2GB Memory Module set	DDR333, Registered, 1GB x2
	N8102-196	Additional 4GB Memory Module set	DDR333, Registered, 2GB x2
ADDITIONAL BOARDS			
	N8103-65F	SCSI controller	Ultra SCSI(Wide), 1ch, LowProfile, Connected to tape devices.
	N8503-56F	SCSI controller	Ultra160 SCSI, 1ch, Connected to tape devices.
	N8103-75	SCSI Controller	Ultra320 SCSI, Low profile. Not support tape devices.
	N8190-126	SCSI Controller	LowProfile PCI card, for SATA Disk Array Unit connection
	N8103-80F	Disk Array Controller(U320/1ch)	Ultra320, 1ch, 64MB cache
	N8103-79F	Additional DAC Battery	For N8103-80F
	N8103-81F	Disk Array Controller(U320/2ch)	Ultra320, 2ch, 128MB cache
	N8103-86	Disk Array Controller(0ch)	Ultra320 SCSI, 0ch (only connected to built-in HDD), 48MB cache
	N8190-120	Fibre Channel controller	64bit/133MHz PCI, for FC Disk array unit connection
	N8115-01CP01	Remote Management Card	Enhances RAS functions
	N8115-02CP01	Advanced Remote Management Card	Enhances RAS functions
ADDITIONAL INTERNAL DEVICES			
	N8150-163F	73.2GB HDD	Ultra320 SCSI, 1" height 10Krpm, Hot-Plug
	N8150-171F	146.5GB HDD	Ultra320 SCSI, 1" height 10Krpm, Hot-Plug
	N8150-192	300GB HDD	Ultra320 SCSI, 1" height 10Krpm, Hot-Plug
	N8150-165F	36.3GB HDD	Ultra320 SCSI, 1" height 15Krpm, Hot-Plug
	N8150-172F	73.2GB HDD	Ultra320 SCSI, 1" height 15Krpm, Hot-Plug
	N8150-193	146.5GB HDD	Ultra320 SCSI, 1" height 15Krpm, Hot-Plug
	N8154-02F	HDD Adapter Kit for Device Bay	Kit to install three hot-plug SCSI HDDs into two 5-inch device bays
	N8151-45F	Built-In DAT	DDS-4, 20GB(uncompressed)
	N8151-51	Built-In DAT	DAT72, 36GB(uncompressed)
	N8151-39F	Built-In DAT auto-loader unit	DDS-4, 20GBx8(uncompressed)
	N8151-55	Built-In AIT	AIT-1 Turbo, 40GB(uncompressed)
	N8151-54	Built-In AIT	AIT-2 Turbo, 80GB (uncompressed)
	N8151-41B	Built-In AIT	AIT-3, 100GB(uncompressed)
	N8151-49F	Built-In LTO	200GB (uncompressed)
	N8181-38F	Power Unit	For redundant power supply
	N8181-39	Redundant Fan	For redundant fan

* See the system configuration guide for connection cables required and directions for use.

ACCESSORY LIST

	CODE	PRODUCT NAME	DESCRIPTION
EXTERNAL OPTIONS			
	N8141-36AF	Disk Expansion Unit	Max 14 Ultra320 SCSI HDDs, Rack mount, 3U height
	N8141-28BF	Device Expansion Unit	5" half height device x4 or full height device x2, Rack mount, 2U height
	N8190-110F	Fibre Channel Diskarray Unit	2Gbps, Max.12 HDDs, 512MB cache/controller, 2U height
	N8190-121F	SATA Disk Array Unit	Max.12 HDDs, 512MB cache, 2U height, RAID 1/5 supported
RACKMOUNT OPTIONS			
	N8143-56F	Rack conversion kit	Converts tower model to rack-mountable one, 5U

* See the system configuration guide for connection cables required and directions for use.



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