

# NEC EXPRESS5800/R320e-E4 Configuration Guide

VMware model



## 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

- Fault tolerant technology based on GeminiArchitecture™
- Full manageability by integrated EXPRESSSCOPE Engine 3
- High performance with the latest Intel® Xeon® processor E5-2600 v3 product family
- Up to 512GB of high speed DDR4-1866 memory

## Specification

Model	R320e-E4	
<b>Part Number</b>	N8800-201F	
<b>Processor</b>	<b>Type</b>	Intel® Xeon® processor E5-2630 v3
	<b>Clock speed</b>	2.40 GHz
	<b>Logical Number of Processors</b>	1 or 2
	<b>Cache</b>	20MB
	<b>Cores and Threads</b>	8C / 16T
<b>Chipset</b>	Intel® C612 Chipset with GeminiEngine™	
<b>Memory</b>	<b>Type</b>	DDR4-2133 Registered DIMM (8/16GB DIMM), DDR4-2400 Registered DIMM (32GB DIMM)
	<b>Memory Clock</b>	1866MHz
	<b>Logical Standard Capacity</b>	0GB
	<b>Logical Maximum Capacity</b>	512GB (16 x 32 GB)
	<b>Memory protection</b>	ECC, x4 SDDC
<b>Internal Storage</b>	<b>Standard Capacity</b>	0GB
	<b>Maximum Logical Capacity</b>	HDD : SAS 9.6 TB (8×1.2TB) SSD : SAS 1.6 TB (8×200GB)
	<b>Disk Controller</b>	SAS: 12Gb/s (Standard)
	<b>RAID</b>	SAS : RAID 1 (Standard)
	<b>Hot Plug</b>	Supported
	<b>Optical Disk Drive</b>	DVD Super Multi drive <sup>1</sup>
	<b>Optical Drive Bays [free]</b>	1 [0]
	<b>Logical Disk Drive Bays [free]</b>	8 [8]
<b>Expansion Slots [free]</b>	<b>Standard</b>	Total: 2 slots available 2 Low-profile PCIe x4 Gen 3 (x8 connector)
	<b>Video</b>	<b>Controller (VRAM)</b> Integrated in Server Management Controller (32MB) <b>Resolution / Color Supported</b> 800 x 600,1024 x 768, 1280 x 1024,1,600 x 1,200/ 16.7M
<b>Interfaces</b>	1 VGA (15-pin mini D-sub, 1 rear per system) 4 USB2.0 (1 front, 3 rear per system) 4 1000BASE-T LAN connector (RJ-45, 2 rear per module) 2 Management LAN connector (RJ-45, 1 rear per module)	
<b>Server Management</b>	EXPRESSSCOPE Engine 3	
<b>Power Supply</b>	2 x 800 Watt (1 per module, 80 PLUS® Platinum certified) 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz	

