

# **NEC EXPRESS5800/R120b-2 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 5600 series
- Up to 192 GB of high speed DDR3-1333 memory
- High energy efficiency with power capping feature and 80 PLUS® Gold power supply
- Full manageability by integrated EXPRESSSCOPE Engine 2

## Specification

### 2.5-inch Drive Model (1 / 2)

Model		R120b-2			
<b>Part Number</b>		N8100-1706F	N8100-1707F	N8100-1708F	N8100-1759F
<b>Processor</b>	<b>Type</b>	Intel® Xeon® processor E5503	Intel® Xeon® processor E5606	Intel® Xeon® processor E5620	Intel® Xeon® processor X5687
	<b>Clock speed</b>	2 GHz	2.13 GHz	2.40 GHz	3.60 GHz
	<b>Number of Processors</b>	1 or 2			
	<b>Cache</b>	4 MB	8 MB	12 MB	12 MB
	<b>Cores and Threads</b>	2C-2T	4C-4T	4C-8T	4C-8T
<b>Chipset</b>		Intel® 5520 Chipset			
<b>Memory</b>	<b>Type</b>	DDR3-1333 and DDR3-1066 ECC Registered Low Power DIMM			
	<b>Standard Capacity</b>	0 GB			
	<b>Maximum Capacity</b>	192 GB (12 x 16 GB)			
	<b>Memory protection</b>	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparring <sup>1</sup>			
<b>Internal Storage</b>	<b>Standard Capacity</b>	0 GB			
	<b>Maximum Capacity</b>	SAS : 10.8 TB (12 x 900 GB) SATA : 12 TB (12 x 1 TB) SSD : 1.2 TB ( 12 x 100 GB)			
	<b>Disk Controller</b>	SATA : 3Gb/s (Integrated) SAS: 6Gb/s (Optional)			
	<b>RAID</b>	SATA : RAID 0/1/5/6/10/50 (Optional) SAS : RAID 0/1/5/6/10/50 (Optional)			
	<b>Hot Plug</b>	Supported			
	<b>Optical Disk Drive</b>	Optional			
	<b>Floppy Disk Drive</b>	Optional			
	<b>Optical Drive Bays [free]</b>	1 [1]			
	<b>Floppy Drive Bays [free]</b>	1 [1]			
	<b>3.5-inch Media Bays [free]</b>	1 [1]			
	<b>Disk Drive Bays [free]</b>	12 [12] <sup>2</sup>			
<b>Expansion Slots [free]</b>	<b>Standard</b>	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 2[2] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			

Model		R120b-2			
Expansion Slots [free] (Cont.)	Optional Riser Card (N8116-21)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x 64-bit/ 133 MHz PCI-X 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			
	Optional Riser Card (N8116-22)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 2[2] x 64-bit / 33 MHz 5V PCI 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			
Video Controller (VRAM)		Integrated in Server Management Controller (32MB)			
Interfaces		1 x Keyboard (6-pin mini DIN, 1 x rear) 1 x Mouse (6-pin mini DIN, 1 x rear) 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 B, 1 x rear) 8 x USB2.0 (2 x front, 2 x rear, 4 x internal) 2 x 1000BASE-T LAN connector (1000BASE-T / 100BASE-TX / 10BASE-T, RJ-45, 2 x rear) 1 x Management LAN connector (100BASE-TX / 10BASE-T, RJ-45, 1 x rear)			
Server Management		EXPRESSSCOPE Engine 2			
Redundant Fan		Optional, hot plug			
Redundant Power Supply		Optional, hot plug			
Power Supply		1-2 x 750 Watt 80 PLUS® Gold certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			
Power Consumption	(Max. Config, Idling)	253 VA / 251 Watt	270 VA / 268 Watt	276 VA / 274 Watt	297 VA / 295 Watt
	(Max. Config, Operating)	550 VA / 540 Watt	580 VA / 570 Watt	600 VA / 590 Watt	750 VA / 740 Watt
Acoustical Noise (Sound Pressure Level) <sup>3</sup>	Max. Config, Idling	47.3dB	47.3dB	47.3dB	47.9dB
	Max. Config, Operating	54.1dB	54.1dB	54.1dB	55.8dB
Dimensions (W x D x H)		445.2 x 721.2 x 86.7 mm / 17.5 x 28.4 x 3.4 in (2U)			
Weight (Minimum / Maximum)		21 kg / 31 kg, 46.30 lbs. / 68.34 lbs.			
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 35° C / 50° to 95° 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, Standard Edition (SP1 or later) Microsoft® Windows Server® 2003, Enterprise Edition (SP1 or later) 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 ES4.8 or later (x86) <sup>4</sup> Red Hat Enterprise Linux ES4.8 or later (EM64T) <sup>4</sup> Red Hat Enterprise Linux AS4.8 or later (x86) <sup>4</sup>			

Model	R120b-2
<b>Operating Systems (Cont.)</b>	Red Hat Enterprise Linux AS4.8 or later (EM64T) <sup>4</sup> Red Hat Enterprise Linux 5.4 or later (x86) <sup>4</sup> Red Hat Enterprise Linux 5.4 or later (EM64T) <sup>4</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (x86) <sup>4</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (EM64T) <sup>4</sup> Red Hat Enterprise Linux 6.0 or later (x86) <sup>4</sup> Red Hat Enterprise Linux 6.0 or later (x86_64) <sup>4</sup> SUSE Linux Enterprise Server 10 <sup>4</sup> SUSE Linux Enterprise Server 10 (EM64T) <sup>4</sup> SUSE Linux Enterprise Server 11 SP1 or later (EM64T) <sup>4</sup> VMware ESXi 4.1

- <sup>1</sup> Online Spare is supported on Xeon 5600 series.
- <sup>2</sup> An optional HDD Cage is required to install more than 8 hard drives.
- <sup>3</sup> Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.
- <sup>4</sup> For Linux support, contact our sales representative or go to the NEC website at: <http://www.nec.com/global/prod/express/linux/index.html>

### 2.5-inch Drive Model (2 / 2)

Model	R120b-2				
<b>Part Number</b>	N8100-1709F	N8100-1711F	N8100-1712F	N8100-1713F	
<b>Processor</b>	<b>Type</b>	Intel® Xeon® processor E5645	Intel® Xeon® processor X5650	Intel® Xeon® processor X5675	Intel® Xeon® processor X5690
	<b>Clock speed</b>	2.40 GHz	2.66 GHz	3.06 GHz	3.46 GHz
	<b>Number of Processors</b>	1 or 2			
	<b>Cache</b>	12 MB			
	<b>Cores and Threads</b>	6C-12T			
<b>Chipset</b>	Intel® 5520 Chipset				
<b>Memory</b>	<b>Type</b>	DDR3-1333 and DDR3-1066 ECC Registered Low Power DIMM			
	<b>Standard Capacity</b>	0 GB			
	<b>Maximum Capacity</b>	192 GB (12 x 16 GB)			
	<b>Memory protection</b>	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing			
<b>Internal Storage</b>	<b>Standard Capacity</b>	0 GB			
	<b>Maximum Capacity</b>	SAS : 10.8 TB (12 x 900 GB) SATA : 12 TB (12 x 1 TB) SSD : 1.2 TB ( 12 x 100 GB)			
	<b>Disk Controller</b>	SATA : 3Gb/s (Integrated) SAS: 6Gb/s (Optional)			
	<b>RAID</b>	SATA : RAID 0/1/5/6/10/50 (Optional) SAS : RAID 0/1/5/6/10/50 (Optional)			
	<b>Hot Plug</b>	Supported			
	<b>Optical Disk Drive</b>	Optional			
	<b>Floppy Disk Drive</b>	Optional			
	<b>Optical Drive Bays [free]</b>	1 [1]			
	<b>Floppy Drive Bays [free]</b>	1 [1]			
	<b>3.5-inch Media Bays [free]</b>	1 [1]			

Model		R120b-2			
Internal Storage	3.5-inch Media Bays [free]	1 [1]			
(Cont.)	Disk Drive Bays [free]	12 [12] <sup>1</sup>			
Expansion Slots [free]	Standard	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 2[2] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			
	Optional Riser Card (N8116-21)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x 64bit / 133MHz PCI-X 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			
	Optional Riser Card (N8116-22)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 2[2] x 64-bit / 33 MHz 5V PCI 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot			
Video Controller (VRAM)		Integrated in Server Management Controller (32MB)			
Interfaces		1 x Keyboard (6-pin mini DIN, 1 x rear) 1 x Mouse (6-pin mini DIN, 1 x rear) 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 B, 1 x rear) 8 x USB2.0 (2 x front, 2 x rear, 4 x internal) 2 x 1000BASE-T LAN connector (1000BASE-T / 100BASE-TX / 10BASE-T, RJ-45, 2 x rear) 1 x Management LAN connector (100BASE-TX / 10BASE-T, RJ-45, 1 x rear)			
Server Management		EXPRESSSCOPE Engine 2			
Redundant Fan		Optional, hot plug			
Redundant Power Supply		Optional, hot plug			
Power Supply		1-2 x 750 Watt 80 PLUS® Gold certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz			
Power Consumption	(Max. Config, Idling)	276 VA / 274 Watt	286 VA / 284 Watt	286 VA / 284 Watt	297 VA / 295 Watt
	(Max. Config, Operating)	610 VA / 600 Watt	670 VA / 660 Watt	670 VA / 660 Watt	810 VA / 800 Watt
Acoustical Noise (Sound Pressure Level) <sup>2</sup>	Max. Config, Idling	47.3dB	47.9dB	47.9dB	47.9dB
	Max. Config, Operating	54.1dB	54.2dB	54.2dB	54.2dB
Dimensions (W x D x H)		445.2 x 721.2 x 86.7 mm / 17.5 x 28.4 x 3.4 in (2U)			
Weight (Minimum / Maximum)		21 kg / 31 kg, 46.30 lbs. / 68.34 lbs.			
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 35° C / 50° to 95° 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, Standard Edition (SP1 or later) Microsoft® Windows Server® 2003, Enterprise Edition (SP1 or later) Microsoft® Windows Server® 2003 R2, Standard Edition Microsoft® Windows Server® 2003 R2, Enterprise Edition Microsoft® Windows Server® 2003 R2, Standard x64 Edition			

Model	R120b-2
<b>Operating Systems (Cont.)</b>	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 ES4.8 or later (x86) <sup>3</sup> Red Hat Enterprise Linux ES4.8 or later (EM64T) <sup>3</sup> Red Hat Enterprise Linux AS4.8 or later (x86) <sup>3</sup> Red Hat Enterprise Linux AS4.8 or later (EM64T) <sup>3</sup> Red Hat Enterprise Linux 5.4 or later (x86) <sup>3</sup> Red Hat Enterprise Linux 5.4 or later (EM64T) <sup>3</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (x86) <sup>3</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (EM64T) <sup>3</sup> Red Hat Enterprise Linux 6.0 or later (x86) <sup>3</sup> Red Hat Enterprise Linux 6.0 or later (x86_64) <sup>3</sup> SUSE Linux Enterprise Server 10 <sup>3</sup> SUSE Linux Enterprise Server 10 (EM64T) <sup>3</sup> SUSE Linux Enterprise Server 11 SP1 or later (EM64T) <sup>3</sup> VMware ESXi 4.1

<sup>1</sup> An optional HDD Cage is required to install more than 8 hard drives.

