

NEC Express5800/R120d-1M Configuration Guide



Introduction

This document contains product and configuration information that will enable you to configure your system. The guide will ensure fast and proper configuration of your NEC EXPRESS5800 server.

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Technical Specification

Key Features

- High performance with the latest Intel® Xeon® processor E5-2600 Product Family
- Up to 768 GB of memory capacity, supporting high speed and energy efficient DDR3L-1600 memory
- Up to eight 2.5-inch HDD/SDD
- 80 PLUS® Platinum certified power supply

Specification

(1 / 2)

Model		R120d-1M		
Part Number		N8100-1794F		
Processor	Type	Intel® Xeon® processor E5-2609	Intel® Xeon® processor E5-2630L	Intel® Xeon® processor E5-2640
	Clock speed	2.40GHz	2GHz	2.50GHz
	Number of Processors	1 or 2		
	Cache	10 MB	15 MB	15 MB
	Cores and Threads	4C-8T	6C-12T	6C-12T
Chipset		Intel® C602-J Chipset		
Memory	Type	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 ECC Registered Low Power DIMM, DDR3-1333 ECC Load Reduced DIMM		
	Standard Capacity	0 GB		
	Maximum Capacity	768 GB (24 x 32 GB)		
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing		
Internal Storage	Standard Capacity	0 GB		
	Maximum Capacity	SAS HDD: 7.2 TB (8 x 900 GB) SATA HDD: 8 TB (8 x 1 TB) SAS SSD: 3.2 TB (8 x 400 GB) SATA SSD: 800 GB (8 x 100 GB)		
	Disk Controller	SATA : 3Gb/s and 6Gb/s (Integrated) SAS: 6Gb/s (Optional)		
	RAID	SATA : RAID 0/1/5/6/10/50 (Optional) SAS : RAID 0/1/5/6/10/50 (Optional)		
	Hot Plug	Supported		
	Optical Disk Drive	Optional		
	Optical Drive Bays [free]	1 [1]		
	Disk Drive Bays [free]	6 [6] or 8 [8] with optional drive cage		
	Expansion Slots [free]	Standard	Total: 4 slots available 1 [1] x PCIe 3.0 x16 (x16 connector) 1 [1] x PCIe 3.0 x8 (x16 connector) 1 [1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot 1 [1] x PCIe 3.0 x8 (x8 connector) dedicated LAN riser slot	
Video		Integrated in Server Management Controller (32MB)		
Controller (VRAM)		Integrated in Server Management Controller (32MB)		
Resolution / Color		1280 x 1024 / 16.7M ¹		

Model		R120d-1M		
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 1 x Serial (9-pin mini D-sub, RS232-C, Serial A, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 2 x 1000BASE-T LAN connector (RJ-45, 2 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)		
Server Management		EXPRESSSCOPE Engine 3		
Redundant Fan		Standard, non-hot plug		
Redundant Power Supply		Optional, hot plug		
Power Supply		1-2 x 450 Watt or 800 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz		
Power Consumption	(Max. Config, Idling)	259 VA / 257 Watt	268 VA / 266 Watt	269 VA / 267 Watt
	(Max. Config, Operating)	365 VA / 364 Watt	416 VA / 396 Watt	521 VA / 521 Watt
Acoustical Noise (Sound Pressure Level)²	Max. Config, Idling	48.0 dB	48.0 dB	48.0 dB
	Max. Config, Operating	53.7 dB	52.4 dB	53.7 dB
Dimensions (W x D x H)		439.8 x 722.0 x 43.4 mm / 17.3 x 28.4 x 1.7 in (1U)		
Weight (Minimum / Maximum)		15.2 kg / 23.0 kg, 33.51 lbs. / 50.71 lbs.		
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 40° C / 50° to 104° F, 20 to 80% Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%		
Regulatory and Safety		FCC, CE, BSMI, CCC, UL, CB, RoHS, WEEE		
Operating Systems		Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Red Hat Enterprise Linux 5.7 or later (x86) ³ Red Hat Enterprise Linux 5.7 or later (EM64T) ³ Red Hat Enterprise Linux 6.1 or later (x86) ³ Red Hat Enterprise Linux 6.1 or later (x86_64) ³ VMware ESXi 5.0 Update 1		

¹ Maximum resolution available via EXPRESSSCOPE Engine 3 remote console is 1280 x 1024 / 65K colors.

² Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.

³ For Linux support, contact your sales representative or go to the NEC website at: <http://www.nec.com/global/prod/express/linux/index.html>

(2 / 2)

Model		R120d-1M		
Part Number		N8100-1794F		
Processor	Type	Intel® Xeon® processor E5-2650L	Intel® Xeon® processor E5-2670	Intel® Xeon® processor E5-2690
	Clock speed	1.80GHz	2.60GHz	2.90GHz
	Number of Processors	1 or 2		
	Cache	20 MB		
	Cores and Threads	8C-16T		
	Chipset	Intel® C602-J Chipset		
Memory	Type	DDR3-1333 ECC Unbuffered Low Power DIMM, DDR3-1600 ECC Registered Low Power DIMM, DDR3-1333 ECC Load Reduced DIMM		
	Standard Capacity	0 GB		
	Maximum Capacity	768 GB (24 x 32 GB)		
	Memory protection	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing		
Internal Storage	Standard Capacity	0 GB		
	Maximum Capacity	SAS HDD: 7.2 TB (8 x 900 GB) SATA HDD: 8 TB (8 x 1 TB) SAS SSD: 3.2 TB (8 x 400 GB) SATA SSD: 800 GB (8 x 100 GB)		
	Disk Controller	SATA : 3Gb/s and 6Gb/s (Integrated) SAS: 6Gb/s (Optional)		
	RAID	SATA : RAID 0/1/5/6/10/50 (Optional) SAS : RAID 0/1/5/6/10/50 (Optional)		
	Hot Plug	Supported		
	Optical Disk Drive	Optional		
	Optical Drive Bays [free]	1 [1]		
	Disk Drive Bays [free]	6 [6] or 8 [8] with optional drive cage		
	Expansion Slots [free]	Standard	Total: 4 slots available 1 [1] x PCIe 3.0 x16 (x16 connector) 1 [1] x PCIe 3.0 x8 (x16 connector) 1 [1] x PCIe 3.0 x8 (x8 connector) dedicated RAID slot 1 [1] x PCIe 3.0 x8 (x8 connector) dedicated LAN riser slot	
Controller (VRAM)		Integrated in Server Management Controller (32MB)		
Resolution / Color		1280 x 1024 / 16.7M ¹		
Video				
Interfaces		2 x VGA (15-pin mini D-sub, 1 x front, 1 x rear) 1 x Serial (9-pin mini D-sub, RS232-C, Serial A, 1 x rear) 9 x USB2.0 (2 x front, 4 x rear, 3 x internal) 2 x 1000BASE-T LAN connector (RJ-45, 2 x rear) 1 x Management LAN connector (RJ-45, 1 x rear)		
Server Management	EXPRESSSCOPE Engine 3			
Redundant Fan	Standard, non-hot plug			
Redundant Power Supply	Optional, hot plug			
Power Supply	1-2 x 450 Watt or 800 Watt 80 PLUS® Platinum certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			