**CONFIGURATION GUIDE – NEC EXPRESS5800/R320e-E4 / VMware model**

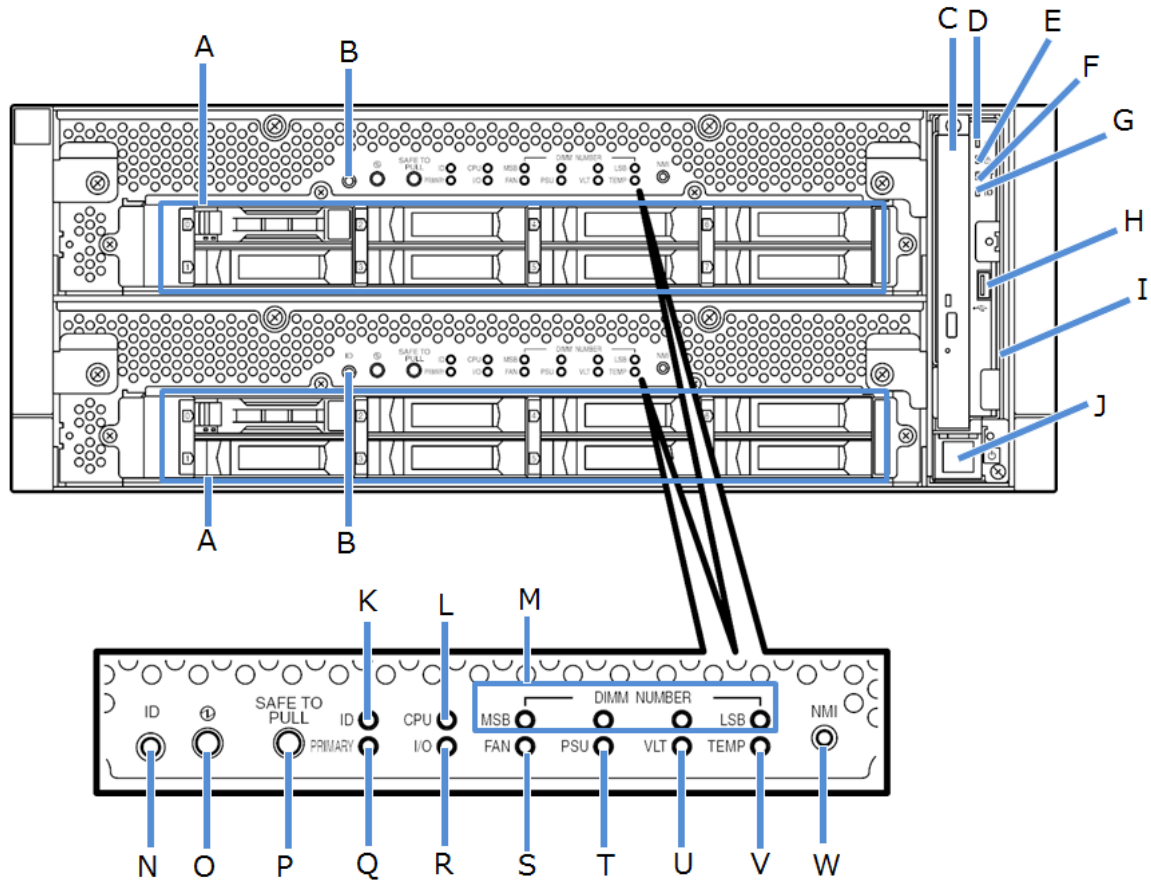
<b>Model</b>	<b>R320e-E4</b>
<b>Power Consumption (Max. Config, Operating)</b>	1,430 VA / 1,420 Watt
<b>Dimensions (W x D x H )</b>	483.0 x 734.0 x 176 mm / 19.0 x 29.0 x 7.0 in (4U)
<b>Weight (Minimum / Maximum)</b>	45 kg / 51 kg, 99.21 lbs. / 112.44 lbs.
<b>Temperature, Relative Humidity (non-condensing)</b>	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%
<b>Regulatory and Safety</b>	FCC, CE, BSMI, CCC, UL, CB, RoHS
<b>Operating Systems</b>	VMware® ESXi™ 6.0 Update1b

<sup>1</sup> Writing software is not provided for this DVD drive.