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

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

### 3.5-inch Drive Model

Model	R120b-2			
<b>Part Number</b>	N8100-1714F	N8100-1715F	N8100-1716F	
<b>Processor</b>	<b>Type</b>	Intel® Xeon® processor E5606	Intel® Xeon® processor E5620	Intel® Xeon® processor X5650
	<b>Clock speed</b>	2.13 GHz	2.40 GHz	2.66 GHz
	<b>Number of Processors</b>	1 or 2		
	<b>Cache</b>	8 MB	12 MB	12 MB
	<b>Cores and Threads</b>	4C-4T	4C-8T	6C-12T
<b>Chipset</b>	Intel® 5520 Chipset			
<b>Memory</b>	<b>Type</b>	DDR3-1333 and DDR3-1066 ECC Registered Low Power DIMM		
	<b>Standard Capacity</b>	0 MB		
	<b>Maximum Capacity</b>	192 MB (12 x 16 GB)		
	<b>Memory protection</b>	ECC, x4 SDDC, Memory Mirroring, Memory Lockstep, Memory Sparing		
<b>Internal Storage</b>	<b>Standard Capacity</b>	0 GB		
	<b>Maximum Capacity</b>	SATA : 12 TB (6 x 2 TB)		
	<b>Disk Controller</b>	SATA : 3 Gb/s (Integrated)		
	<b>RAID</b>	SATA : RAID 0/1/5/6/10/50 (Optional)		
	<b>Hot Plug</b>	Supported		
	<b>Optical Disk Drive</b>	Optional		
	<b>Floppy Drive</b>	Optional		

Model		R120b-2		
Internal Storage (Cont.)	3.5-inch Media Bays [free]	1 [1]		
	Optical Drive Bays [free]	1 [1]		
	Floppy Drive Bays [free]	1 [1]		
	Disk Drive Bays [free]	6 [6]		
Expansion Slots [free]	Standard	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 2[2] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot		
	Optional Riser Card (N8116-21)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x16 connector) 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 1[1] x 64-bit / 133MHz PCI-X 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot		
	Optional Riser Card (N8116-22)	Total: 6 slots available 1[1] x PCIe 2.0 x8 (x8 connector) 1[1] x PCIe 2.0 x4 (x8 connector) 1[1] x PCIe x4 (x8 connector) 2[2] x 64-bit/ 33 MHz 5V PCI 1[1] x PCIe 2.0 x4 (x8 connector) dedicated RAID slot		
Video Controller (VRAM)		Integrated in Server Management Controller (32MB)		
Interfaces		1 x Keyboard (6-pin mini DIN, 1 x rear) 1 x Mouse (6-pin mini DIN, 1 x rear) 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 B, 1 x rear) 8 x USB2.0 (2 x front, 2 x rear, 4 x internal) 2 x 1000BASE-T LAN connector (1000BASE-T / 100BASE-TX / 10BASE-T, RJ-45, 2 x rear) 1 x Management LAN connector (100BASE-TX / 10BASE-T, RJ-45, 1 x rear)		
Server Management		EXPRESSSCOPE Engine 2		
Redundant Fan		Optional, hot plug		
Redundant Power Supply		Optional, hot plug		
Power Supply		1-2 x 750 Watt 80 PLUS® Gold certified hot plug PSU 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz		
Power Consumption	(Max. Config, Idling)	277 VA / 275 Watt	264 VA / 262 Watt	272 VA / 270 Watt
	(Max. Config, Operating)	550 VA / 540 Watt	580 VA / 570 Watt	660 VA / 650 Watt
Acoustical Noise (Sound Pressure Level) <sup>1</sup>	Max. Config, Idling	47.3 dB	47.3 dB	47.9 dB
	Max. Config, Operating	54.1 dB	54.1 dB	55.8 dB
Dimensions (W x D x H)		445.2 x 721.2 x 86.7 mm / 17.5 x 28.4 x 3.4 in (2U)		
Weight (Minimum / Maximum)		21 kg / 31 kg, 46.30 lbs. / 68.34 lbs.		
Temperature, Relative Humidity (non-condensing)		Operating: 10° to 35° C / 50° to 95° 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		



Model	R120b-2
<b>Operating Systems</b>	Microsoft® Windows Server® 2003, Standard Edition (SP1 or later) Microsoft® Windows Server® 2003, Enterprise Edition (SP1 or later) 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 ES4.8 or later (x86) <sup>2</sup> Red Hat Enterprise Linux ES4.8 or later (EM64T) <sup>2</sup> Red Hat Enterprise Linux AS4.8 or later (x86) <sup>2</sup> Red Hat Enterprise Linux AS4.8 or later (EM64T) <sup>2</sup> Red Hat Enterprise Linux 5.4 or later (x86) <sup>2</sup> Red Hat Enterprise Linux 5.4 or later (EM64T) <sup>2</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (x86) <sup>2</sup> Red Hat Enterprise Linux Advanced Platform5.4 or later (EM64T) <sup>2</sup> Red Hat Enterprise Linux 6.0 or later (x86) <sup>2</sup> Red Hat Enterprise Linux 6.0 or later (x86_64) <sup>2</sup> SUSE Linux Enterprise Server 10 <sup>2</sup> SUSE Linux Enterprise Server 10 (EM64T) <sup>2</sup> SUSE Linux Enterprise Server 11 SP1 or later (EM64T) <sup>2</sup> VMware ESXi 4.1

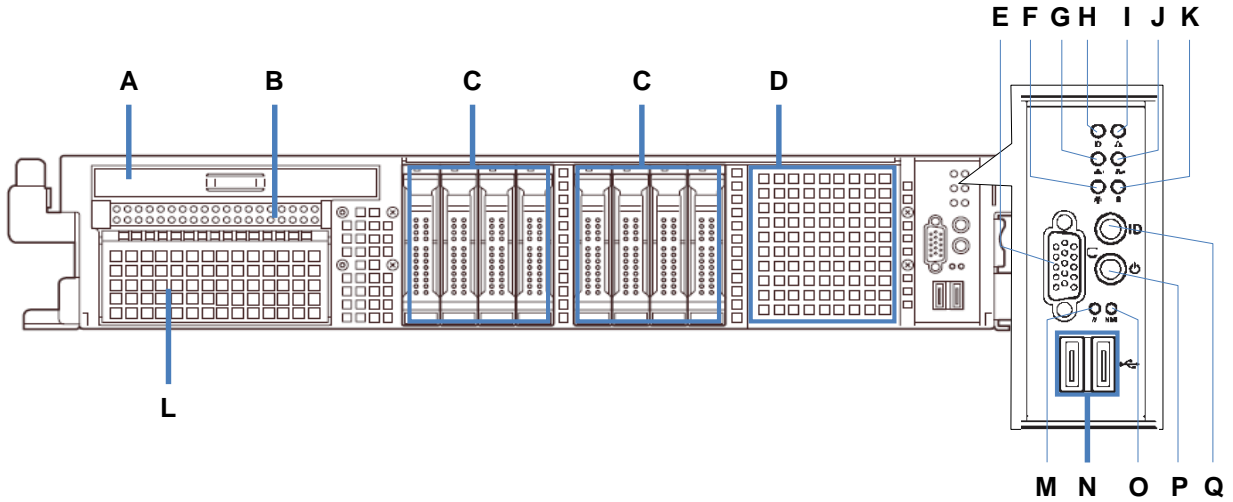
<sup>1</sup> Noise emission was measured in accordance with ISO 7779. The actual value may vary by the operating environment.

<sup>2</sup> For Linux support, contact our sales representative or go to the NEC website at: <http://www.nec.com/global/prod/express/linux/index.html>

