

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 E5-2620 | Intel® Xeon® processor E5-2630L | Intel® Xeon® processor E5-2640 | |
| | Clock speed | 2.40GHz | 2GHz | 2GHz | 2.50GHz | |
| | Number of Processors | 1 or 2 | | | | |
| | Cache | 10 MB | 15 MB | | | |
| | Cores and Threads | 4C-8T | 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: 9.6 TB (8 x 1.2 TB) SATA HDD: 8 TB (8 x 1 TB) SAS SSD: 3.2 TB (8 x 400 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 | 1 | | | | |
| | Disk Drive Bays | 6 or 8 with optional drive cage | | | | |
| | Expansion Slots | Standard | Total: 4 slots available | | | |
| | | | 1 PCIe 3.0 x16 (x16 connector) | | | |
| 1 PCIe 3.0 x8 (x16 connector) | | | | | | |
| 1 PCIe 3.0 x8 (x8 connector) dedicated RAID slot | | | | | | |
| 1 PCIe 3.0 x8 (x8 connector) flexible integrated NIC slot | | | | | | |
| Video | Controller (VRAM) | Integrated in Server Management Controller (32MB) | | | | |
| | Resolution / Color | 1280 x 1024 / 16.7M ¹ | | | | |
| 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) | | | | |

| Model | | R120d-1M | | | |
|--|--------------------------|---|----------------------|----------------------|----------------------|
| 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 | 268 VA / 266 Watt | 269 VA / 267 Watt |
| | (Max. Config, Operating) | 365 VA / 364 Watt | 416 VA / 396 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 | 48.0 dB |
| | Max. Config, Operating | 53.7 dB | 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 Microsoft® Windows Server® 2012 Standard ³ Microsoft® Windows Server® 2012 Datacenter ³ 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 ESX 4.1 Update 2 VMware ESXi 5.0 Update 1 VMware ESXi 5.1 | | | |

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

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

³ For Windows Server 2012 installation, download the driver kit from the following website and install it after OS installation
<http://www.nec.com/en/global/prod/express/download/>

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>

(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: 9.6 TB (8 x 1.2 TB) SATA HDD: 8 TB (8 x 1 TB) SAS SSD: 3.2 TB (8 x 400 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 | 1 | | | |
| | Disk Drive Bays | 6 or 8 with optional drive cage | | | |
| Expansion Slots | Standard | Total: 4 slots available 1 PCIe 3.0 x16 (x16 connector) 1 PCIe 3.0 x8 (x16 connector) 1 PCIe 3.0 x8 (x8 connector) dedicated RAID slot 1 PCIe 3.0 x8 (x8 connector) flexible integrated NIC slot | | | |
| | Video | Controller (VRAM) | Integrated in Server Management Controller (32MB) | | |
| | | Resolution / Color | 1280 x 1024 / 16.7M ¹ | | |
| | 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 100BASE-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) | 267 VA / | 266 VA / | 266 VA / | |
| | | 265 Watt | 265 Watt | 265 Watt | |
| | (Max. Config, Operating) | 445 VA / | 579 VA / | 645 VA / | |
| | | 444 Watt | 578 Watt | 645 Watt | |

| Model | R120d-1M |
|--|---|
| 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, Enterprise 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 Microsoft® Windows Server® 2012 Standard ⁴ Microsoft® Windows Server® 2012 Datacenter ⁴ Red Hat Enterprise Linux 5.7 or later (x86) ⁵ Red Hat Enterprise Linux 5.7 or later (EM64T) ⁵ Red Hat Enterprise Linux 6.1 or later (x86) ⁵ Red Hat Enterprise Linux 6.1 or later (x86_64) ⁵ VMware ESX 4.1 Update 2 VMware ESXi 5.0 Update 1 VMware ESXi 5.1 |

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

² Noise emission was measured at the bystander positions 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.