# External Views

## Front and Rear Views

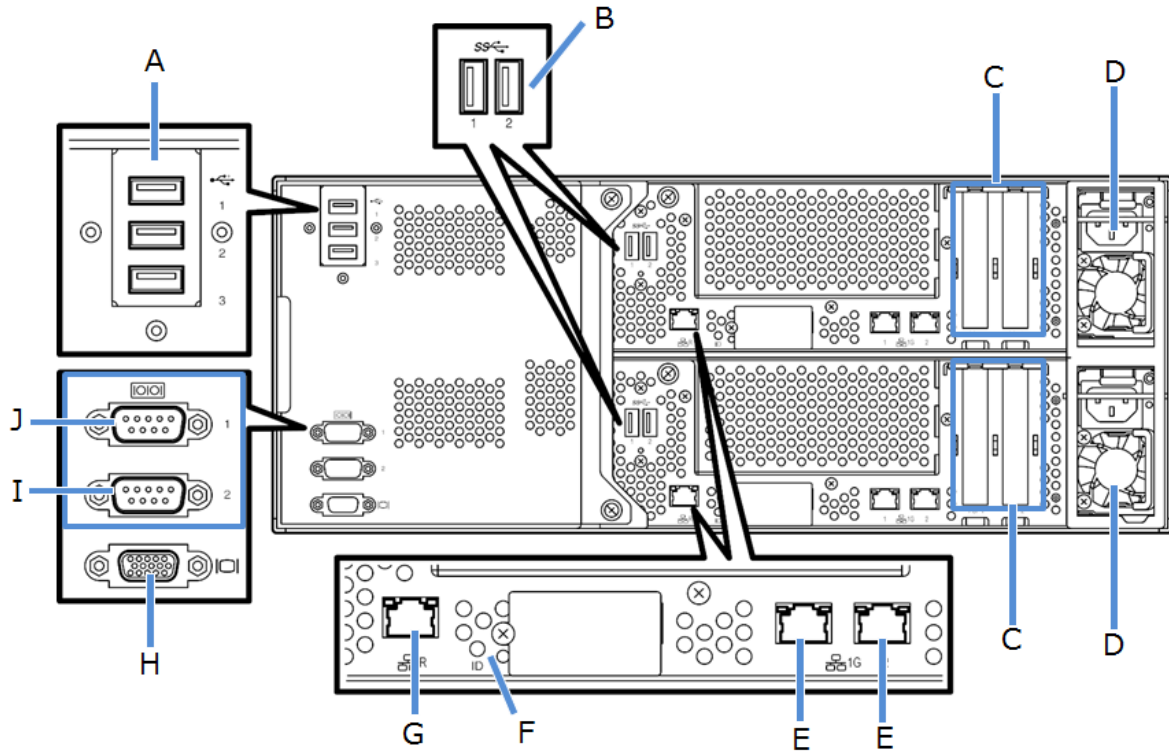
### Front View



### Legend

<b>A.</b> Drive Bays	<b>M.</b> Memory Fault LED
<b>B.</b> UID Button	<b>N.</b> UID Button
<b>C.</b> DVD Super Multi Drive	<b>O.</b> Module Power LED
<b>D.</b> System Power LED	<b>P.</b> SAFE TO PULL LED
<b>E.</b> System Status LED	<b>Q.</b> PRIMARY LED
<b>F.</b> System FT LED	<b>R.</b> IO Module Fault LED
<b>G.</b> UID LED	<b>S.</b> Fan Fault LED
<b>H.</b> USB Connector	<b>T.</b> PSU Fault LED
<b>I.</b> Pull-out Tab	<b>U.</b> DC Power Fault LED
<b>J.</b> Power Button	<b>V.</b> Temperature Fault
<b>K.</b> Module ID LED	<b>W.</b> NMI Button
<b>L.</b> CPU Fault LED	