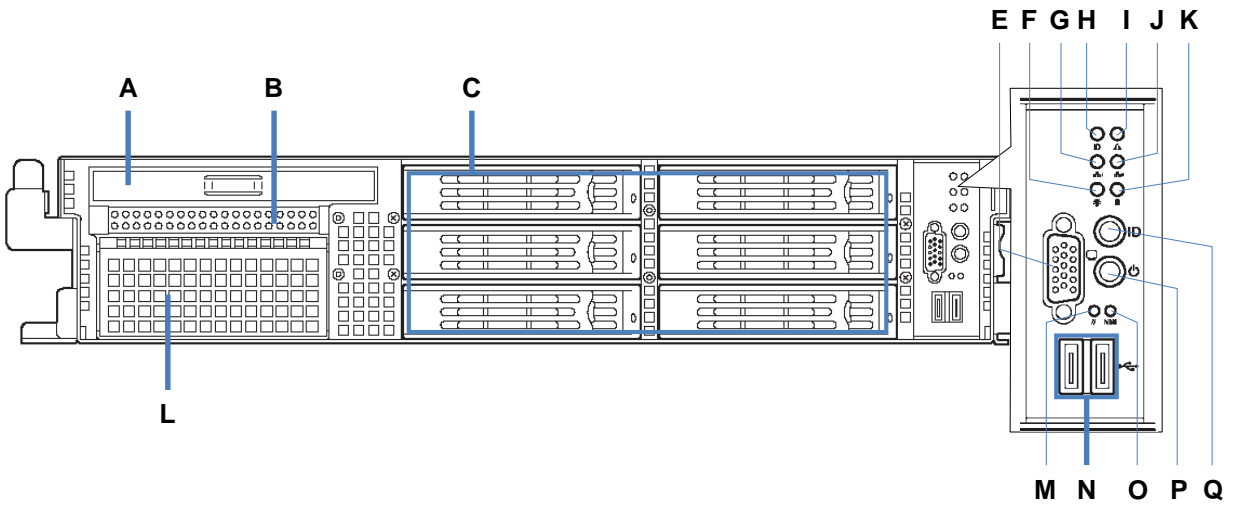
# External Views

## Front and Rear Views

Front View for 2.5-inch Drive Model

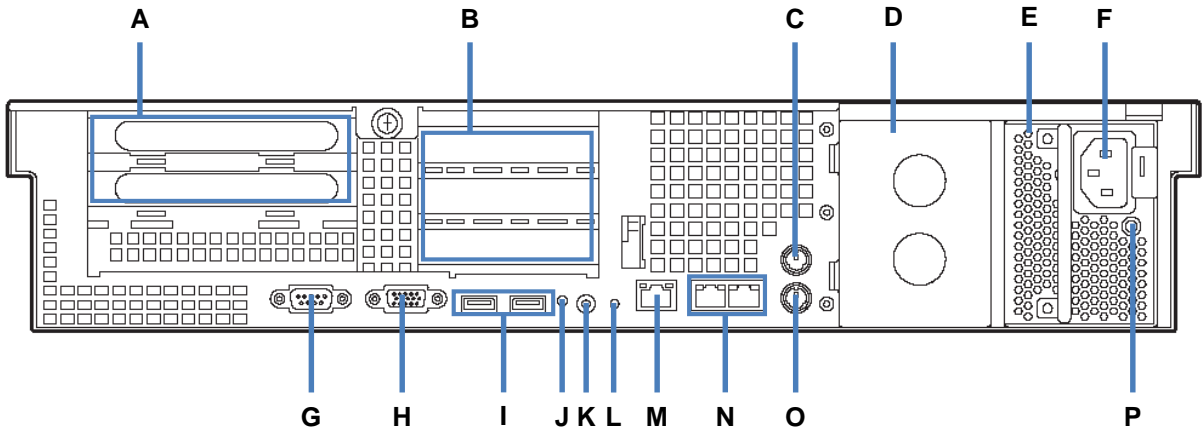


Front View for 3.5-inch Drive Model



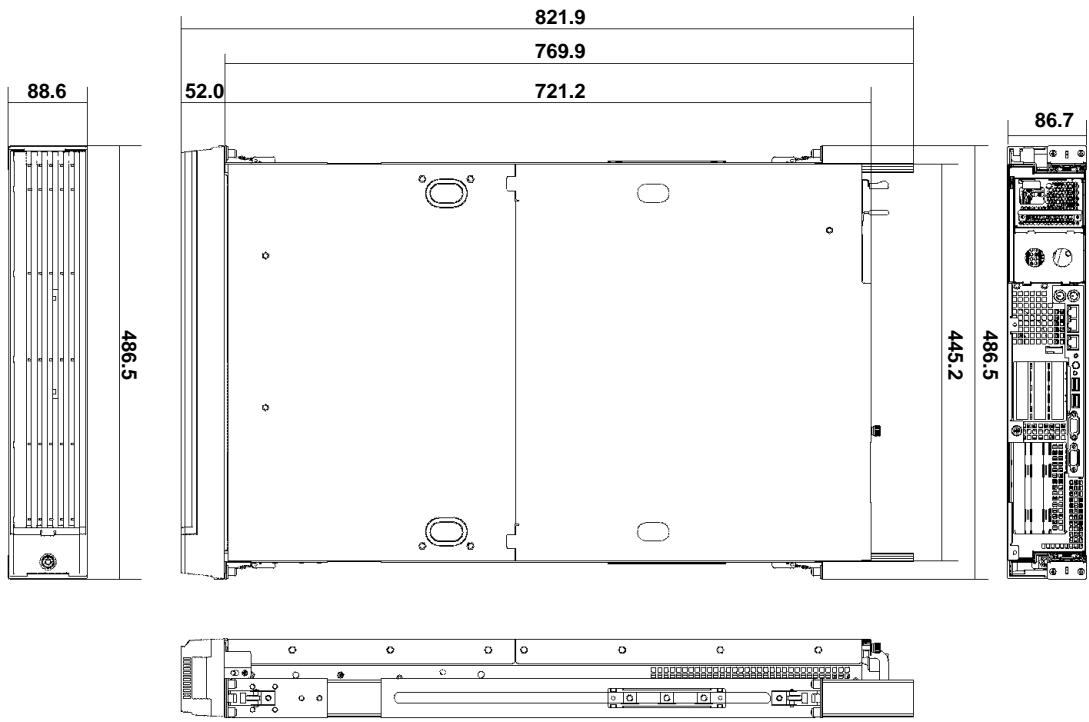
Legend	
A.	Optical Drive Bay
B.	Floppy Drive Bay
C.	Drive Bays
D.	2.5-inch Drive Cage Bay
E.	VGA Connector
F.	Power LED
G.	Data LAN 1 Activity LED
H.	UID LED
I.	System Status LED
J.	Data LAN 2 Activity LED
K.	Hard Drive Activity LED
L.	3.5-inch Media Bay
M.	System Reset Switch
N.	USB Connectors
O.	Dump (NMI) Switch
P.	Power Button
Q.	UID LED Button

Rear View



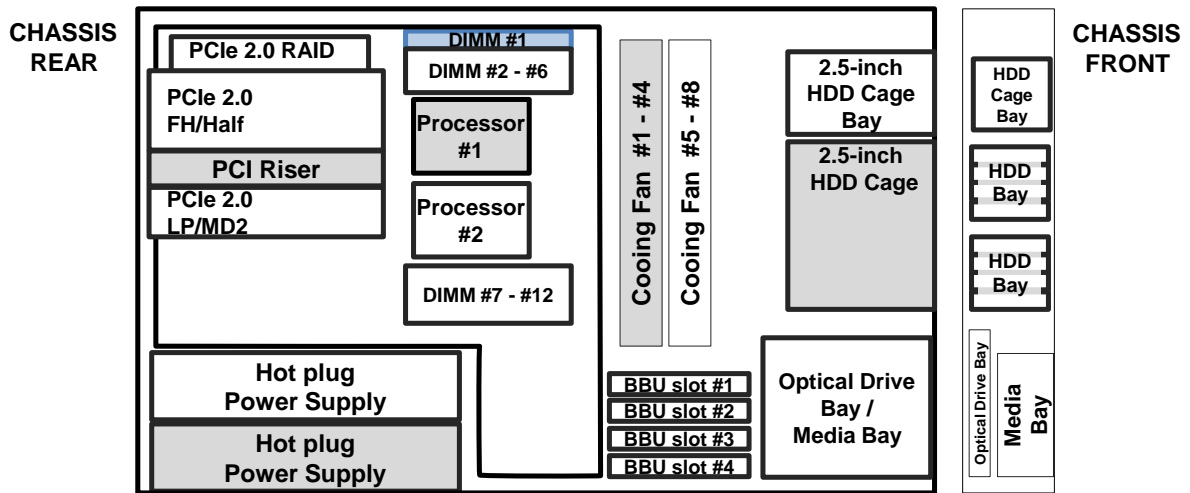
Legend	
A.	PCI Slots (Full-Height)
B.	PCI Slots (Low-Profile)
C.	Mouse Connector
D.	Additional PS Slot
E.	Power Supply
F.	AC Inlet
G.	Serial Port Connector
H.	VGA Connector
I.	USB Connectors
J.	UID Button
K.	UID LED
L.	Dump (NMI) Switch
M.	Management LAN Connector
N.	Data LAN Connectors
O.	Keyboard Connector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

Dimensions (mm)



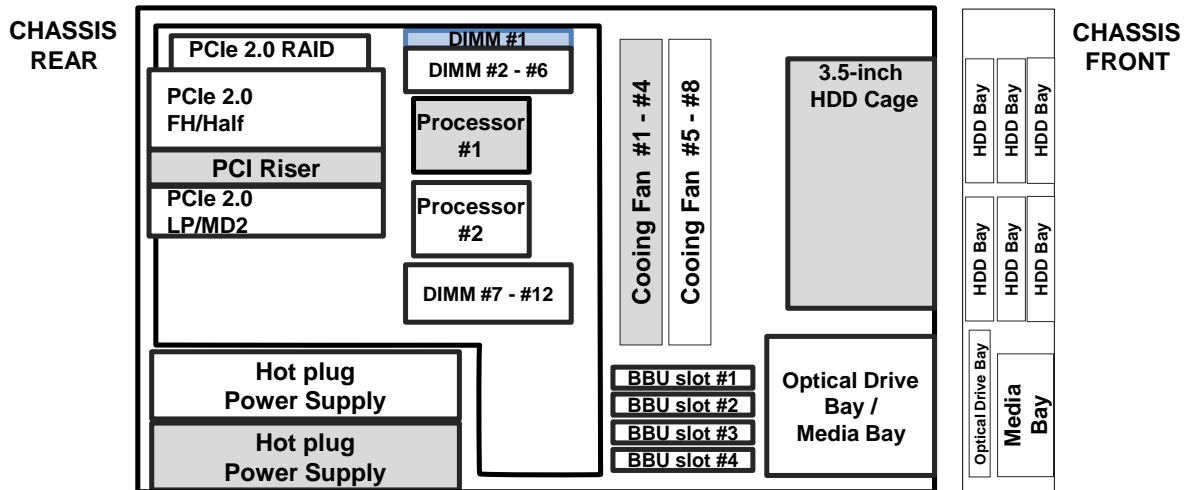
# Configuration Diagram

## 2.5-inch Drive Model



Legend:  Minimum required components  Standard components

## 3.5-inch Drive Model



Legend:  Minimum required components  Standard components

# Server Configuration

## 1 Base Models

### 2.5-inch Drive Model

Product Name / Description	Part Number
<b>NEC EXPRESS5800/R120b-2 Server (2C/E5503)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5503, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1706F
<b>NEC EXPRESS5800/R120b-2 Server (4C/E5606)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5606, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1707F
<b>NEC EXPRESS5800/R120b-2 Server (4C/E5620)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5620, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1708F
<b>NEC EXPRESS5800/R120b-2 Server (4C/X5687)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor X5687, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1759F
<b>NEC EXPRESS5800/R120b-2 Server (6C/E5645)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5645, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1709F
<b>NEC EXPRESS5800/R120b-2 Server (6C/X5650)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor X5650, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1711F
<b>NEC EXPRESS5800/R120b-2 Server (6C/X5675)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor X5675, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1712F
<b>NEC EXPRESS5800/R120b-2 Server (6C/X5690)</b> no RAM, no 2.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor X5690, 2.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1713F