Model	R120d-1M			
Power Consumption	(Max. Config, Idling)	267 VA / 265 Watt	266 VA / 265 Watt	266 VA / 265 Watt
	(Max. Config, Operating)	445 VA / 444 Watt	579 VA / 578 Watt	645 VA / 645 Watt
Acoustical Noise (Sound Pressure Level)²	Max. Config, Idling	48.0 dB	48.0 dB	50.6 dB
	Max. Config, Operating	52.4 dB	53.9 dB	59.6 dB
Dimensions (W x D x H)	439.8 x 722.0 x 43.4 mm / 17.3 x 28.4 x 1.7 in (1U)			
Weight (Minimum / Maximum)	15.2 kg / 23.0 kg, 33.51 lbs. / 50.71 lbs.			
Temperature, Relative Humidity (non-condensing)	Operating: 10° to 40° C ³ / 50° to 104° ³ F, 20 to 80%			
	Non-Operating: -10° to 55° C / 14° to 131° F, 20 to 80%			
Regulatory and Safety	FCC, CE, BSMI, CCC, UL, CB, RoHS, WEEE			
Operating Systems	Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Microsoft® Windows Server® 2008 Standard Microsoft® Windows Server® 2008 Enterprise Microsoft® Windows Server® 2008 Standard (x64) Microsoft® Windows Server® 2008 Enterprise (x64) Microsoft® Windows Server® 2008 R2 Standard Microsoft® Windows Server® 2008 R2 Enterprise Red Hat Enterprise Linux 5.7 or later (x86) ⁴ Red Hat Enterprise Linux 5.7 or later (EM64T) ⁴ Red Hat Enterprise Linux 6.1 or later (x86) ⁴ Red Hat Enterprise Linux 6.1 or later (x86_64) ⁴ VMware ESXi 5.0 Update 1			

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² Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.

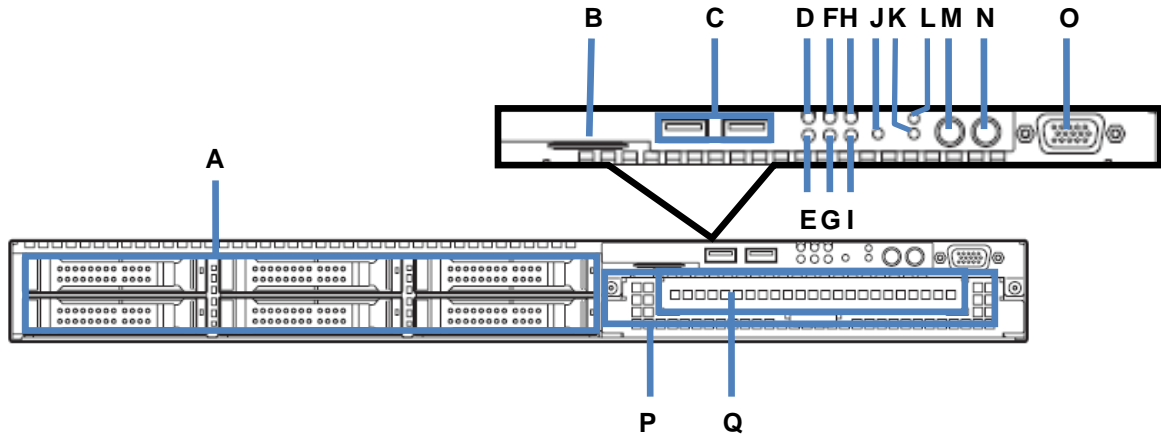
³ Operable up to 35°C (95°F) when E5-2690 is configured with an added optional drive cage.

⁴ For Linux support, contact your sales representative or go to the NEC website at:
<http://www.nec.com/global/prod/express/linux/index.html>