Rear View



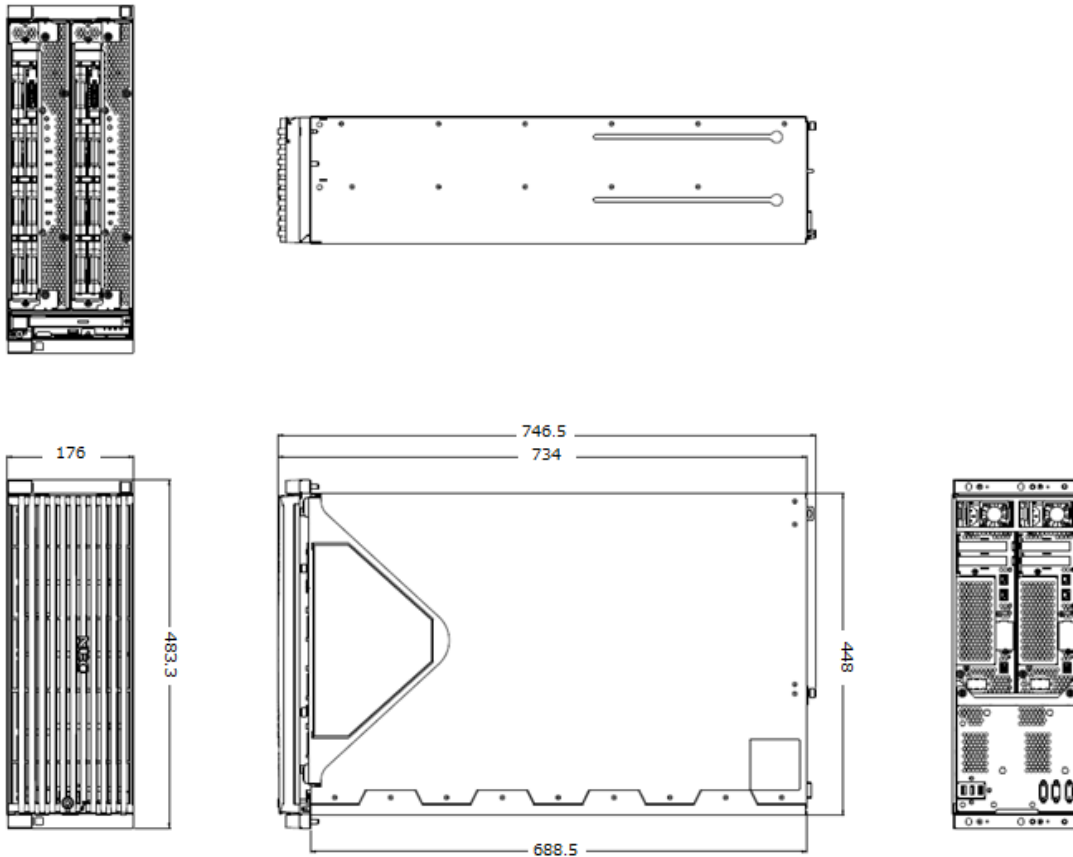
**Legend**

<b>A.</b> USB Connectors	<b>F.</b> Module ID LED
<b>B.</b> USB Connectors (option, for backup use)	<b>G.</b> Management LAN Connector
<b>C.</b> PCI Slots (Low-Profile)	<b>H.</b> VGA Connector
<b>D.</b> Power supply unit	<b>I.J.</b> Serial Port Connector <sup>1</sup>
<b>E.</b> Data LAN Connector	

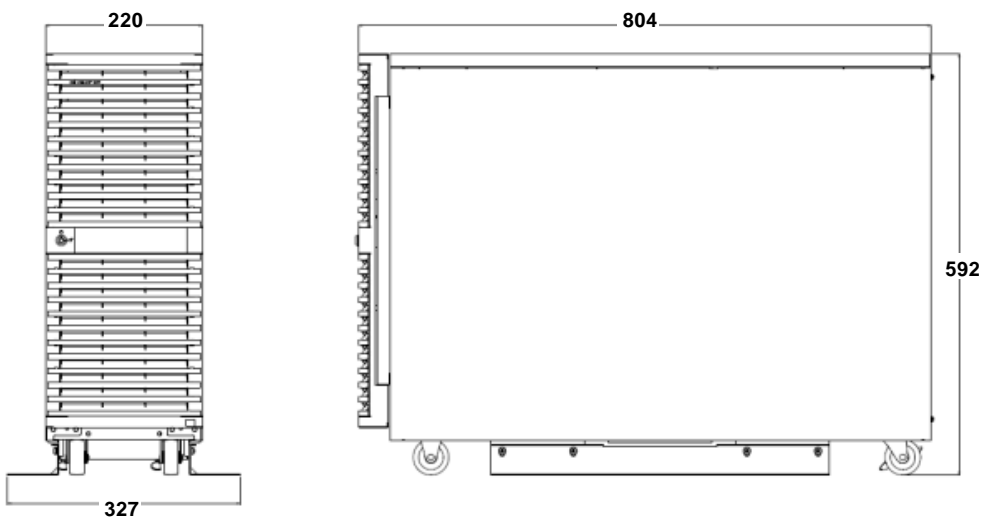
<sup>1</sup> For service personnel only.