### 3.5-inch Drive Model

Product Name / Description	Part Number
<b>NEC EXPRESS5800/R120b-2 Server (4C/E5606)</b> no RAM, no 3.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5606, 3.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1714F
<b>NEC EXPRESS5800/R120b-2 Server (4C/E5620)</b> no RAM, no 3.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor E5620, 3.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1715F
<b>NEC EXPRESS5800/R120b-2 Server (6C/X5650)</b> no RAM, no 3.5-inch HDD, no ODD, no FDD Including: 1 x Intel Xeon processor X5650, 3.5-inch HDD Cage, EXPRESSBUILDER DVD	N8100-1716F

## 2 2nd Processor

Available sockets: 1

Product Name / Description	Part Number
<b>CPU Kit (2C/E5503)</b> Intel® Xeon® Processor E5503 (2 GHz / 2C-2T / 4 MB)	N8101-456F
<b>CPU Kit (4C/E5606)</b> Intel® Xeon® Processor E5606 (2.13 GHz / 4C-4T / 8 MB)	N8101-484F
<b>CPU Kit (4C/E5620)</b> Intel® Xeon® Processor E5620 (2.40 GHz / 4C-8T / 12 MB)	N8101-458F
<b>CPU Kit (4C/ X5687)</b> Intel® Xeon® Processor X5687 (3.60 GHz / 4C-8T / 12 MB)	N8101-510F
<b>CPU Kit (6C/E5645)</b> Intel® Xeon® Processor E5645 (2.40 GHz / 6C-12T / 12 MB)	N8101-485F
<b>CPU Kit (6C/X5650)</b> Intel® Xeon® Processor X5650 (2.66 GHz / 6C-12T / 12 MB)	N8101-486F
<b>CPU Kit (6C/X5675)</b> Intel® Xeon® Processor X5675 (3.06 GHz / 6C-12T / 12 MB)	N8101-487F
<b>CPU Kit (6C/X5690)</b> Intel® Xeon® Processor X5690 (3.46 GHz / 6C-12T / 12 MB)	N8101-488F

### NOTE:

- The 2nd processor must be the same with what is used in the base model

## 3 Memory

### 3.1 Memory Configuration

Refer to the section in accordance with your memory configuration:

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

#### 3.1.1 Independent Channel / Memory Sparring Configuration

Available slots: 6 per processor

Product Name / Description	Part Number
<b>Additional 1GB Memory Module (1x 1GB)</b> 1 GB (1 x 1 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-371F
<b>Additional 2GB Memory Module (1x 2GB)</b> 2 GB (1 x 2 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-372F
<b>Additional 4GB Memory Module (1x 4GB)</b> 4 GB (1 x 4 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-373F
<b>Additional 8GB Memory Module (1x 8GB)</b> 8 GB (1 x 8 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-374F
<b>Additional 16GB Memory Module (1x 16GB)</b> 16 GB (1 x 16 GB) DDR3-1066 ECC Registered Low Power DIMM	N8102-375F

### NOTE:

- Minimum one memory kit per processor must be installed.
- It is recommended to install two or three identical memory kits for dual-channel or triple-channel symmetric memory configurations to increase memory transfer speed.

### 3.1.2 Memory Mirroring / Memory Lockstep Configuration

Available slots: 4 per processor

Product Name / Description	Part Number
<b>Additional 2GB Memory Module (2x 1GB)</b> 2 GB (2 x 1 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-387
<b>Additional 4GB Memory Module (2x 2GB)</b> 4 GB (2 x 2 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-388
<b>Additional 8GB Memory Module (2x 4GB)</b> 8 GB (2 x 4 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-389
<b>Additional 16GB Memory Module (2x 8GB)</b> 16 GB (2 x 8 GB) DDR3-1333 ECC Registered Low Power DIMM	N8102-390
<b>Additional 32GB Memory Module (2x 16GB)</b> 32 GB (2 x 16 GB) DDR3-1066 ECC Registered Low Power DIMM	N8102-391

**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
<b>Performance</b>	Best	Better	Better	Good
<b>Data Protection</b>	No	Multiple single bit error protection	No	Multiple single bit and multi bit error protection
<b>Data Correction</b>	ECC, x4 SDDC	ECC, x4 SDDC	ECC, x8 SDDC	ECC, x4 SDDC
<b>Redundancy</b>	No	Partly	No	Fully
<b>Available Memory</b>	Full physical memory	Physical memory excluding spare memory	Full physical memory	Half physical memory
<b>Available Memory Channels</b>	3	3	2	2
<b>Notes</b>	-	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 speed on your system.

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

Processor Type	Populated DIMMs	Memory Power Setting	DIMMs per Channel	DIMM Speed
E5503	-	-	-	800 MHz
E5606	1 GB, 2 GB, 4 GB, 8 GB	-	-	1066 MHz
E5620	16GB	Normal (1.5V)	1	1066 MHz
			2	800 MHz
		Low (1.35V)	-	800 MHz
E5645 X5650 X5675 X5687 X5690	1 GB, 2 GB, 4 GB, 8 GB	Normal (1.5V)	-	1333 MHz
			1	1333 MHz
		2	1066 MHz	
	16GB	Normal (1.5V)	1	1066 MHz
			2	800 MHz
		Low (1.35V)	-	800 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
<b>4 GB</b>	Microsoft Windows Server 2003, Standard Edition(SP1) Microsoft Windows Server 2003 R2, Standard Edition Microsoft Windows Server 2008 Standard	<b>4 GB (HW-DEP enabled)</b> <b>App. 3.6 GB (HW-DEP disabled)</b>
<b>32 GB</b>	Microsoft Windows Server 2003 R2, Standard x64 Edition Microsoft Windows Server 2008 Standard (x64) Microsoft Windows Server 2008 R2 Standard (x64)	<b>32 GB</b>
<b>64 GB</b>	Microsoft Windows Server 2003, Enterprise Edition(SP1) Microsoft Windows Server 2003 R2, Enterprise Edition Microsoft Windows Server 2008 Enterprise	<b>64 GB</b>
<b>1 TB</b>	Microsoft Windows Server 2003 R2, Enterprise x64 Edition	<b>192 GB</b>
<b>2 TB</b>	Microsoft Windows Server 2008 Enterprise (x64) Microsoft Windows Server 2008 R2 Enterprise (x64)	<b>192 GB</b>
<b>16 GB</b>	Red Hat Enterprise Linux ES4 Red Hat Enterprise Linux ES4 (EM64T) Red Hat Enterprise Linux 5 Red Hat Enterprise Linux 5 Advanced Platform Red Hat Enterprise Linux 6 SUSE Linux Enterprise Server 10 SUSE Linux Enterprise Server 11	<b>16 GB</b>
<b>64 GB</b>	Red Hat Enterprise Linux AS4	<b>64 GB</b>
<b>256 GB</b>	Red Hat Enterprise Linux AS4 (EM64T) Red Hat Enterprise Linux 5 (EM64T) Red Hat Enterprise Linux 5 Advanced Platform (EM64T)	<b>192 GB</b>
<b>2 TB</b>	Red Hat Enterprise Linux 6.0 (x86_64)	<b>192 GB</b>
<b>512 GB</b>	SUSE Linux Enterprise Server 10 (EM64T) SUSE Linux Enterprise Server 11 (EM64T)	<b>192 GB</b>
<b>256 GB or 1TB<sup>1</sup></b>	VMware ESXi 4.1	<b>192 GB</b>

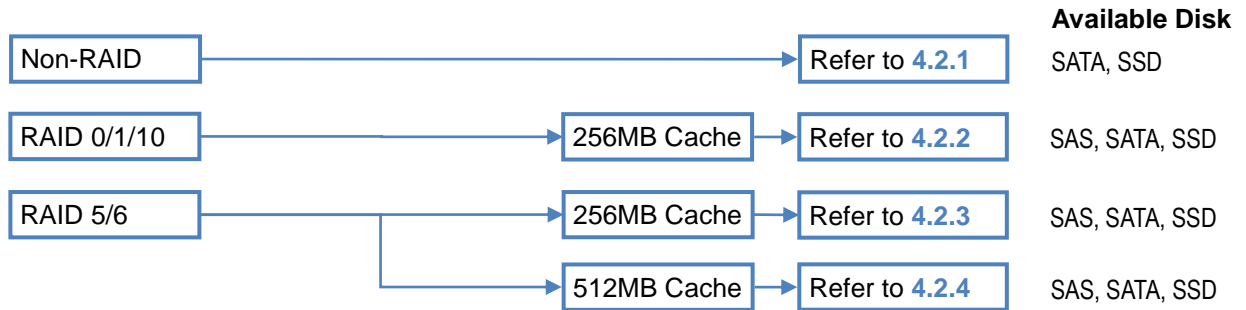
<sup>1</sup> Up to 255 GB of main memory is available to each virtual machine.

## 4 Internal Hard Disk Drives

### 4.1 RAID Configuration

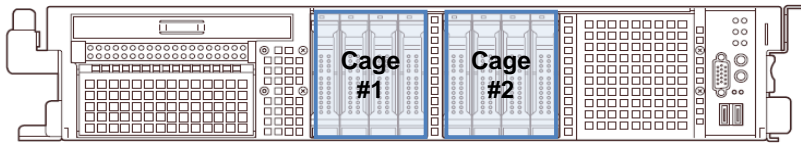
Refer to the section in accordance with your disk form factor and RAID configuration.