External Views

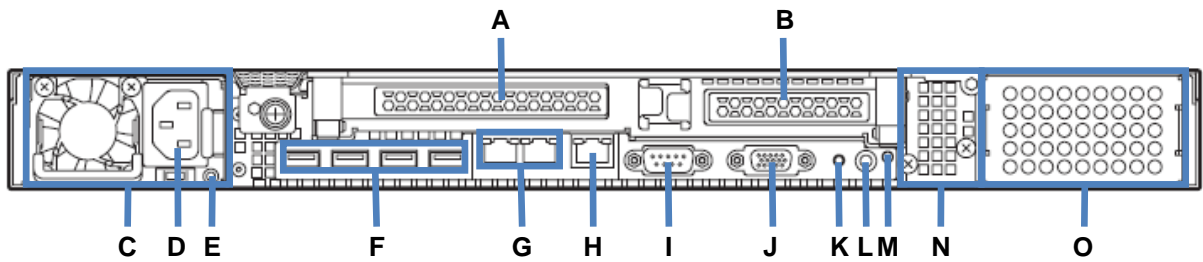
Front and Rear Views

Front View



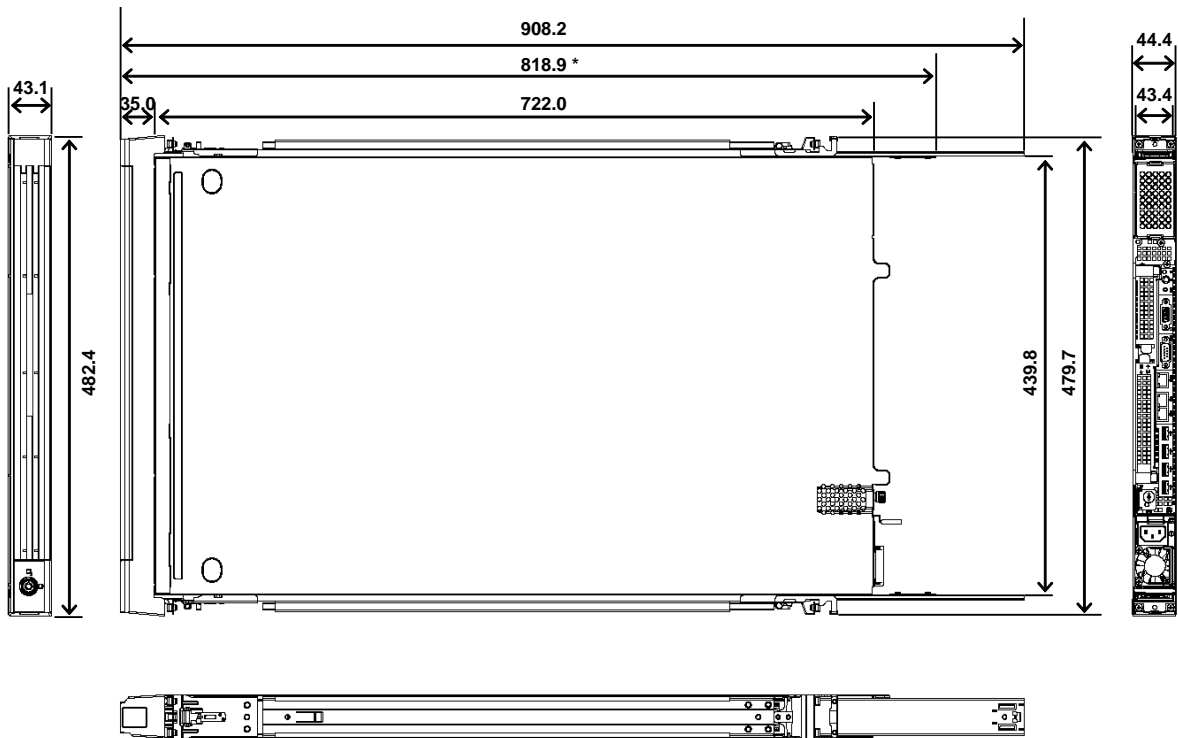
Legend	
A.	Drive Bays
B.	Pull-out tab
C.	USB Connectors
D.	Data LAN 1 Activity LED
E.	Data LAN 2 Activity LED
F.	Data LAN 3 Activity LED
G.	Data LAN 4 Activity LED
H.	Hard Drive Activity LED
I.	System Status LED
J.	BMC RESET Switch
K.	DUMP Switch
L.	RESET Switch
M.	UID LED Button/LED
N.	POWER Button/LED
O.	VGA Connector
P.	2.5-inch HDD cage (optional, 2 bays)
Q.	Optical Drive Bay (blank cover)

Rear View



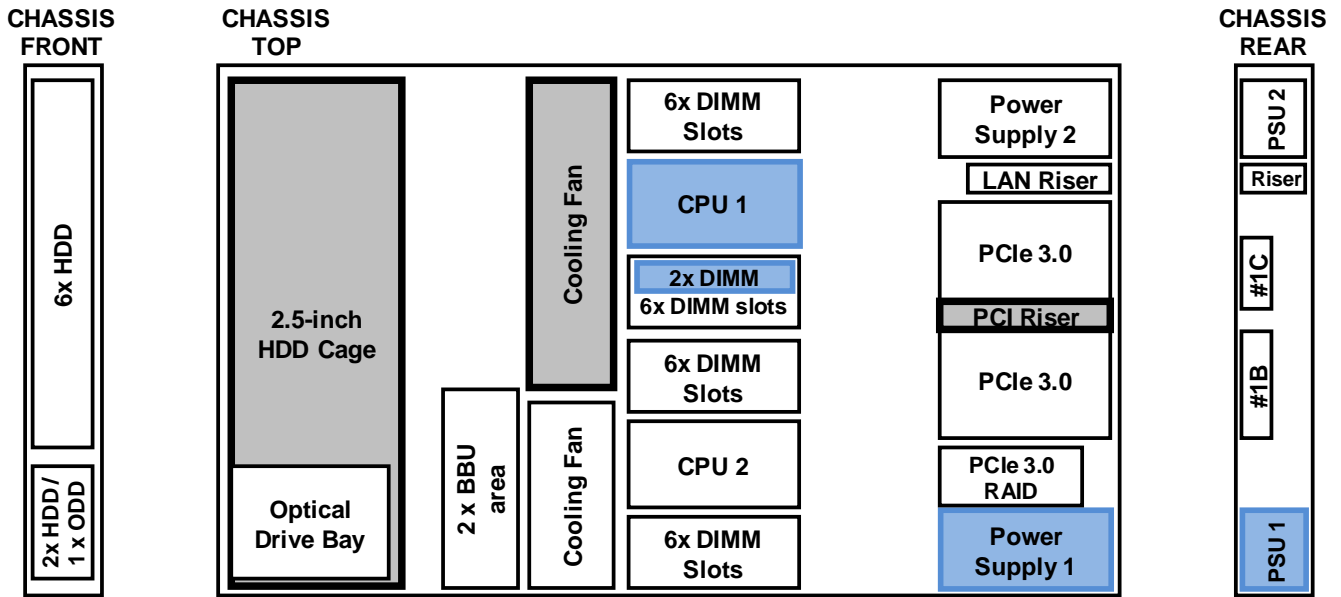
Legend	
A.	PCI Slot (Full Height)
B.	PCI Slot (Low Profile)
C.	Power Supply
D.	AC Inlet
E.	AC Power LED
F.	USB Connectors
G.	Data LAN Connectors
H.	Management LAN Connector
I.	Serial Port Connector
J.	VGA Connector
K.	Dump (NMI) Switch
L.	UID LED Button/LED
M.	AC Power LED
N.	LAN Riser (blank cover)
O.	Additional PS Slot (blank cover)

Dimensions (mm)



* Without back side parts of slide rails (in that case, cable arm can not be attached)

Configuration Diagram



Legend: Minimum required components Standard Components

Server Configuration

1 Base Models

Product Name / Description	Part Number
Express5800/R120d-1M no processor, no RAM, no HDD, no ODD, no PSU, no front bezel Including: Heat sink for the first CPU, EXPRESSBUILDER DVD	N8100-1794F

NOTE:

- The base model must be ordered with a processor kit.