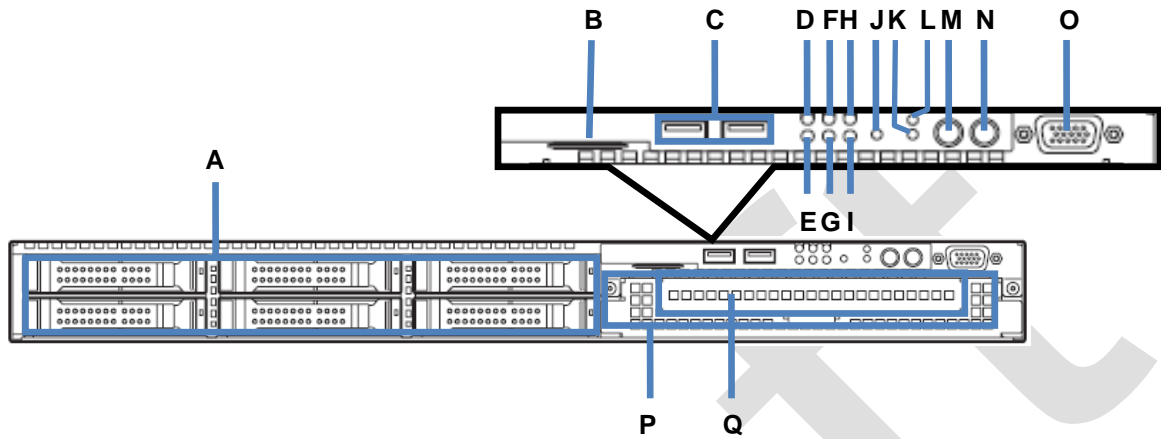
⁴ For Windows Server 2012 installation, download the driver kit from the following website and install it after OS installation
<http://www.nec.com/en/global/prod/express/download/>

⁵ 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

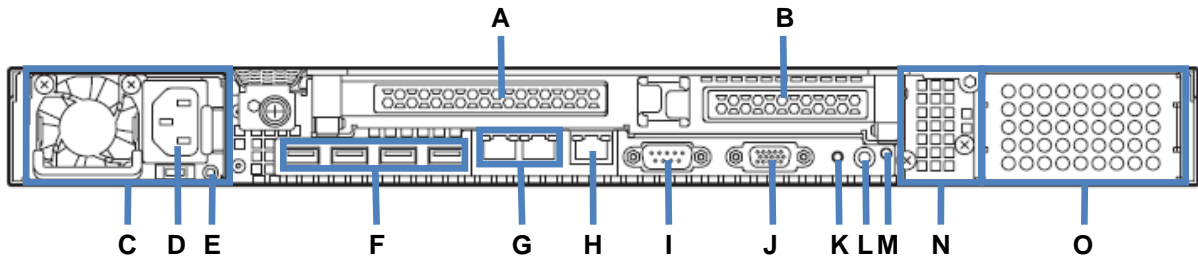
Front and Rear Views

Front View



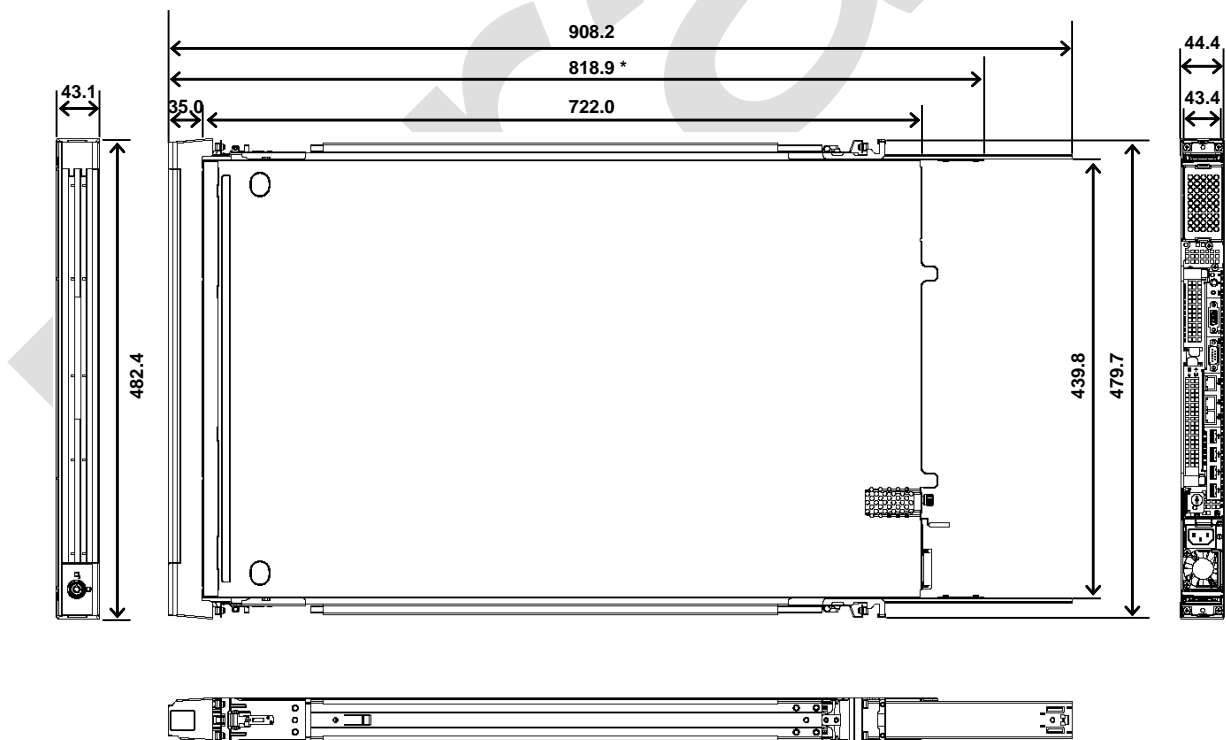
| Legend | | | |
|--------|-------------------------|----|--|
| A. | Drive Bays | J. | BMC RESET Switch |
| B. | Pull-out tab | K. | DUMP Switch |
| C. | USB Connectors | L. | RESET Switch |
| D. | Data LAN 1 Activity LED | M. | UID LED Button/LED |
| E. | Data LAN 2 Activity LED | N. | POWER Button/LED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