#### 4.1.1 Up to eight 2.5-inch Drives

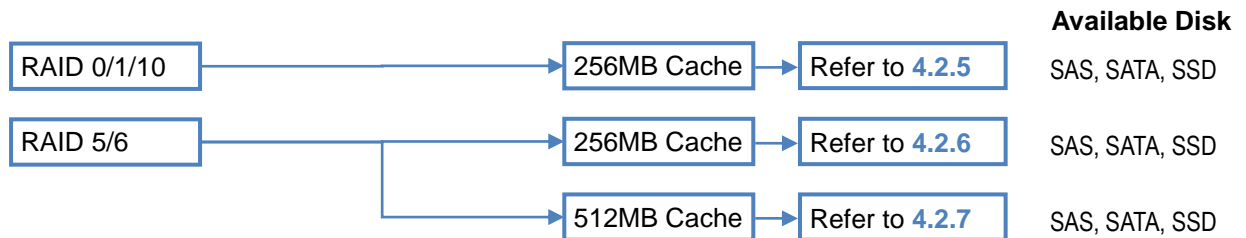


**NOTE:**

- Up to four hard drives can be installed in the on-board SATA configuration.
- Hot plug insertion/removal are not supported in the on-board 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.
- SAS and SATA hard drives must be installed in separate HDD Cages.

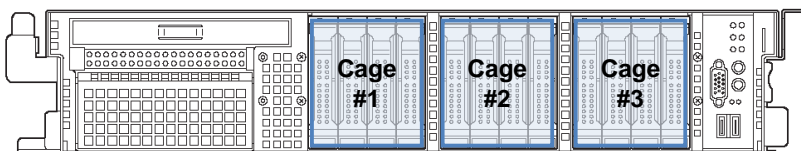


#### 4.1.2 Up to twelve 2.5-inch Drives

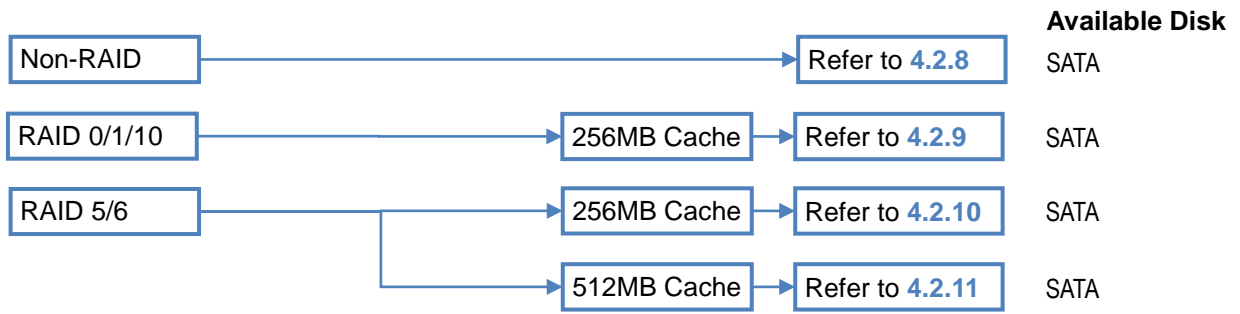


**NOTE:**

- An optional RAID controller occupies one PCI slot.
- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.



### 4.1.3 3.5-inch Drives



**NOTE:**

- Up to four hard drives can be installed in the configuration.
- Hot plug insertion/removal are not supported in the on-board 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.

## 4.2 Internal Drive Configuration

### 4.2.1 2.5-inch Drives with On-board SATA Controller

Category	Product Name / Description		Part Number
Storage Controller	On-board SATA Controller 4 x SATA ports		(Standard)
Cable	Internal SATA Cable 1 x mini-SAS to 1 x mini-SAS		(Standard)
HDD Cage	2.5-inch HDD Cage 8 x 2.5-inch Hot-plug hard drive bays		(Standard)
HDD 4 slots available	SATA	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
		<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
		<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
	SSD	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
		<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- Up to four hard drives can be installed in the configuration.
- Hot plug insertion/removal are not supported in the configuration.

### 4.2.2 Up to eight 2.5-inch Drives with RAID 0/1 Controller with 256 MB Cache

Category	Product Name / Description	Part Number		
<b>Storage Controller Required</b>	<b>RAID Controller (256MB, RAID 0/1)</b> LSI MegaRAID SAS 9264-8i RAID 0/1, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-129		
<b>RAID BBU Recommended</b>	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123		
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)		
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 8 x 2.5-inch hot plug hard drive bays	(Standard)		
<b>HDD</b> <b>8 slots available</b>	<b>SAS</b>	<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-300	
		<b>300GB HDD</b> 1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-301	
		<b>450GB HDD</b> 1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-322	
		<b>600GB HDD</b> 1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-304	
		<b>900GB HDD</b> 1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-332	
		<b>73.2GB HDD</b> 1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-302	
		<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-303	
		<b>300GB HDD</b> 1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-331	
		<b>SATA</b>	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
			<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
			<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
		<b>SSD</b>	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
			<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.

### 4.2.3 Up to eight 2.5-inch Drives with RAID 5/6 Controller with 256 MB Cache

Category	Product Name / Description	Part Number		
<b>Storage Controller Required</b>	<b>RAID Controller (256MB, RAID 0/1/5/6)</b> LSI MegaRAID SAS 9264-8i RAID 0/1/5/6/10/50, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-130		
<b>RAID BBU Recommended</b>	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123		
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)		
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 8 x 2.5-inch hot plug hard drive bays	(Standard)		
<b>HDD</b> <b>8 slots available</b>	<b>SAS</b>	<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-300	
		<b>300GB HDD</b> 1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-301	
		<b>450GB HDD</b> 1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-322	
		<b>600GB HDD</b> 1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-304	
		<b>900GB HDD</b> 1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-332	
		<b>73.2GB HDD</b> 1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-302	
		<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-303	
		<b>300GB HDD</b> 1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-331	
		<b>SATA</b>	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
			<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
			<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
		<b>SSD</b>	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
			<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.

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

Category	Product Name / Description	Part Number
<b>Storage Controller Required</b>	<b>RAID Controller (512MB, RAID0/1/5/6)</b> Promise SuperTrak EX8760T-512 RAID 0/1/5/6/10/50, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-134
<b>RAID BBU Recommended</b>	<b>RAID Battery Backup Unit</b> for Promise SuperTrak EX8760T and EX8768	N8103-140
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 8 x 2.5-inch hot plug hard drive bays	(Standard)
<b>HDD</b> <b>8 slots available</b>	<b>SAS</b>	
	<b>146.5GB HDD</b>	N8150-300
	1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	
	<b>300GB HDD</b>	N8150-301
	1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	
	<b>450GB HDD</b>	N8150-322
	1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	
	<b>600GB HDD</b>	N8150-304
	1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	
	<b>900GB HDD</b>	N8150-332
	1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	
	<b>73.2GB HDD</b>	N8150-302
	1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	
	<b>146.5GB HDD</b>	N8150-303
1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm		
<b>300GB HDD</b>	N8150-331	
1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm		
<b>SATA</b>		
<b>160GB HDD</b>	N8150-276	
1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm		
<b>500GB HDD</b>	N8150-277	
1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm		
<b>1TB HDD</b>	N8150-334	
1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm		
<b>SSD</b>		
<b>50GB SSD</b>	N8150-702	
1 x 50 GB, 2.5-inch, SATA2		
<b>100GB SSD</b>	N8150-707	
1 x 100 GB, 2.5-inch, SATA2		

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.

### 4.2.5 Up to twelve 2.5-inch Drives with RAID 0/1 Controller with 256 MB Cache

Category	Product Name / Description	Part Number		
<b>Storage Controller</b> 2 sets required	<b>RAID Controller (256MB, RAID 0/1)</b> LSI MegaRAID SAS 9264-8i RAID 0/1, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-129		
<b>RAID BBU</b> 2 sets recommended	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123		
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)		
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 6 x 2.5-inch hot plug hard drive bays	(Standard)		
<b>Optional HDD Cage Required</b>	<b>2.5-Inch HDD Cage</b> 4 x 2.5-inch hot plug hard drive bays Including 1 x mini-SAS to 1 x mini-SAS cable	N8154-35F		
<b>HDD</b> 12 slots available	<b>SAS</b>	<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-300	
		<b>300GB HDD</b> 1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-301	
		<b>450GB HDD</b> 1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-322	
		<b>600GB HDD</b> 1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-304	
		<b>900GB HDD</b> 1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-332	
		<b>73.2GB HDD</b> 1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-302	
		<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-303	
		<b>300GB HDD</b> 1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-331	
		<b>SATA</b>	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
			<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
			<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
		<b>SSD</b>	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
			<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.

#### 4.2.6 Up to twelve 2.5-inch Drives with RAID 5/6 Controller with 256 MB Cache

Category	Product Name / Description	Part Number		
<b>Storage Controller</b> 2 sets required	<b>RAID Controller (256MB, RAID 0/1/5/6)</b> LSI MegaRAID SAS 9264-8i RAID 0/1/5/6/10/50, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-130		
<b>RAID BBU</b> 2 sets recommended	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123		
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)		
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 6 x 2.5-inch hot plug hard drive bays	(Standard)		
<b>Optional HDD Cage Required</b>	<b>2.5-Inch HDD Cage</b> 4 x 2.5-inch hot plug hard drive bays Including 1 x mini-SAS to 1 x mini-SAS cable	N8154-35F		
<b>HDD</b> 12 slots available	<b>SAS</b>	<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-300	
		<b>300GB HDD</b> 1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-301	
		<b>450GB HDD</b> 1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-322	
		<b>600GB HDD</b> 1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-304	
		<b>900GB HDD</b> 1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-332	
		<b>73.2GB HDD</b> 1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-302	
		<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-303	
		<b>300GB HDD</b> 1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-331	
		<b>SATA</b>	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
			<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
			<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
		<b>SSD</b>	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
			<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.