2 Processors and Heat Sink

Available sockets: 2

Category	Product Name / Description	Part Number
Processor	Xeon E5-2609 Processor Kit Intel® Xeon® Processor E5-2609 (2.40 GHz, 4C/4T, 10 MB)	N8101-545F
	Xeon E5-2630L Processor Kit Intel® Xeon® Processor E5-2630L (2 GHz, 6C/12T, 15 MB)	N8101-546F
	Xeon E5-2640 Processor Kit Intel® Xeon® Processor E5-2640 (2.50 GHz, 6C/12T, 15 MB)	N8101-547F
	Xeon E5-2650L Processor Kit Intel® Xeon® Processor E5-2650L (1.80 GHz, 8C/16T, 20 MB)	N8101-550F
	Xeon E5-2670 Processor Kit Intel® Xeon® Processor E5-2670 (2.60 GHz, 8C/16T, 20 MB)	N8101-551F
	Xeon E5-2690 Processor Kit Intel® Xeon® Processor E5-2690 (2.90 GHz, 8C/16T, 20 MB)	N8101-552F
	Heat Sink	1st Processor Heat Sink For the first processor
2nd Processor Heat Sink For the second processor, cooling fan kit included		N8101-554F

NOTE:

- Minimum one processor kit from above must be installed.
- The processors must be identical to configure dual processor system.

3 Memory

3.1 Memory Configuration

Refer to the section in accordance with your memory configuration:

- Independent Channel Configuration: Refer to [3.1.1](#)
- Memory Sparing Configuration: Refer to [3.1.2](#)
- Memory Mirroring / Memory Lockstep Configuration: Refer to [3.1.3](#)

3.1.1 Independent Channel Configuration

Available slots: 12 per processor

Category	Product Name / Description	Part Number
Unbuffered DIMM (UDIMM)	8GB DDR3-1333 UNB Memory Kit 2x 4GB Unbuffered ECC DIMM, DDR3L-1333(PC3L-10600)	N8102-435F
	NOTE: - Up to four sets (eight slots) per processor can be installed - This DIMM doesn't support x4 SDDC.	
Registered DIMM (RDIMM)	4GB DDR3-1600 REG Memory Kit 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-468F
	NOTE: - This DIMM doesn't support x4 SDDC.	
	8GB DDR3-1600 REG Memory Kit 2x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-469F
	16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-470F
	32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-471F
Load Reduced DIMM (LRDIMM)	64GB DDR3-1333 LR Memory Kit 2x 32GB Load Reduced ECC DIMM, DDR3L-1333(PC3L-10600)	N8102-440F

NOTE:

- Minimum one memory kit per processor must be installed.
- The configured memories must be identical.
- It is recommended to install memory kits in multiples of two (four identical DIMMs) for quad-channel symmetric memory configurations to increase memory transfer speed.
- When two processors are installed, balance the DIMMs across the two processors.
- Mix configurations of UDIMM/RDIMM/LRDIMM are not supported

3.1.2 Memory Sparing Configuration

Available slots: 12 per processor

Product Name / Description	Part Number
6GB DDR3-1600 REG Memory Kit 3x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-476
12GB DDR3-1600 REG Memory Kit 3x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-477
24GB DDR3-1600 REG Memory Kit 3x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-499
48GB DDR3-1600 REG Memory Kit 3x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-500

NOTE:

- Minimum one memory kit per processor must be installed.
- The configured memories must be identical.
- When two processors are installed, balance the DIMMs across the two processors.
- The logical memory capacity at the time of memory sparing becomes two-thirds of physical capacity with configurations less than 4GB DIMM and five-sixth physical capacity with configurations more than 8GB DIMM.
- The maximum memory transfer rate is 1066 MHz.

3.1.3 Memory Mirroring / Memory Lockstep Configuration

Available slots: 12 per processor

Product Name / Description	Part Number
4GB DDR3-1600 REG Memory Kit 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-472
8GB DDR3-1600 REG Memory Kit 2x 4GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-473
16GB DDR3-1600 REG Memory Kit 2x 8GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-474
32GB DDR3-1600 REG Memory Kit 2x 16GB Registered ECC DIMM, DDR3L-1600(PC3L-12800)	N8102-475

NOTE:

- Minimum one memory kit per processor must be installed.

Memory Configuration Feature Comparison

See the table below for feature comparisons of memory configurations supported.

	Independent Channel	Memory Sparing	Memory Lockstep	Memory Mirroring
Performance	Best	Better	Better	Good
Data Protection	No	Multiple single bit error protection	No	Multiple single bit and multi bit error protection
Redundancy	No	Partly	No	Fully
Data Correction	ECC, x4 SDDC	ECC, x4 SDDC	ECC, x8 SDDC	ECC, x4 SDDC
Available Memory	Full physical memory	2/3 physical memory (2, 4GB DIMM) 5/6 physical memory (8, 16GB DIMM)	Full physical memory	Half physical memory
Available Memory Channels	4	4	4	4
Notes	-	All DIMMs in the system must be identical.	Paired DIMMs must be identical.	Paired DIMMs must be identical.

Maximum Memory Speed

See the table below for the actual maximum memory transfer speed in Independent Channel / Memory Sparing Configuration.

DDR3 memory speed depends on the type of DIMMs, the native memory bus speed of the memory controller and memory configuration. All memory buses operate at the clock frequency of the DIMM with the lowest frequency.

The maximum memory transfer rate is 1066 MHz with Memory Sparing Configuration.

Processor Type	Populated DIMMs	DIMMs per processor	DIMM Speed	
			At 1.35V	At 1.5V
E5-2609	-	-	1066 MHz	1066 MHz
E5-2630L E5-2640	UDIMM (4GB)	-	1066 MHz	1333 MHz
	RDIMM (2, 4, 8, 16GB)	Up to 8 DIMMs	1333 MHz	1333 MHz
		10 or more DIMMs	-	1066 MHz
	LRDIMM (32GB)	Up to 8 DIMMs	1066 MHz	1333 MHz
		10 or more DIMMs	1066 MHz	1066 MHz
E5-2650L E5-2670 E5-2690	UDIMM (4GB)	-	1066 MHz	1333 MHz
	RDIMM (2, 4, 8, 16GB)	Up to 8 DIMMs	1333 MHz	1600 MHz
		10 or more DIMMs	-	1066 MHz
	LRDIMM (32GB)	Up to 8 DIMMs	1066 MHz	1333 MHz
		10 or more DIMMs	1066 MHz	1066 MHz

Maximum Available Memory

See the table below for the maximum memory size that you can actually use on your system.

The maximum available memory is less than the maximum physical memory supported by your system because some chipsets require PCI resource space of about 750MB. PCI resource requirements vary depending on the type and the number of PCI cards you are using.