Rear View



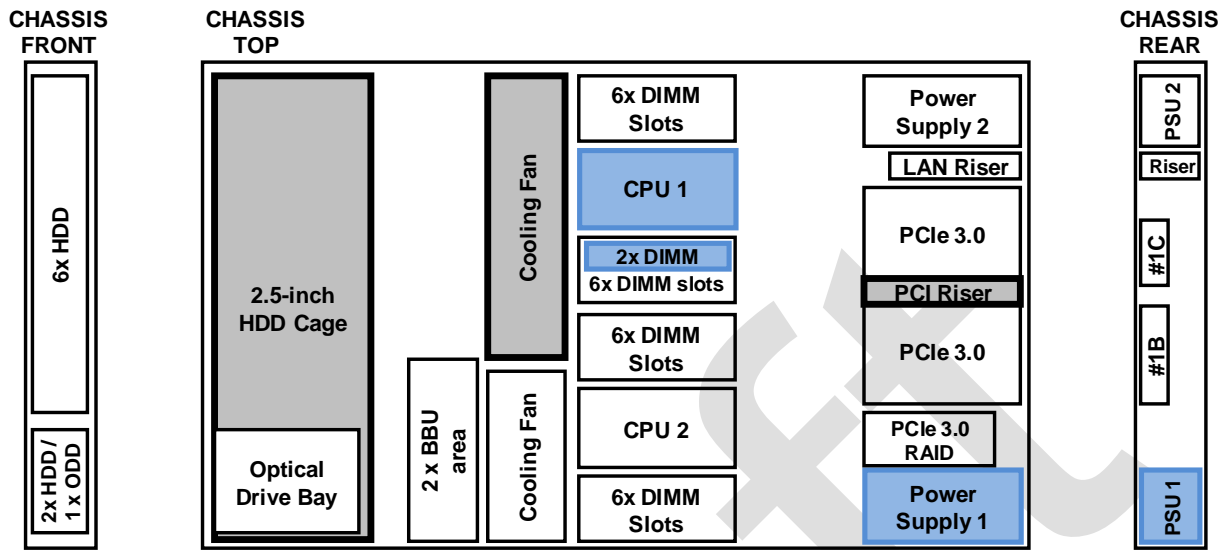
| Legend | |
|--------|----------------------------------|
| A. | PCI Slot (Full Height) |
| B. | PCI Slot (Low Profile) |
| C. | Power Supply |
| D. | AC Inlet |
| E. | AC Power LED |
| F. | USB Connectors |
| G. | Data LAN Connectors |
| H. | Management LAN Connector |
| I. | Serial Port Connector |
| 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)



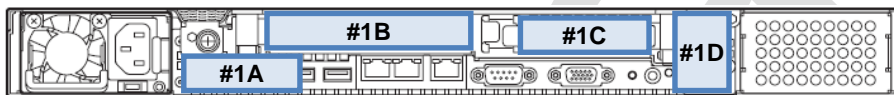
* Without back side parts of slide rails (in that case, cable arm cannot be attached)