#### 4.2.7 Up to twelve 2.5-inch Drives with RAID 5/6 Controller with 512 MB Cache

Category	Product Name / Description	Part Number		
<b>Storage Controller</b> 2 sets required	<b>RAID Controller (512MB, RAID0/1/5/6)</b> Promise SuperTrak EX8760T-512 RAID 0/1/5/6/10/50, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-134		
<b>RAID BBU</b> 2 sets recommended	<b>RAID Battery Backup Unit</b> for Promise SuperTrak EX8760T and EX8768	N8103-140		
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)		
<b>HDD Cage</b>	<b>2.5-inch HDD Cage</b> 6 x 2.5-inch hot plug hard drive bays	(Standard)		
<b>Optional HDD Cage Required</b>	<b>2.5-Inch HDD Cage</b> 4 x 2.5-inch hot plug hard drive bays Including 1 x mini-SAS to 1 x mini-SAS cable	N8154-35F		
<b>HDD</b> 12 slots available	<b>SAS</b>	<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-300	
		<b>300GB HDD</b> 1 x 300 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-301	
		<b>450GB HDD</b> 1 x 450 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-322	
		<b>600GB HDD</b> 1 x 600 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-304	
		<b>900GB HDD</b> 1 x 900 GB, 2.5-inch, SAS 6Gb/s, 10,000 rpm	N8150-332	
		<b>73.2GB HDD</b> 1 x 73.2 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-302	
		<b>146.5GB HDD</b> 1 x 146.5 GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-303	
		<b>300GB HDD</b> 1 x 300GB, 2.5-inch, SAS 6Gb/s, 15,000 rpm	N8150-331	
		<b>SATA</b>	<b>160GB HDD</b> 1 x 160 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-276
			<b>500GB HDD</b> 1 x 500 GB, 2.5-inch, SATA2, 7,200 rpm	N8150-277
			<b>1TB HDD</b> 1 x 1 TB, 2.5-inch, SATA2, 7,200 rpm	N8150-334
		<b>SSD</b>	<b>50GB SSD</b> 1 x 50 GB, 2.5-inch, SATA2	N8150-702
			<b>100GB SSD</b> 1 x 100 GB, 2.5-inch, SATA2	N8150-707

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.
- SAS and SATA hard drives must be installed in separate HDD Cages.

#### 4.2.8 3.5-inch Drives with On-board SATA Controller

Category	Product Name / Description	Part Number
Storage Controller	<b>On-board SATA Controller</b> 4 x SATA ports	(Standard)
Cable	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS	(Standard)
HDD Cage	<b>3.5-inch HDD Cage</b> 6 x 3.5-inch hot plug hard drive bays	(Standard)
HDD 4 slots available	<b>250GB HDD</b> 1 x 250 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-209A
	<b>500GB HDD</b> 1 x 500 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-274
	<b>1TB HDD</b> 1 x 1 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-263
	<b>2TB HDD</b> 1 x 2 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-278

**NOTE:**

- Up to four hard drives can be installed in the configuration.
- Hot plug insertion/removal are not supported in the configuration.

#### 4.2.9 3.5-inch Drives with RAID 0/1 Controller with 256 MB Cache

Category	Product Name / Description	Part Number
Storage Controller Required	<b>RAID Controller (256MB, RAID 0/1)</b> LSI MegaRAID SAS 9264-8i RAID 0/1, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-129
RAID BBU Recommended	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123
Cable	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
HDD Cage	<b>3.5-inch HDD Cage</b> 6 x 3.5-inch hot plug hard drive bays	(Standard)
HDD 6 slots available	<b>250GB HDD</b> 1 x 250 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-209A
	<b>500GB HDD</b> 1 x 500 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-274
	<b>1TB HDD</b> 1 x 1 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-263
	<b>2TB HDD</b> 1 x 2 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-278

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.

#### 4.2.10 3.5-inch Drives with RAID 5/6 Controller with 256 MB Cache

Category	Product Name / Description	Part Number
<b>Storage Controller</b> <i>Required</i>	<b>RAID Controller (256MB, RAID 0/1/5/6)</b> LSI MegaRAID SAS 9264-8i RAID 0/1/5/6/10/50, 256MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-130
<b>RAID BBU</b> <i>Recommended</i>	<b>RAID Battery Backup Unit</b> for LSI MegaRAID SAS 9264	N8103-123
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
<b>HDD Cage</b>	<b>3.5-inch HDD Cage</b> 6 x 3.5-inch hot plug hard drive bays	(Standard)
<b>HDD</b> <i>6 slots available</i>	<b>250GB HDD</b> 1 x 250 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-209A
	<b>500GB HDD</b> 1 x 500 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-274
	<b>1TB HDD</b> 1 x 1 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-263
	<b>2TB HDD</b> 1 x 2 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-278

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.

#### 4.2.11 3.5-inch Drives with RAID 5/6 Controller with 512 MB Cache

Category	Product Name / Description	Part Number
<b>Storage Controller</b> <i>Required</i>	<b>RAID Controller (512MB, RAID0/1/5/6)</b> Promise SuperTrak EX8760T-512 RAID 0/1/5/6/1/50, 512MB, Int. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-134
<b>RAID BBU</b> <i>Recommended</i>	<b>RAID Battery Backup Unit</b> for Promise SuperTrak EX8760T and EX8768	N8103-140
<b>Cable</b>	<b>Internal SAS/SATA Cable</b> 1 x mini-SAS to 1 x mini-SAS, 2 sets	(Standard)
<b>HDD Cage</b>	<b>3.5-inch HDD Cage</b> 6 x 3.5-inch hot plug hard drive bays	(Standard)
<b>HDD</b> <i>6 slots available</i>	<b>250GB HDD</b> 1 x 250 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-209A
	<b>500GB HDD</b> 1 x 500 GB, 3.5-inch, SATA2, 7,200 rpm	N8150-274
	<b>1TB HDD</b> 1 x 1 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-263
	<b>2TB HDD</b> 1 x 2 TB, 3.5-inch, SATA2, 7,200 rpm	N8150-278

**NOTE:**

- All hard drives within a RAID array should be of the same capacity and rotation speed.

## 5 Optical Drive

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

**NOTE:**

- Up to 1 optical drive can be connected.

## 6 Floppy Drive / Flash FDD

Category	Product Name / Description	Part Number
Internal 1 slot available	<b>Drive</b> Internal USB FDD 2 mode	N8151-92
	<b>Cable</b> Internal USB Cable 1 x USB-FDD cable	K410-193(00)
External	<b>Flash FDD</b> USB flash emulating USB floppy disk, Native capacity 1.44 MB	N8160-86

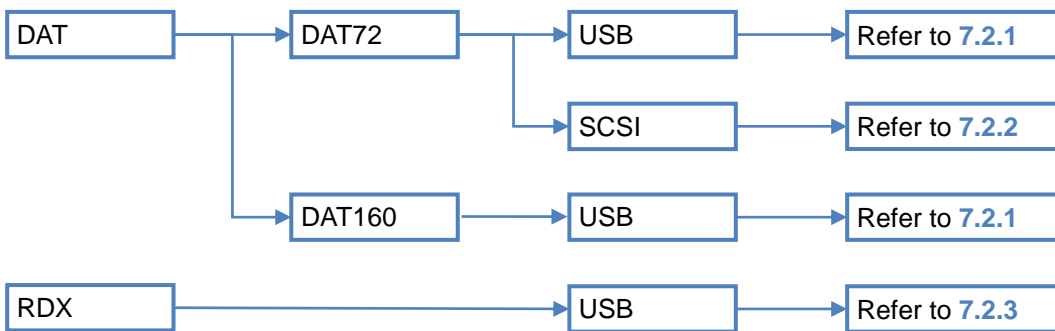
**NOTE:**

- Up to 1 drive can be connected.

## 7 Internal Tape / RDX Drives

### 7.1 Tape / RDX Drive Selection

Refer to the section in accordance with your type of tape drives.



**NOTE:**

- Tape devices cannot be directly connected to VMware systems. For VMware systems, it is recommended to connect and configure an additional backup server via network.

## 7.2 Tape / RDX Configuration

### 7.2.1 DAT / USB

Category	Product Name / Description	Part Number
<b>Controller</b>	<b>Internal USB Controller</b> 1 x USB port	(Standard)
<b>Cable Required</b>	<b>Internal USB cable</b> 1 x Internal USB to 1 x USB device	K410-195(00)
<b>Drive</b> 1 bay available	<b>Internal DAT (USB)</b> DDS3 / DDS4 / DAT72, Native capacity 36 GB <b>NOTE: DDS1 / DDS2 format are not supported</b>	N8151-69
	<b>Internal DAT (USB)</b> DDS4 / DAT72 / DAT160, Native capacity 80 GB <b>NOTE: DDS1 / DDS2 / DDS3 format are not supported</b>	N8151-78

### 7.2.2 DAT / SCSI

Category	Product Name / Description	Part Number
<b>Controller Required</b>	<b>SCSI Controller</b> Adaptec SCSI Card 29320LPE 1-channel U320, 68-pin D-sub / 68-pin VHDC, PCIe x1, LP/FH	N8103-107
<b>Cable Required</b>	<b>Internal SCSI cable</b> 1 x 68-pin HD D-sub to 1 x 68-pin HD D-sub, w/ terminator	K410-147(00)
<b>Drive</b> 1 bay available	<b>Internal DAT (SCSI)</b> DDS3 / DDS4 / DAT72, Native capacity 36 GB <b>NOTE: DDS1 / DDS2 format are not supported</b>	N8151-51A

### 7.2.3 RDX

Category	Product Name / Description	Part Number
<b>Controller</b>	<b>Internal USB Controller</b> 1 x USB port	(Standard)
<b>Cable Required</b>	<b>Internal USB cable</b> 1 x Internal USB to 1 x USB device	K410-195(00)
<b>Drive</b> 1 bay available	<b>Internal RDX (USB)</b>	N8151-86

## 8 PCI Riser Card / PCI Card

### 8.1 PCI Riser Card

Product Name / Description	Part Number
<b>Riser Card</b> 3 x PCIe 2.0 x8, 1 x PCIe 2.0 x4, 1 x PCIe x4	(Standard)
<b>Riser Card (PCI-X)</b> 2 x PCIe 2.0 x8, 1 x PCIe 2.0 x4, 1 x PCIe x4, 1 x 64-bit / 133 MHz PCI-X	N8116-21
<b>Riser Card (PCI)</b> 1 x PCIe 2.0 x8, 1 x PCIe 2.0 x4, 1x PCIe x4, 2 x 64-bit / 33 MHz 5V PCI <b>NOTE:</b> The riser card is make-to-order product. Please consult our sales representative in regard to production lead time. The card is not supported on VMware ESXi systems.	N8116-22