Maximum Memory Size Supported by OS		Maximum Available Memory
Microsoft Windows Server 2003 R2, Standard Edition	4 GB	4 GB (HW-DEP enabled)
Microsoft Windows Server 2008 Standard		App. 2 GB (HW-DEPdisabled)
Microsoft Windows Server 2003 R2, Standard x64 Edition	32 GB	32 GB
Microsoft Windows Server 2008 Standard (x64)		
Microsoft Windows Server 2008 R2 Standard (x64)		
Microsoft Windows Server 2003 R2, Enterprise Edition	64 GB	64 GB
Microsoft Windows Server 2008 Enterprise		
Microsoft Windows Server 2003 R2, Enterprise x64 Edition	1 TB	768 GB
Microsoft Windows Server 2008 Enterprise (x64)	2 TB	768 GB
Microsoft Windows Server 2008 R2 Enterprise (x64)		
Red Hat Enterprise Linux 5	16 GB	16 GB
Red Hat Enterprise Linux 6		
Red Hat Enterprise Linux 5 (EM64T)	256 GB	256 GB
Red Hat Enterprise Linux 6 (x86_64)	2 TB	768 GB
VMware ESXi 5.0 ¹	2 TB	768 GB

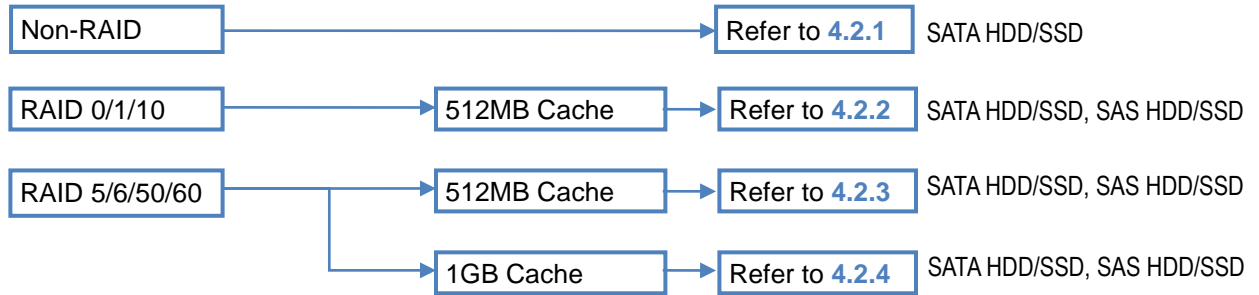
¹ Up to 1 TB of main memory is available to each virtual machine.

4 Internal Hard Disk Drives

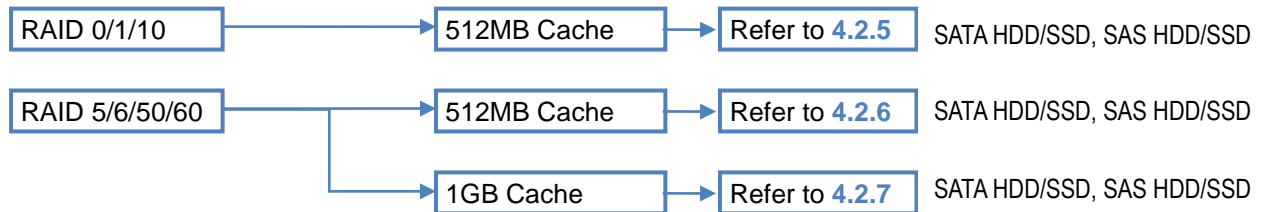
4.1 RAID Configuration

Refer to the section in accordance with your disk form factor and RAID configuration.

Up to six 2.5-inch Drives



Up to eight 2.5-inch Drives



NOTE:

- Up to four hard drives can be installed in the Embedded SATA configuration.
- Hot plug insertion/removal are not supported in the Embedded SATA configuration.
- An optional RAID controller occupies one PCI slot.
- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Use the same rotational speed of the SAS Hard drives.
- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.

4.2 Internal Drive Configuration

4.2.1 Up to four 2.5-inch Drives with On-board SATA Controller

Category	Product Name / Description		Part Number
Storage Controller	On-board SATA Controller 2x 6Gb/s SATA, 2x 3Gb/s SATA		(Standard)
Cable	Internal SATA Cable 1 x mini-SAS - 1 x mini-SAS		(Standard)
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch Hot-plug hard drive bays		(Standard)
Drive 4 slots available	SATA HDD	250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SATA SSD	100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- Hot plug insertion/removal is not supported with the on-board SATA non-RAID controller.
- The maximum transfer speed for Slot 2 and Slot 3 is 3 Gbp/s.

4.2.2 Up to six 2.5-inch Drives with RAID 0/1 Controller with 512 MB Cache

Category	Product Name / Description	Part Number
Storage Controller Required	RAID Controller (512MB, RAID 0/1) LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512MB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU Recommended	RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153
Cable	Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)
Drive 6 slots available	SAS HDD 300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
	450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
	600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
	900GB HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
	73.2GB HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
	146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
	300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD 250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
	500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
	1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD 100GB Hot Plug 2.5-inch SAS SSD 1x 100 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-709
	400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD 100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. <http://www.nec.com/en/global/prod/express/download/index.html>

4.2.3 Up to six 2.5-inch Drives with RAID 5/6 Controller with 512 MB Cache

Category		Product Name / Description	Part Number	
Storage Controller Required		RAID Controller (512MB, RAID 0/1/5/6) LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512MB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-150	
RAID BBU Recommended		RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153	
Cable		Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)	
HDD Cage		2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)	
Drive 6 slots available	SAS HDD	300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301	
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322	
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304	
		900GB HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332	
		73.2GB HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302	
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303	
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331	
		SATA HDD	250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
			500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
	1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm		N8150-358	
	SAS SSD	100GB Hot Plug 2.5-inch SAS SSD 1x 100 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-709	
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710	
		SATA SSD 100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707	

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- A large-capacity RAID array configuration requires long-time rebuilding when to recover from the failure. In order to improve the reliability, RAID 6 or RAID 60 configuration, which supports two hard drives failures, is recommended as the redundancy becomes invalid during the system recovery.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. <http://www.nec.com/en/global/prod/express/download/index.html>