Configuration Diagram



Legend: ■ Minimum required components ■ Standard Components

Expansion Slots



| Legend | |
|--------|--|
| #1A | PCIe 3.0 x8, x8 connector, for a dedicated RAID controller |
| #1B | PCIe 3.0 x16, x16 connector, Full-height, up to 220 mm length |
| #1C | PCIe 3.0 x8, x16 connector, Low-profile, up to 220 mm length |
| #1D | PCIe 3.0 x8, x8 connector, for a flexible integrated NIC (LAN Riser) |

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 E5-2620 Processor Kit Intel® Xeon® Processor E5-2620 (2 GHz, 6C/12T, 15 MB) | N8101-616F |
| | 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 | (Standard) |
| 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) NOTE: - Up to four sets (eight slots) per processor can be installed - This DIMM doesn't support x4 SDDC. | N8102-435F |
| Registered DIMM (RDIMM) | 4GB DDR3-1600 REG Memory Kit 2x 2GB Registered ECC DIMM, DDR3L-1600(PC3L-12800) NOTE: - This DIMM doesn't support x4 SDDC. | N8102-468F |
| | 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.
- 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 | # of DIMMs per processor | Memory Power Setting | DIMM Speed |
|----------------|-----------------------|--------------------------|----------------------|------------|
| E5-2609 | - | - | - | 1066 MHz |
| E5-2620 | UDIMM (4GB) | - | Low (1.35V) | 1066 MHz |
| E5-2630L | | | Normal (1.5V) | 1333 MHz |
| E5-2640 | RDIMM (2, 4, 8, 16GB) | Up to 8 DIMMs | - | 1333 MHz |
| | | 10 or more DIMMs | - | 1066 MHz |
| | LRDIMM (32GB) | Up to 8 DIMMs | Low (1.35V) | 1066 MHz |
| | | | Normal (1.5V) | 1333 MHz |
| | | 10 or more DIMMs | - | 1066 MHz |
| E5-2650L | UDIMM (4GB) | - | Low (1.35V) | 1066 MHz |
| E5-2670 | | | Normal (1.5V) | 1333 MHz |
| E5-2690 | RDIMM (2, 4, 8, 16GB) | Up to 8 DIMMs | Low (1.35V) | 1333 MHz |
| | | | Normal (1.5V) | 1600 MHz |
| | | 10 or more DIMMs | - | 1066 MHz |
| | LRDIMM (32GB) | Up to 8 DIMMs | Low (1.35V) | 1066 MHz |
| | | | Normal (1.5V) | 1333 MHz |
| | | 10 or more DIMMs | - | 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 Operating Systems | | 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-DEP disabled) |
| 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 | 384 GB |
| Microsoft Windows Server 2008 Enterprise (x64) | 2 TB | 384 GB |
| Microsoft Windows Server 2008 R2 Enterprise (x64) | | |
| Microsoft Windows Server 2012 Standard (x64) | 4 TB | 384 GB |
| Microsoft Windows Server 2012 Datacenter (x64) | | |
| Red Hat Enterprise Linux 5 | 16 GB | 16 GB |
| Red Hat Enterprise Linux 6 | | |
| Red Hat Enterprise Linux 5 (EM64T) | 1 TB | 384 GB |
| Red Hat Enterprise Linux 6 (x86_64) | 2 TB | 384 GB |
| VMware ESX 4.1 ¹ | 256 GB or 1 TB | 256 GB or 384 GB |
| VMware ESXi 5.0 / 5.1 ² | 2 TB | 384 GB |

¹ Up to 255 GB of main memory is available to each virtual machine.

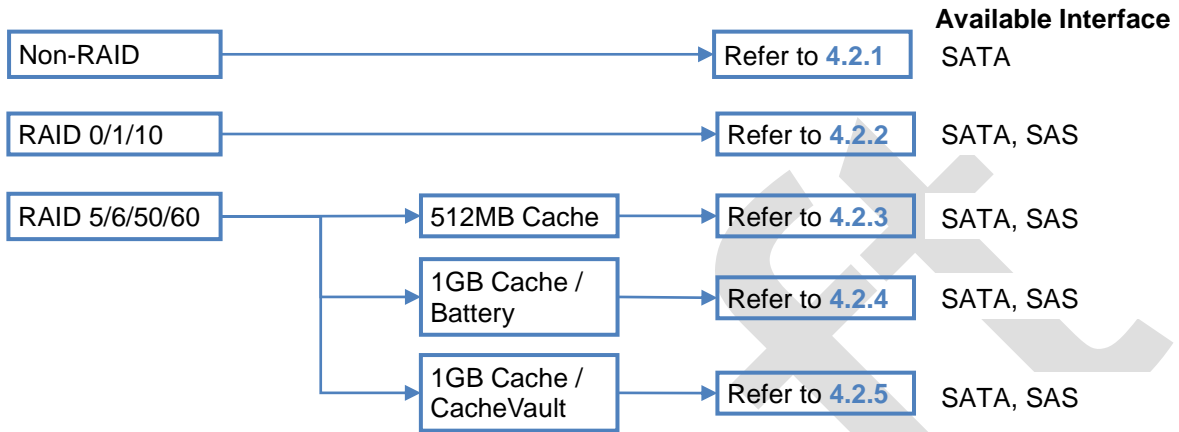
² Up to 1 TB of main memory is available to each virtual machine.