## 8.2 LAN Controller

Category		Product Name / Description	Part Number
GbE	PCIe	<b>1000BASE-T Adapter</b> Intel® PRO/1000 PT Server Adapter PCIe x1, LP / FH, Max. three adapters	N8104-126
		<b>1000BASE-T Adapter (2ch)</b> Intel® PRO/1000 PT Dual Port Server Adapter PCIe x4, FH	N8104-121
		<b>1000BASE-T Adapter (2ch)</b> Intel® PRO/1000 PT Dual Port Server Adapter PCIe x4, LP, Max. two adapters	N8104-122
		<b>1000BASE-T Adapter (4ch)</b> Intel® PRO/1000 PT Quad Port Server Adapter PCIe x4, LP / FH, Max. two adapters	N8104-125A
		<b>NOTE:</b> Network cables with RJ-45 plug covers cannot be used.	
	PCI-X	<b>1000BASE-T Adapter</b> Intel® PRO/1000 MT Server Adapter 64bit / 133 MHz PCI-X, FH	N8104-119
		<b>1000BASE-T Adapter (2ch)</b> Intel® PRO/1000 MT Dual Port Server Adapter 64bit / 133 MHz PCI-X, FH	N8104-120
		<b>1000BASE-SX Adapter</b> Intel® PRO/1000 MF Server Adapter 64bit / 133 MHz PCI-X, FH	N8104-112
10GbE	Ctrlr	<b>10GBASE-SR Adapter</b> Chelsio S310E-SR 10GbE Storage Accelerator PCIe x8, LP / FH, Max. two adapters	N8104-123A
		<b>10GBASE Adapter (SFP+/2ch)</b> Broadcom NetXtreme II BCM957711 10G SFP+ Dual Port Network Interface Card PCIe 2.0 x8, LP / FH <b>NOTE:</b> - N8104-129 SFP+ Module is required to connect with an optical cable. - Up to 2 SFP+ Modules can be installed. - On Windows Server 2003R2 /2008 / 2008R2 and Red Hat Linux 5.x(EM64T) and 6.x(x86_64) operating systems, teaming and bonding features across one or two identical adapters are supported. A team can include up to two ports and up to two teams per system are allowed. - On Red Hat Linux 5.x(x86) and 6.x(x86) operating systems, bonding features within one adapter with up to two ports are supported. One team per system is allowed.	N8104-128
	Module	<b>SFP+ Module (10G-SR)</b> 1 x SFP+ Module for N8104-128	N8104-129
Converged Network		<b>Dual Port 10Gb Converged Network Adapter</b> BROCADE 1020 Dual Port 10Gbps Converged Network Adapter PCIe 2.0 x8, LP / FH, 2 x SFP module, Max. two adapters	N8104-131

**NOTE:**

- Teaming and bonding features across the standard LAN and optional PCIe based GbE LAN controller (excluding N8104-126) are supported on Windows Server 2003R2 /2008 / 2008R2 and Red Hat Linux 5.x and 6.x operating systems.
- When installing a 10GBASE-SR Adapter, no other additional 10GbE LAN controllers is allowed.
- When installing a 1000BASE-SX Adapter, no other additional GbE LAN controllers is allowed.
- Teaming feature is not supported on iSCSI interfaces.

### 8.3 External RAID Controller

Category	Product Name / Description	Part Number
Controller	<b>RAID Controller (512MB, RAID0/1/5/6)</b> Promise SuperTrak EX8768 RAID 0/1/5/6, 512MB, Ext. 8, PCIe 2.0 x8, SAS 6Gb/s, SATA 3Gb/s, LP / FH	N8103-135
RAID BBU	<b>RAID Battery Backup Unit</b> for Promise SuperTrak EX8760T and EX8768	N8103-140

### 8.4 Fibre Channel / SAS / SCSI Controller

Category	Product Name / Description	Part Number
Fibre Channel	<b>Fibre Channel Controller (1ch)</b> Emulex LightPulse LPe1250-F8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8, LP / FH	N8190-153
	<b>Fibre Channel Controller (2ch)</b> Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8, LP / FH	N8190-154
	<b>Fibre Channel Controller (1ch)</b> Emulex LightPulse LPe1150-F4 Host Bus Adapter 4Gb/s, Optical, PCIe x4, LP / FH	N8190-127
	<b>Fibre Channel Controller (2ch)</b> Emulex LightPulse LPe11002-M4 Host Bus Adapter 4Gb/s, Optical, PCIe 2.0 x8, LP / FH	N8190-131
SCSI	<b>SCSI Controller</b> Adaptec SCSI Card 29320LPE 1-channel U320, 68-pin D-sub / 68-pin VHDC, PCIe x1, LP/FH	N8103-107
SAS	<b>SAS Controller</b> LSI SAS3442E-R Host Bus Adapter 3Gb/s SAS, Int. 4 / Ext. 4, SFF-8484 / SFF8470, PCIe x8, LP/FH	N8103-104A
	<b>SAS Controller</b> LSI SAS9212-4i4 Host Bus Adapter 6Gb/s SAS, Int. 4 / Ext. 4, 7-pin SATA / SFF-8088, PCIe 2.0 x8, LP/FH	N8103-142

### 8.5 Serial Port Adapter

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

## 9 Other Add-in Components

### 9.1 Redundant Power Supply

Product Name / Description	Part Number
<b>Power Unit</b> 1 x 750 Watt 80 PLUS® Gold certified Hot plug Power Supply	N8181-77F

## 9.2 Redundant Fan

Product Name / Description	Part Number
<b>Redundant Fan</b> Hot plug redundant cooling fan for R120b-2	N8181-65

## 9.3 VMware ESXi Pre-install Kit

Product Name / Description	Part Number
<b>VMware ESXi 4.1 Base Kit</b> Including USB flash memory, VMware ESXi 4.1 Recovery CD <b>NOTE:</b> The Base Kit may not be available in some regions. Please contact our sales representative to confirm if it is available in your country. The Base Kit must be ordered with the base model. Installation of VMware ESXi onto hard drives is not supported.	N8106-004F

# 10 Add-on Components

## 10.1 17-inch LCD Console Drawer

Category	Product Name / Description	Part Number
<b>Drawer w/ KVM</b>	<b>Drawer 17inch LCD Console Unit (1U/8port)</b> 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height	N8143-69F
	<b>Cable Switch Unit Connection Cable Set (USB, 1.8m)</b> 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)
	<b>Switch Unit Connection Cable Set (USB, 3m)</b> 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)
	<b>Switch Unit Connection Cable Set (USB, 5m)</b> 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)
	<b>Switch Unit Connection Cable Set (PS/2, 1.8m)</b> 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(1A)
	<b>Switch Unit Connection Cable Set (PS/2, 3m)</b> 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(03)
	<b>Switch Unit Connection Cable Set (PS/2, 5m)</b> 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(05)
<b>Drawer w/o KVM</b>	<b>Drawer 17inch LCD Console Unit 1U</b> 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



## 10.2 KVM Switch

Category	Product Name / Description	Part Number
KVM Switch	<b>Server Switch Unit (8 server)</b> 1U USB 8 port KVM switch	N8191-10F
Cable	<b>Switch Unit Connection Cable Set (USB,1.8m)</b> 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)
	<b>Switch Unit Connection Cable Set (USB,3m)</b> 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)
	<b>Switch Unit Connection Cable Set (USB,3m)</b> 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)
	<b>Switch Unit Connection Cable Set (PS/2, 1.8m)</b> 1.8 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(1A)
	<b>Switch Unit Connection Cable Set (PS/2, 3m)</b> 3 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(03)
	<b>Switch Unit Connection Cable Set (PS/2, 5m)</b> 5 m, 1 x 15-pin mini D-sub to 1 x 15-pin mini D-sub / 2 x 6-pin mini DIN	K410-119(05)

## 10.3 Server Management License

The server integrates the EXPRESSSCOPE Engine 2 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
<b>Remote KVM and Media License Kit</b> License for one server. Remote KVM and remote media are enabled regardless of OS status. Remote KVM: <ul style="list-style-type: none"> <li>- Displays a graphics console on the web browser of the remote terminal (PC/server).</li> <li>- Controls keyboard and mouse via the remote terminals' web browser</li> </ul> Remote media: Enables the user to use the CD / DVD / FD / Flash memory of the remote terminals (PC/server) as if accessing the local drives.  <b>NOTE:</b> Remote KVM and remote media features are not available for virtual machines.	N8115-03

## 10.4 Front Bezel

Product Name / Description	Part Number
<b>Front Bezel</b> Front bezel for R120b-2	N8146-17F

## 10.5 Cable Management Arm

Product Name / Description	Part Number
<b>Cable Management Arm</b> For R120b-2 / R120b-1	N8143-70

## 10.6 Medium and Cartridge

Category	Product Name	Drive supported	Part Number
RDX	RDX Cartridge (160GB)	N8151-86	N8152-20
	RDX Cartridge (320GB)	N8151-86	N8152-26
	RDX Cartridge (500GB)	N8151-86	N8152-27
	RDX Cartridge (640GB)	N8151-86	N8152-30
	RDX Cartridge (1TB)	N8151-86	N8152-33

## 11 Support Service

### 11.1 Software

Product Name / Description	Part Number
<b>PP Support Pack (VMware ESXi 4.1 for 1 processor)(1year)</b> Technical Support Service regarding ESXi (for quick solutions to technical issues) <b>NOTE:</b> It is necessary to purchase a PP support pack for each processor installed in the system.	ULH1S-SV40-008F

# References

## Server Management

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

<sup>1</sup> The feature is not supported on VMware ESXi systems.