4.2.4 Up to six 2.5-inch Drives with RAID 5/6 Controller with 1 GB Cache

Category	Product Name / Description	Part Number	
Storage Controller Required	RAID Controller (1GB, RAID 0/1/5/6) LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 1GB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-151	
RAID BBU Recommended	RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153	
SSD Caching Recommended	MegaRAID CacheCade for LSI MegaRAID SAS 9267-8i NOTE: - SSD used for cache is required - The SSD capacity which can be used as ReadCache is up to 512 GB.	N8103-156	
Cable	Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)	
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)	
Drive 6 slots available	SAS HDD	300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	100GB Hot Plug 2.5-inch SAS SSD 1x 100 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- A large-capacity RAID array configuration requires long-time rebuilding when to recover from the failure. In order to improve the reliability, RAID 6 or RAID 60 configuration, which supports two hard drives failures, is recommended as the redundancy becomes invalid during the system recovery.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration.
<http://www.nec.com/en/global/prod/express/download/index.html>

4.2.5 Up to eight 2.5-inch Drives with RAID 0/1 Controller with 512 MB Cache

Category	Product Name / Description	Part Number
Storage Controller Required	RAID Controller (512MB, RAID 0/1) LSI MegaRAID SAS 9267-8i RAID 0/1/10, 512MB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-149
RAID BBU Recommended	RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153
Cable	Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)
Optional HDD cage Required	2.5-inch HDD Cage 2 x 2.5-inch hot plug hard drive bays	N8154-41
Drive 8 slots available	SAS HDD 300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
	450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
	600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
	900GB HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
	73.2GB HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
	146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
	300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD 250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
	500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
	1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD 100GB Hot Plug 2.5-inch SAS SSD 1x 100 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-709
	400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD 100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- A large-capacity RAID array configuration requires long-time rebuilding when to recover from the failure. Since redundancy becomes invalid during the system recovery, it is recommended to obtain a RAID controller for RAID 6 (N8103-150/-151) to configure with RAID 6 or RAID 60, which supports two hard drives failures, in order to improve the reliability.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. <http://www.nec.com/en/global/prod/express/download/index.html>

4.2.6 Up to eight 2.5-inch Drives with RAID 5/6 Controller with 512 MB Cache

Category	Product Name / Description	Part Number
Storage Controller Required	RAID Controller (512MB, RAID 0/1/5/6) LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 512MB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-150
RAID BBU Recommended	RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153
Cable	Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)
Optional HDD cage Required	2.5-inch HDD Cage 2 x 2.5-inch hot plug hard drive bays	N8154-41
Drive 8 slots available	SAS HDD	
	300GB HDD	N8150-301
	1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	
	450GB HDD	N8150-322
	1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	
	600GB HDD	N8150-304
	1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	
	900GB HDD	N8150-332
	1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	
	73.2GB HDD	N8150-302
	1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	
	146.5GB HDD	N8150-303
	1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	
	300GB HDD	N8150-331
1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm		
SATA HDD		
250GB 7.2K Hot Plug 2.5-inch SATA HDD	N8150-356	
1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm		
500GB 7.2K Hot Plug 2.5-inch SATA HDD	N8150-357	
1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm		
1TB 7.2K Hot Plug 2.5-inch SATA HDD	N8150-358	
1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm		
SAS SSD		
100GB Hot Plug 2.5-inch SAS SSD	N8150-709	
1x 100 GB SAS SSD, 2.5-inch, 6Gb/s		
400GB Hot Plug 2.5-inch SAS SSD	N8150-710	
1x 400 GB SAS SSD, 2.5-inch, 6Gb/s		
SATA SSD		
100GB SSD	N8150-707	
1x 100 GB SATA SSD, 2.5-inch, 3Gb/s		

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- A large-capacity RAID array configuration requires long-time rebuilding when to recover from the failure. In order to improve the reliability, RAID 6 or RAID 60 configuration, which supports two hard drives failures, is recommended as the redundancy becomes invalid during the system recovery.
- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. <http://www.nec.com/en/global/prod/express/download/index.html>

4.2.7 Up to eight 2.5-inch Drives with RAID 5/6 Controller with 1 GB Cache

Category	Product Name / Description	Part Number	
Storage Controller Required	RAID Controller (1GB, RAID 0/1/5/6) LSI MegaRAID SAS 9267-8i RAID0/1/5/6/10/50/60, 1GB, Int. 8, PCIe 2.0(x8), SAS 6Gb/s, SATA 6Gb/s	N8103-151	
RAID BBU Recommended	RAID Battery Backup Unit For LSI MegaRAID SAS 9267-8i	N8103-153	
Cable	Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)	
HDD Cage	2.5-inch HDD Cage 6 x 2.5-inch hot plug hard drive bays	(Standard)	
Optional HDD cage Required	2.5-inch HDD Cage 2 x 2.5-inch hot plug hard drive bays	N8154-41	
SSD Caching Recommended	MegaRAID CacheCade for LSI MegaRAID SAS 9267-8i NOTE: - SSD used for cache is required. - The SSD capacity which can be used as ReadCache is up to 512 GB.	N8103-156	
Drive 8 slots available	SAS HDD	300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-301
		450GB HDD 1x450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-322
		600GB HDD 1x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-304
		900GB HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm	N8150-332
		73.2GB HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-302
		146.5GB HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-303
		300GB HDD 1x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm	N8150-331
	SATA HDD	250GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 250 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-356
		500GB 7.2K Hot Plug 2.5-inch SATA HDD 1x 500 GB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-357
		1TB 7.2K Hot Plug 2.5-inch SATA HDD 1x 1 TB SATA HDD, 2.5-inch, 6Gb/s, 7,200 rpm	N8150-358
	SAS SSD	100GB Hot Plug 2.5-inch SAS SSD 1x 100 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-709
		400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, 2.5-inch, 6Gb/s	N8150-710
	SATA SSD	100GB SSD 1x 100 GB SATA SSD, 2.5-inch, 3Gb/s	N8150-707

NOTE:

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For mix configuration, the same kind of hard drives are mounted starting with Slot 0 sequentially, and the remaining slots can mount different kind of hard drives.
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.
- A large-capacity RAID array configuration requires long-time rebuilding when to recover from the failure. In order to improve the reliability, RAID 6 or RAID 60 configuration, which supports two hard drives failures, is recommended as the redundancy becomes invalid during the system recovery.

- Please download RAID controller driver from the web to install Windows Server 2003 R2 in the configuration. <http://www.nec.com/en/global/prod/express/download/index.html>

5 Optical Drive

Category	Product Name / Description	Part Number
Internal 1 slot available	Internal Slim DVD-ROM drive Slim DVD-ROM drive	N8151-100
	Internal DVD Super Multi Drive Slim DVD Super Multi drive, not including writing software	N8151-104F
External	External DVD-ROM drive Slim DVD-ROM drive, Bus powered, 0.8 A required	N8160-85

NOTE:

- Up to 1 optical drive can be connected.