4 Internal Hard Disk Drives

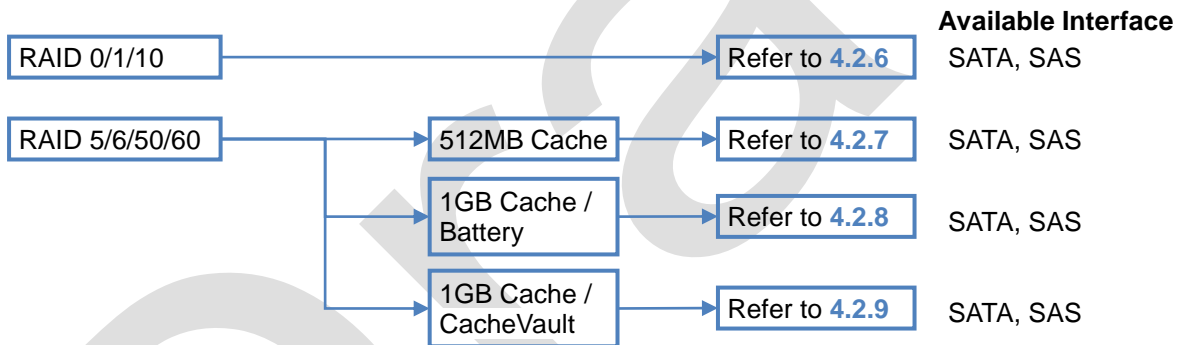
4.1 RAID Configuration

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.
- All drives within a RAID array should be of the same type, 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.
- For optional RAID controller driver to install Windows Server 2003 R2, download from the NEC website at:
<http://www.nec.com/en/global/prod/express/download/index.html>

4.2 Internal Drive Configuration

4.2.1 Up to four Drives with embedded SATA non-RAID 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 |

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 Gbps.

4.2.2 Up to six 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | 300GB 15K Hot Plug 2.5-inch SAS 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 | 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 |
| | | 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- For SAS and SATA hard drive mix configuration, they must be installed in separate drive groups with multiple of two drives.

4.2.3 Up to six 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | | 300GB 15K Hot Plug 2.5-inch SAS 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 |
| | | 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 | 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 |
| | | 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.

4.2.4 Up to six Drives with RAID 5/6 Controller with 1 GB Cache/Battery

| 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | 300GB 15K Hot Plug 2.5-inch SAS 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 | |
| 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 | |
| 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 | |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.

4.2.5 Up to six Drives with RAID 5/6 Controller with 1 GB Cache/CacheVault

| Category | Product Name / Description | Part Number |
|--|--|--------------|
| Storage Controller Required | RAID Controller (1GB, RAID 0/1/5/6) LSI MegaRAID SAS 9265CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Int. 8ports, PCIe 3.0(x8), 6Gb/s, flash cache protection modules included | N8103-152 |
| SSD Caching Recommended | MegaRAID CacheCade for LSI MegaRAID SAS NOTE: - SSD used for cache is required. - The SSD capacity which can be used as Read Cache is up to 512 GB. | N8103-156 |
| Cable | Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets | K410-271(00) |
| 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 |
| | 1.2TB HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | 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 | | |
| 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 | |
| 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 | |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.
- For VMware ESXi 5.x installation, to download the CIM provider is required.
- For VMware ESXi 5.x systems, monitoring the status of a RAID array with NEC ESMPRO is not supported.

4.2.6 Up to eight 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | 300GB 15K Hot Plug 2.5-inch SAS 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 | |
| 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 | |
| 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 | |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.

4.2.7 Up to eight 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | 300GB 15K Hot Plug 2.5-inch SAS 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 | |
| | 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 |
| 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 | |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.

4.2.8 Up to eight Drives with RAID 5/6 Controller with 1 GB Cache/Battery

| 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 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | | 300GB 15K Hot Plug 2.5-inch SAS 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 | 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 |
| | | 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.