<sup>2</sup> 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	WS 2003	RHEL 6	RHEL 6 x64	RHEL 5	RHEL 5 x64	RHEL 4	RHEL 4 x64	SLES 10	SLES 10 x64	ESXI 4.1
N8103-129	RAID Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-130	RAID Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8103-134	RAID Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	✓
N8103-135	RAID Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓
N8103-107	SCSI Controller	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	-	-
N8103-104A	SAS Controller, 3 Gb/s	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	-
N8103-142	SAS Controller, 6 Gb/s	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	-	-	-	-
N8190-153	Fibre Channel Controller	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	-	-	-	✓
N8190-154	Fibre Channel Controller (2ch)	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	-	-	-	✓
N8190-127	Fibre Channel Controller	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
N8190-131	Fibre Channel Controller (2ch)	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓
N8104-126	1000BASE-T Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-121	1000BASE-T Adapter (2ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-122	1000BASE-T Adapter (2ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N8104-125A	1000BASE-T Adapter (4ch)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓
N8104-123A	10GBASE-SR Adapter	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-	-
N8104-128	10GBASE Adapter (SFP+/2ch)	✓	✓	✓	-	-	-	✓	✓	✓	✓	-	-	-	-	✓
N8104-119	1000BASE-T Adapter	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓
N8104-120	1000BASE-T Adapter (2ch)	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓
N8104-112	1000BASE-SX Adapter	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-
N8104-131	Dual Port 10Gb Converged Network Adapter	✓	✓	✓	-	-	-	-	-	✓	✓	-	-	-	-	-

## Supporting PCI Cards and Installable Slots

### Standard Riser Card

Part Number	Product Name	Slots						Remarks
		Slot # :	#0A	#2B	#3B	#1C	#2C	
	PCI Slot:	x4	x8	x8	x8	x4	x4	
	Card height:	-	FH	FH	LP	LP	LP	
	Slot type:	x8	x16	x8	x8	x8	x8	
	Installable card length (mm) :	-	312	312	167	167	167	
<b>N8103-129</b>	RAID Controller (256MB, RAID 0/1) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-130</b>	RAID Controller (256MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-134</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-135</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	✓	✓	✓	-	Max. 2
<b>N8103-107</b>	SCSI Controller [PCIe x1]	-	✓	✓	✓	✓	✓	Max. 3
<b>N8103-104A</b>	SAS Controller [PCIe x8]	-	✓	✓	✓	✓	-	Max. 3
<b>N8103-142</b>	SAS Controller [PCIe 2.0 x8]	-	✓	✓	✓	✓	-	Max. 3
<b>N8190-127</b>	Fibre Channel Controller [PCIe x4]	-	✓	✓	✓	✓	✓	
<b>N8190-131</b>	Fibre Channel Controller (2ch) [PCIe x4]	-	✓	✓	✓	✓	✓	
<b>N8190-153</b>	Fibre Channel Controller [PCIe 2.0 x8]	-	✓	✓	✓	✓	✓	
<b>N8190-154</b>	Fibre Channel Controller (2ch) [PCIe 2.0 x8]	-	✓	✓	✓	-	-	
<b>N8104-126</b>	1000BASE-T adapter [PCIe x1]	-	✓	✓	✓	✓	✓	Max. 3
<b>N8104-121</b>	1000BASE-T Adapter (2ch) [PCIe x4]	-	✓	✓	-	-	-	
<b>N8104-122</b>	1000BASE-T Adapter (2ch) [PCIe x4]	-	-	-	✓	✓	✓	Max. 2
<b>N8104-125A</b>	1000BASE-T Adapter (4ch) [PCIe x4]	-	✓	✓	✓	✓	-	Max. 2
<b>N8104-123A</b>	10GBASE-SR Adapter [PCIe x8]	-	✓	✓	✓	✓	-	Max. 2
<b>N8104-128</b>	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	✓	✓	✓	-	-	Max. 2
<b>N8104-131</b>	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	✓	✓	✓	-	-	Max. 2
<b>N8117-01A</b>	Serial Port Adapter	-	-	-	✓	✓	✓	Max. 1

### N8116-21 Riser Card (PCI-X)

Part Number	Product Name	Slots						Remarks
		#0A	#2B	#3B	#1C	#2C	#3C	
	Slot # :	#0A	#2B	#3B	#1C	#2C	#3C	
	PCI Slot:	x4	x8	64-bit	x8	x4	x4	
	Card height:	-	FH	FH	LP	LP	LP	
	Slot type:	x8	x16	3.3 V	x8	x8	x8	
	Installable card length (mm) :	-	312	312	167	167	167	
<b>N8103-129</b>	RAID Controller (256MB, RAID 0/1) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-130</b>	RAID Controller (256MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-134</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	✓	-	-	-	-	
<b>N8103-135</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	✓	-	✓	✓	-	Max. 2
<b>N8103-107</b>	SCSI Controller [PCIe x1]	-	✓	-	✓	✓	✓	Max. 3
<b>N8103-104A</b>	SAS Controller [PCIe x8]	-	✓	-	✓	✓	-	
<b>N8103-142</b>	SAS Controller [PCIe 2.0 x8]	-	✓	-	✓	✓	-	
<b>N8190-127</b>	Fibre Channel Controller [PCIe x4]	-	✓	-	✓	✓	✓	
<b>N8190-131</b>	Fibre Channel Controller (2ch) [PCIe x4]	-	✓	-	✓	✓	✓	
<b>N8190-153</b>	Fibre Channel Controller [PCIe2.0 x8]	-	✓	-	✓	✓	✓	
<b>N8190-154</b>	Fibre Channel Controller(2ch) [PCIe2.0 x8]	-	✓	-	✓	-	-	
<b>N8104-119</b>	100BASE-T Adapter [64-bit / 133 MHz PCI-X]	-	-	✓	-	-	-	
<b>N8104-120</b>	100BASE-T Adapter(2ch) [64-bit / 133 MHz PCI-X]	-	-	✓	-	-	-	
<b>N8104-126</b>	1000BASE-T Adapter [PCIe x1]	-	✓	-	✓	✓	✓	Max. 3
<b>N8104-121</b>	1000BASE-T Adapter(2ch) [PCIe x4]	-	✓	-	-	-	-	
<b>N8104-122</b>	1000BASE-T Adapter(2ch) [PCIe x4]	-	-	-	✓	✓	✓	Max. 2
<b>N8104-125A</b>	1000BASE-T Adapter(4ch) [PCIe x4]	-	✓	-	✓	✓	-	Max. 2
<b>N8104-112</b>	1000BASE-SX adapter [64-bit / 133 MHz PCI-X]	-	-	✓	-	-	-	
<b>N8104-123A</b>	10GBASE-SR adapter [PCIe x8]	-	✓	-	✓	✓	-	Max. 2
<b>N8104-128</b>	10GBASE adapter (SFP+/2ch) [PCIe2.0 x8]	-	✓	-	✓	-	-	
<b>N8104-131</b>	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	✓	-	✓	-	-	
<b>N8117-01A</b>	Serial Port Adapter	-	-	-	✓	✓	✓	Max. 1

### N8116-22 Riser Card (PCI)

Part Number	Product Name	Slots						Remarks
		#0A	#2B	#3B	#1C	#2C	#3C	
	Slot # :	#0A	#2B	#3B	#1C	#2C	#3C	
	PCI Slot:	x4	64-bit	64-bit	x8	x4	x4	
	Card height:	-	FH	FH	LP	LP	LP	
	Slot type:	x8	5 V	5 V	x8	x8	x8	
	Installable card length (mm) :	-	312	312	167	167	167	
<b>N8103-129</b>	RAID Controller (256MB, RAID 0/1) [PCIe 2.0 x8]	✓	-	-	✓	-	-	
<b>N8103-130</b>	RAID Controller (256MB, RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	✓	-	-	
<b>N8103-134</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	✓	-	-	✓	-	-	
<b>N8103-135</b>	RAID Controller (512MB,RAID 0/1/5/6) [PCIe 2.0 x8]	-	-	-	✓	✓	-	
<b>N8103-107</b>	SCSI Controller [PCIe x1]	-	-	-	✓	✓	✓	Max. 3
<b>N8103-104A</b>	SAS Controller [PCIe x8]	-	-	-	✓	✓	-	
<b>N8103-142</b>	SAS Controller [PCIe 2.0 x8]	-	-	-	✓	✓	-	
<b>N8190-127</b>	Fibre Channel Controller [PCIe x4]	-	-	-	✓	✓	✓	
<b>N8190-131</b>	Fibre Channel Controller (2ch) [PCIe x4]	-	-	-	✓	✓	✓	
<b>N8190-153</b>	Fibre Channel Controller [PCIe 2.0 x8]	-	-	-	✓	✓	✓	
<b>N8190-154</b>	Fibre Channel Controller(2ch) [PCIe 2.0 x8]	-	-	-	✓	-	-	
<b>N8104-119</b>	100BASE-T Adapter [64-bit / 133 MHz PCI-X]	-	✓	✓	-	-	-	
<b>N8104-120</b>	100BASE-T Adapter(2ch) [64-bit / 133 MHz PCI-X]	-	✓	✓	-	-	-	
<b>N8104-126</b>	1000BASE-T Adapter [PCIe x1]	-	-	-	✓	✓	✓	
<b>N8104-122</b>	1000BASE-T Adapter(2ch) [PCIe x4]	-	-	-	✓	✓	✓	Max. 2
<b>N8104-125A</b>	1000BASE-T Adapter(4ch) [PCIe x4]	-	-	-	✓	✓	-	
<b>N8104-112</b>	1000BASE-SX adapter [64-bit / 133 MHz PCI-X]	-	✓	✓	-	-	-	
<b>N8104-123A</b>	10GBASE-SR adapter [PCIe x8]	-	-	-	✓	✓	-	
<b>N8104-128</b>	10GBASE adapter (SFP+/2ch) [PCIe 2.0 x8]	-	-	-	✓	-	-	
<b>N8104-131</b>	Dual Port 10Gb Converged Network Adapter [PCIe 2.0 x8]	-	-	-	✓	-	-	
<b>N8117-01A</b>	Serial Port Adapter	-	-	-	✓	✓	✓	Max. 1

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



## Revision History

Revision	Date	Description
5.2	September 15, 2011	<p><b>Others:</b> Correct incorrect part numbers for 50 GB SSD, PS/2 Switch Unit Connection Cable Set. Correct incorrect information in Specification, 10.1 17-inch LCD Console Drawer, OS Support Matrix for PCI Cards, and Supporting PCI Cards and Installable Slots.</p>
5.1	August 24, 2011	<p><b>Others:</b> Add section for Medium and Cartridge</p>
5.0	July 29, 2011	<p><b>New products added:</b> 300GB 15K 2.5-inch SAS HDD / N8150-331 900GB 10K 2.5-inch SAS HDD / N8150-332</p> <p><b>Discontinued products removed:</b> SCSI Controller / N8103-75 100BASE-TX Adapter / N8104-111</p>
4.0	June 6, 2011	<p><b>New product added:</b> Internal DVD Super Multi Drive / N8151-104F</p>
3.0	April 8, 2011	<p><b>New products added:</b> 1TB 7.2K 2.5-inch SATA HDD / N8150-334</p>
2.0	February 16, 2011	<p><b>Others:</b> 50GB SSD been re-added</p>
1.0	February 14, 2011	Initial release