6 PCI Riser Card / PCI Card

6.1 LAN Controller

Category		Product Name / Description	Part Number
Riser	GbE	Dual Port 1000BASE-T Riser Card Broadcom® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x8	N8104-135
	10GbE	Dual Port 10GBASE SFP+ Riser Card Broadcom® BCM57810 Converged Controller PCIe 3.0 x8 NOTE: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to two SFP+ Modules can be installed. - Supports up to two adapters of 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-137
Adapter	GbE	1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1, FP / FH	N8104-138
		Dual Port 1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1, FP / FH	N8104-132
		Quad Port 1000BASE-T Adapter Broadcom ® BCM5719 Gigabit Ethernet Controller PCIe 2.0 x4, FP / FH NOTE: - Network cables with RJ-45 plug covers cannot be used. - Jumbo frames are not supported.	N8104-133
	10GbE	10GBASE Adapter (SFP+/2ch) Broadcom NetXtreme II BCM957711 10G SFP+ Dual Port Network Interface Card PCIe 2.0 x8, LP / FH NOTE: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to two SFP+ Modules can be installed. - Supports up to two adapters of 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-128
		Dual Port 10Gb Converged Network Adapter BROCADE 1020 Dual Port 10Gbps Converged Network Adapter PCIe 2.0 x8, LP / FH, 2 x SFP modules, Max. one adapter NOTE: - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to 2 SFP+ Modules can be installed. - Supports up to two adapters of 10Gb Converged Network Adapter and 10Gb Network Adapter.	N8104-131
SPF+ Module		SFP+ Module (10G-SR) 1 x SFP+ Module for N8104-128 and N8104-137	N8104-129

Teaming feature - Teaming and bonding features

See the table below for supported network interfaces and OS combinations.

Windows supports BASP (Broadcom Advanced Server Program) teaming while Linux supports teaming with bonding function supported by OS.

Network Interface	Team	OS
GbE LAN controller Standard network and N8104-135/-138/-132/-133	Up to four teams per one system Up to four ports per one team	Windows Server Red Hat Linux
10GbE LAN controller N8104-128/137	Up to two teams per one system Up to two ports per one team	Windows Server 2008/2008R2

NOTE:

- Teaming feature is not supported on iSCSI interfaces.
- The network interfaces for teaming must be the same.
- 10GbE LAN teaming must be processed in a single LAN controller.
- When 10GbE and 1GbE LAN teamings are mixed, the teams must be up to four per one system.

6.2 External Storage Controller

6.2.1 RAID Controller

Category	Product Name / Description	Part Number
Controller	RAID Controller (512MB, RAID0/1/5/6) LSI MegaRAID SAS 9285-8e RAID0/1/5/6/10/50/60, 1GB, Ext. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 6Gb/s, LP / FH, Max. two adapters	N8103-160
RAID BBU	RAID Battery Backup Unit for LSI MegaRAID SAS 9285-8e	N8103-162

NOTE:

- To configure a large-capacity RAID array, it is recommended to configure in RAID 6 or RAID 60 in order to minimize the risk of becoming multiple hard drives failure during the RAID rebuilding process.
- It is recommended to set RAID array configuration drives less than eight to minimize the risk of becoming multiple hard drives failure.

6.2.2 Fibre Channel / SAS Controller

Category	Product Name / Description	Part Number
Fibre Channel	Fibre Channel Controller (1ch) Emulex LightPulse LPe1250-F8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0(x8), Low Profile / Full Height	N8190-153
	Fibre Channel Controller (2ch) Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0(x8), Low Profile / Full Height	N8190-154
SAS	SAS Controller LSI SAS3442E-R Host Bus Adapter 3Gb/s SAS, Int. 4(SFF-8484) / ext. 4(SFF8470), PCIe(x8), Low Profile / Full Height	N8103-104A
	SAS Controller LSI SAS9212-4i4 Host Bus Adapter 6Gb/s SAS, Int. 4(7-pin SATA) / ext. 4(SFF-8088), PCIe 2.0(x8), Low Profile / Full Height	N8103-142

6.3 Serial Port Adapter

Product Name / Description	Part Number
Serial Port Adapter Serial port fixed to PCI bracket	N8117-01A

7 Other Add-in Components

7.1 Power Supply

Product Name / Description	Part Number
450W Hot Plug Power Supply 1 x 450 Watt 80 PLUS® Platinum	N8181-86F
800W Hot Plug Power Supply 1 x 800 Watt 80 PLUS® Platinum	N8181-87F

NOTE:

- The power units must be the same to configure redundancy.
- Use the NEC Power Supply Selector to select appropriate size for power units. For details, please visit the NEC website at:
http://www.nec.com/en/global/prod/express/collateral/tools/PowerSelector_G01.xls

7.2 Trusted Platform Module Kit

Product Name / Description	Part Number
Trusted Platform Module Kit TPM 1.2 module	N8115-08

NOTE:

- The kit is not available in China.
- The kit is not removable after attachment.
- "TPM Support" in BIOS setup menu must be activated prior to use of this product.
- To use Windows BitLocker drive encryption, be sure to keep the "recovery password" of BitLocker function. The recovery password is required to restore data for hardware replacement during a system error.

7.3 Internal Flash Memory

Available socket: 1

Product Name / Description	Part Number
Internal Flash Memory Internal flash memory to enable software and tools in the EXPRESSBUILDR DVD without DVD media	N8115-07
NOTE: Before use, software and tools must be copied from the EXPRESSBUILDER DVD to the flash memory. The following operations can be performed with the flash memory:	
<ul style="list-style-type: none"> - Installation of Windows server with express setup - Installation of Starter Pack—the package of NEC qualified drivers and system setting tools - Installation of NEC ESM PRO Agent and Universal RAID Utility - Performance of the Test and Diagnosis Tool 	

7.4 Flash FDD

Choose the Flash FDD if you need to prepare an alternative device for a floppy drive.

Category	Product Name / Description	Part Number
External	Flash FDD USB flash emulating USB floppy disk, Native capacity 1.44 MB	N8160-86

NOTE:

- Up to one drive can be connected.