4.2.9 Up to eight Drives with RAID 5/6 Controller with 1 GB Cache/CacheVault

| Category | Product Name / Description | Part Number |
|--|--|--------------|
| Storage Controller Required | RAID Controller (1GB, RAID 0/1/5/6) LSI MegaRAID SAS 9265CV-8i (with CV) RAID0/1/5/6/10/50/60, 1GB Cache, Int. 8ports, PCIe 3.0(x8), 6Gb/s, flash cache protection modules included | N8103-152 |
| SSD Caching Recommended | MegaRAID CacheCade for LSI MegaRAID SAS NOTE: - SSD used for cache is required. - The SSD capacity which can be used as Read Cache is up to 512 GB. | N8103-156 |
| Cable | Internal SAS/SATA Cable 1 x mini-SAS to 1 x mini-SAS, 2 sets | K410-271(00) |
| Drive Cage | 2.5-inch Drive Cage 6 x 2.5-inch hot plug hard drive bays | (Standard) |
| Optional Drive Cage Required | 2.5-inch Drive Cage 2 x 2.5-inch hot plug hard drive bays | N8154-41 |
| Drive 8 slots available | SAS HDD | |
| | 300GB 10K Hot Plug 2.5-inch SAS HDD 1 x 300 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-301 |
| | 450GB 10K Hot Plug 2.5-inch SAS HDD 1 x 450 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-322 |
| | 600GB 10K Hot Plug 2.5-inch SAS HDD 1 x 600 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-304 |
| | 900GB 10K Hot Plug 2.5-inch SAS HDD 1x 900 GB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-332 |
| | 1.2TB 10K Hot Plug 2.5-inch SAS HDD 1x 1.2TB SAS HDD, 2.5-inch, 6Gb/s, 10,000 rpm | N8150-408 |
| | 73.2GB 15K Hot Plug 2.5-inch SAS HDD 1x 73.2 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-302 |
| | 146.5GB 15K Hot Plug 2.5-inch SAS HDD 1x 146.5 GB SAS HDD, 2.5-inch, 6Gb/s, 15,000 rpm | N8150-303 |
| | 300GB 15K Hot Plug 2.5-inch SAS 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 | | |
| 200GB Hot Plug 2.5-inch SAS SSD 1x 200 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-711 | |
| 400GB Hot Plug 2.5-inch SAS SSD 1x 400 GB SAS SSD, eMLC, 2.5-inch, 6Gb/s | N8150-712 | |

NOTE:

- All drives within a RAID array should be of the same type, capacity and rotation speed.
- Up to two kinds of drives can be mixed in one system
- 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.
- For VMware ESXi 5.x installation, to download the CIM provider is required.
- For VMware ESXi 5.x systems, monitoring the status of a RAID array with NEC ESMPRO is not supported.

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 | N8151-107F |
| External | External DVD-ROM drive DVD-ROM drive, Bus powered, 1.2 A required | N8160-91 |

NOTE:

- Up to 1 optical drive can be connected.
- N8154-41 2.5-inch Drive Cage cannot be installed when an internal optical drive is installed.

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6 PCI Card

Please refer to

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Supported PCI Cards and Installable Slots with regard to the position of PCI slot which can mount PCI card supported.

6.1 Network Interface Controller

| Category | | Product Name / Description | Part Number |
|-------------|-------|---|-------------|
| Riser | 1GbE | 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 | 1GbE | 1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1 | N8104-138 |
| | | Dual Port 1000BASE-T Adapter Broadcom ® BCM5718 Gigabit Ethernet Controller PCIe 2.0 x1 | N8104-132 |
| | | Dual Port 1000BASE-T Adapter Intel® 82580 Gigabit Ethernet Controller PCIe 2.0 x4 | N8104-145 |
| | | Quad Port 1000BASE-T Adapter Broadcom ® BCM5719 Gigabit Ethernet Controller PCIe 2.0 x4 NOTE: - Network cables with RJ-45 plug covers cannot be used. - Jumbo frame is supported.on Windows Server 2008 R2 and Redhat Enterprise Linux operating systems.. | N8104-133 |
| | 10GbE | 10GBASE Adapter (SFP+/2ch) Broadcom NetXtreme II BCM957711 10G SFP+ Dual Port Network Interface Card PCIe 2.0 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. | N8104-128 |
| | | Dual Port 10Gb Converged Network Adapter BROCADE 1020 Dual Port 10Gbps Converged Network Adapter PCIe 2.0 x8, 2 x SFP modules, Max. one adapter NOTE: - 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 |

NIC Teaming feature – NIC Teaming and bonding features

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

Windows Server 2003 R2 and Windows Server 2008 support BASP (Broadcom Advanced Server Program) teaming while Windows Server 2012 and Linux support teaming with bonding function supported by OS.

| Network Interface | Team | Operating Systems |
|---|--|--|
| 1GbE LAN controller Embedded 1GbE NIC and N8104-135/-138/-132/-133 | Up to four teams per one system Up to four ports per one team | Windows Server 2003 R2 Windows Server 2008 Windows Server 2008 R2 Windows Server 2012 Red Hat Enterprise Linux |
| 10GbE LAN controller N8104-128/137 | Up to two teams per one system Up to two ports per one team | Windows Server 2008 Windows Server 2008 R2 Windows Server 2012 Red Hat Enterprise Linux |

NOTE:

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

Using iSCSI

See the table below for supported network interfaces and operating system combinations.

| Category | Network Interface | Operating Systems |
|--------------|-------------------|--|
| 1GbE | Embedded 1GbE NIC | Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware |
| | N8104-138 | Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware |
| | N8104-132 | Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware |
| | N8104-133 | Windows Server 2008 R2, Windows Server 2012, Red Hat Linux, VMware |
| 10GbE | N8104-128 | Windows Server 2008, Windows Server 2008 R2, Red Hat Linux, VMware |

NOTE:

- NIC Teaming feature is not supported on iSCSI interfaces.

6.2 External Storage Controller

6.2.1 RAID Controller

| Category | Product Name / Description | Part Number |
|-------------------|---|-------------|
| Controller | RAID Controller (1GB, 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 | 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 | N8190-153 |
| | Fibre Channel Controller (2ch) Emulex LightPulse LPe12002-M8 Host Bus Adapter 8Gb/s, Optical, PCIe 2.0 x8 | N8190-154 |
| | Fibre Channel Controller (1ch) Emulex LightPulse LPe16000B-M6 Host Bus Adapter 16Gb/s, Optical, PCIe 3.0 x8 | N8190-157 |
| | Fibre Channel Controller (2ch) Emulex LightPulse LPe16002B-M6 Host Bus Adapter 16Gb/s, Optical, PCIe 3.0 x8 | N8190-158 |
| SAS | SAS Controller LSI SAS9212-4i4e Host Bus Adapter 6Gb/s SAS, Int. 4 / Ext. 4, 7-pin SATA / SFF-8088, PCIe 2.0 x8 | N8103-142 |

6.3 Serial Port Adapter

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

NOTE:

- Up to one Serial Port Adapter can be installed.

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 EXPRESSBUILDER 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:

- 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 |

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8 Add-on Components

8.1 17-inch LCD Console Drawer

| Category | | Product Name / Description | Part Number |
|----------------|--------|--|--------------|
| Drawer w/ KVM | Drawer | 17-inch LCD Console Drawer (8port) 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height | N8143-77F |
| | 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 2 m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2 m | N8143-76F |
| | | 17inch LCD Console Drawer (1port) 17-inch LCD, US 103-keys Keyboard with 10-key, Touch pad with 3-button, 1U height, 4-pin USB B to 4-pin USB A cable 1.8 m, Two PS/2 cable 1.8 m, 15-pin mini D-sub VGA cable 1.8 m | N8143-84F |
| | Keypad | Keyboard Unit (JP) JP 108-keys Keyboard with 10-key, for N8143-84F 17inch LCD Console Drawer (1port) | N8143-85 |
| | | Keyboard Unit (UK) UK 104-keys Keyboard with 10-key, for N8143-84F 17inch LCD Console Drawer (1port) | N8143-87 |

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 | KVM | 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) |
| | Cascading | Switch Unit Connection Cable 1.8 m 1.8 m, 1 x 15-pin mini D-sub - 1x 15-pin mini D-Sub / 2x PS/2 | K410-119(1A) |