7.5 Front Bezel

Product Name / Description	Part Number
Front Bezel Front bezel for R120d-1M	N8146-27F

8 Add-on Components

8.1 17-inch LCD Console Drawer

Category		Product Name / Description	Part Number
Drawer w/ KVM	Drawer	17inch LCD Console Unit (1U/8port) 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height	N8143-69F
	Cable	Switch Unit Connection Cable Set (USB, 1.8m) 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB, 3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB, 5m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)
Drawer w/o KVM	Drawer	17inch LCD Console Unit 1U 17-inch LCD, US 83-keys Keyboard, Optical mouse, 1U height, 4-pin USB B to 4-pin USB A cable 2m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2m	N8143-76F

8.2 KVM Switch

Category		Product Name / Description	Part Number
KVM Switch		Server Switch Unit (8 server) 1U USB 8 port KVM switch	N8191-12F
Cable		Switch Unit Connection Cable Set (USB,1.8m) 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(1A)
		Switch Unit Connection Cable Set (USB,3m) 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(03)
		Switch Unit Connection Cable Set (USB,3m) 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 1 x 4-pin USB A	K410-118(05)

8.3 Cable Management Arm

Product Name / Description	Part Number
Cable Management Arm 1U Kit For R120d-1M	N8143-79

NOTE:

- The Cable Management Arm cannot be attached when the back parts of the slide-rail are removed.

8.4 Server Management License

The server integrates the EXPRESSSCOPE Engine 3 as standard. Refer to [Server Management](#) for the standard management features. For more extensive remote KVM and remote media features, choose the following kit.

Product Name / Description	Part Number
<p>Remote KVM and Media License Kit</p> <p>License for one server.</p> <p>Remote KVM and remote media are enabled regardless of OS status.</p> <p>Remote KVM:</p> <ul style="list-style-type: none">- Displays a graphics console on the web browser of the remote terminal (PC/server).- Controls keyboard and mouse via the remote terminals' web browser <p>Remote media:</p> <p>Enables the user to use the CD / DVD / FD / Flash memory of the remote terminals (PC/server) as if accessing the local drives.</p> <p>NOTE: Remote KVM and remote media features are not available for virtual machines.</p>	N8115-04

References

Server Management

The EXPRESSSCOPE Engine 3, integrated into the server, provides superior remote control and system management features listed in the table below.

		Standard	With Remote KVM and Media License kit
Hardware monitoring	Temperature/voltage/power/fan /degeneration (memory/hard drive)	✓	✓
	Hardware event log collection	✓	✓
Boot monitoring	Bootting, BIOS/POST stall, OS stall, shutdown	✓	✓
Alerting	HW error, Boot error and OS panic (by SNMP, E-Mail)	✓	✓
Remote KVM (via LAN)	POST/BIOS setup, DOS utility	✓ ²	✓
	Panic screen, Boot screen	✓ ²	✓
	Text-based screen (OS console)	✓ ²	✓
	GUI-based screen (OS console)	-	✓
Remote control (via LAN)	Remote reset/power on-off/ dump	✓	✓
	OS shutdown	✓ ¹	✓ ¹
	Remote media (CD/DVD/FD)	-	✓
	Server Management Command Line Protocol (DMTF compliant)	✓	✓
	Remote control via Web browser (without dedicated app)	✓	✓
	Remote batch	✓	✓
	Scheduling (without UPS)	✓ ¹	✓ ¹
Others	Set automatic IP address via DNS/DHCP	✓	✓
Remote wakeup	Wake On LAN, Wake On Ring	✓	✓
Centralized management	Monitoring and control of multiple servers	✓	✓
Industry standard	IPMI	2.0	2.0

¹ The feature is not supported on VMware ESXi systems.

² The standard serial port is not available for the feature.

OS Support Matrix for PCI Cards

Part number	Product Name	WS 2008R2	WS 2008	WS 2008 x64	WS 2003R2	WS 2003R2 x64	RHEL 6	RHEL 6 x64	RHEL 5	RHEL 5 x64	ESXi 5.0
N8103-149	RAID Controller (512 MB, RAID 0/1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-104A	SAS Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
N8103-142	SAS Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
N8190-153	Fibre Channel Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8190-154	Fibre Channel Controller (2ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-135	Dual Port 1000BASE-T Riser Card	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-138	1000BASE-T adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-132	Dual Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-133	Quad Port 1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
N8104-137	Dual Port 10GBASE SFP+ Riser Card	✓	✓	✓	✓	✓	-	-	-	-	-
N8104-128	10GBASE adapter (SFP+/2ch)	✓	✓	✓	-	-	✓	✓	✓	✓	✓
N8104-131	Dual Port 10Gb Converged Network Adapter	✓	✓	✓	-	-	✓	✓	✓	✓	-

Supporting PCI Cards and Installable Slots

Standard Riser Card

Part Number	Product Name	Slots				Remarks
		#1A	#1B	#1C	#1D	
	Slot # :	#1A	#1B	#1C	#1D	
	PCI Slot:	X8	x16	x8	x8	
	Card height:	-	FH	LP	-	
	Slot type:	x8	x16	x16	x8	
	Installable card length (mm) :	-	175	167	-	
N8103-149	RAID Controller (512 MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	-	
N8103-150	RAID Controller (512 MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	
N8103-151	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	-	
N8103-160	RAID Controller (1 GB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	✓	-	
N8103-104A	SAS Controller [PCIe x8]	-	✓	✓	-	
N8103-142	SAS Controller [PCIe 2.0 x8]	-	✓	✓	-	
N8190-153	Fibre Channel Controller [PCIe 2.0 x8]	-	✓	✓	-	
N8190-154	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	✓	✓	-	
N8104-135	Dual Port 1000BASE-T Riser Card [PCIe 2.0 x1]	-	-	-	✓	
N8104-138	1000BASE-T adapter [PCIe 2.0 x1]	-	✓	✓	-	
N8104-132	Dual Port 1000BASE-T Adapter [PCIe 2.0 x1]	-	✓	✓	-	
N8104-133	Quad Port 1000BASE-T Adapter [PCIe 2.0 x4]	-	✓	✓	-	
N8104-137	Dual Port 10GBASE SFP+ Riser Card [PCIe 2.0 x8]	-	-	-	✓	Max. 2
N8104-128	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	✓	✓	-	
N8104-131	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	✓	✓	-	
N8117-01A	Serial Port Adapter	-	-	✓	-	

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For hard drive capacity measurements, 1 GB = 1 billion bytes. Actual formatted capacity is less.

Revision History

Revision	Date	Description
1.0	March 30, 2012	Initial release