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> | <p>N8115-04</p> |

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 | Booting, 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 and Embedded Controllers

| Part number | Product Name | WS 2012 | WS 2008R2 | WS 2008 | WS 2008 x64 | WS 2003R2 | WS 2003R2 x64 | RHEL 6 | RHEL 6 x64 | RHEL 5 | RHEL 5 x64 | ESXi 5.1 | ESXi 5.0 | ESX 4.1 |
|-------------|--|---------|-----------|---------|-------------|-----------|---------------|--------|------------|--------|------------|----------|----------|---------|
| - | Embedded SATA non-RAID Controller | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| - | Embedded SATA RAID Controller | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | - | - | - | - | - |
| - | Embedded 1GbE NIC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 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) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8103-152 | RAID Controller (1 GB,RAID 0/1/5/6) | ✓ | ✓ | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8103-160 | RAID Controller (1 GB,RAID 0/1/5/6) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8103-142 | SAS Controller | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| N8190-153 | Fibre Channel Controller | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8190-154 | Fibre Channel Controller (2ch) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8190-157 | Fibre Channel Controller | ✓ | ✓ | - | - | - | - | - | ✓ | - | - | - | - | - |
| N8190-158 | 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 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N8104-145 | Dual 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 | - | ✓ | ✓ | ✓ | - | - | ✓ | ✓ | ✓ | ✓ | - | - | - |

Supported PCI Cards and Installable Slots

| Part Number | Product Name | Slots | | | |
|-------------|--|-------|-----|-----|-----|
| | | #1A | #1B | #1C | #1D |
| 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) | ✓ | - | - | - |
| N8103-152 | 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) | - | ✓ | ✓ | - |
| N8190-157 | Fibre Channel Controller | - | ✓ | ✓ | - |
| N8190-158 | 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 | - | ✓ | ✓ | - |
| N8104-145 | Dual 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 | - | ✓ | ✓ | - |
| N8117-01A | Serial Port Adapter | - | - | ✓ | - |

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

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Revision History

| Revision | Date | Description |
|----------|-------------------|--|
| 7.0 | July 17, 2013 | <p>New products added: 1.2TB 10K Hot Plug 2.5-inch SAS HDD / N8150-408 Dual Port 1000BASE-T Adapter / N8104-145</p> |
| 6.0 | April 16, 2013 | <p>New products added: Fibre Channel Controller (1ch) / N8190-157 Fibre Channel Controller (2ch) / N8190-158</p> <p>Part number changed: Internal DVD Super Multi Drive / N8151-107F External DVD-ROM Drive / N8160-91</p> <p>Discontinued products removed: 100GB SSD / N8150-709 400GB SSD / N8150-710</p> <p>Others: Support NIC teaming on Windows Server 2012 systems. Support N8103-142 SAS Controller on Windows Server 2012 systems</p> |
| 5.1 | February 12, 2013 | <p>Other: Add note to install an internal optical drive</p> |
| 5.0 | December 21, 2012 | <p>Other: Add Windows Server 2012 to the list of operating system supported Support N8103-152 RAID Controller on VMware ESXi 5.x systems Support 10GbE NIC teaming with two or more 10GbE NIC cards. Update OS support matrix</p> |
| 4.0 | October 31, 2012 | <p>New products added: RAID Controller (1GB, RAID 0/1/5/6) / N8103-152 Internal SAS/SATA Cable / K410-271(00) 200GB SSD / N8150-711 400GB SSD / N8150-712</p> <p>Discontinued products removed: 100GB SSD / N8150-707 SAS Controller / N8103-104A</p> <p>Other: Add VMWare ESX 5.1 to the list of operating system supported Support bonding feature on Linux operating system using 10GbE NIC Update Regulatory list Update OS support matrix</p> |
| 3.0 | July 3, 2012 | <p>New products added: Xeon E5-2620 Processor Kit / N8101-616F 17-inch LCD Console Drawer (1port) / N8143-84F Switch Unit Connection Cable 1.8 m / N410-119(1A)</p> <p>Other: Add KC in Regulatory list Add description for expansion slots Support jumbo frame on Quad Port 1000BASE-T Adapter Add description for using iSCSI Add OS support information for embedded controllers into support matrix table</p> |
| 2.0 | May 14, 2012 | <p>New products added: 17-inch LCD Console Drawer (8port) / N8143-77F</p> <p>Discontinued products removed: 17inch LCD Console Unit (1U/8port) / N8143-69F</p> <p>Others: Add VMWare ESX 4.1 to the list of operating system supported Correct the incorrect note in Independent Channel Configuration Correct incorrect maximum available memory size for Red Hat Enterprise Linux 5 (EM64T) Support N8103-142 SAS Controller on VMware ESXi 5.0 system Support N8104-133 Quad Port 1000BASE-T Adapter on VMware systems</p> |

| Revision | Date | Description |
|-----------------|----------------|--------------------|
| 1.0 | March 30, 2012 | Initial release |

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