## Dimensions (mm)

### Rack mount

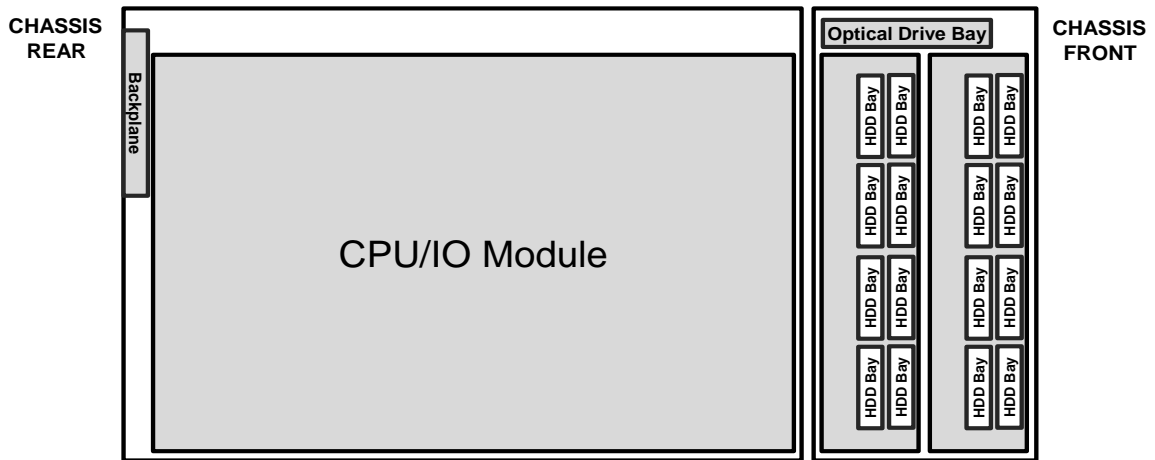


### Tower Conversion (Optional)



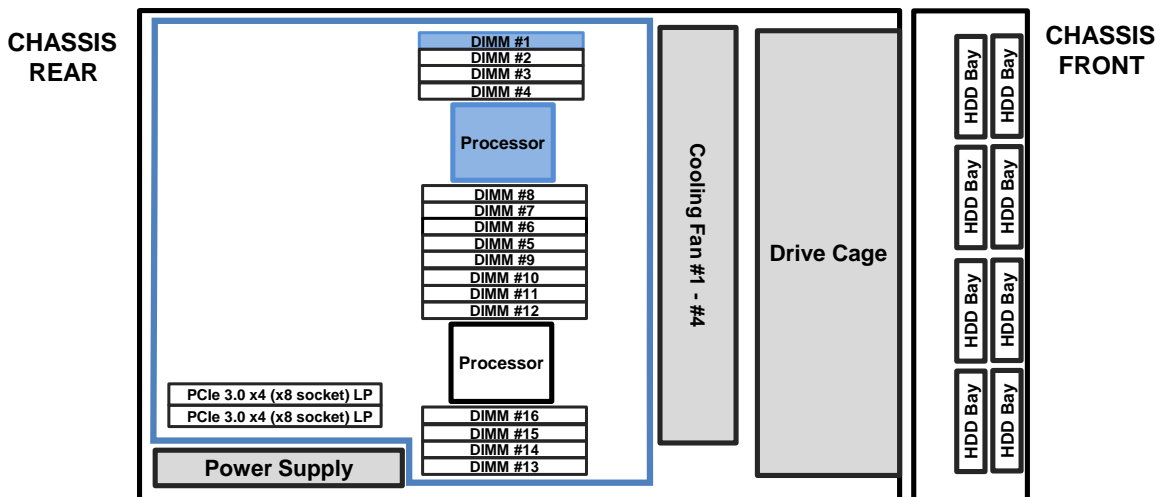
# Configuration Diagram

## Server

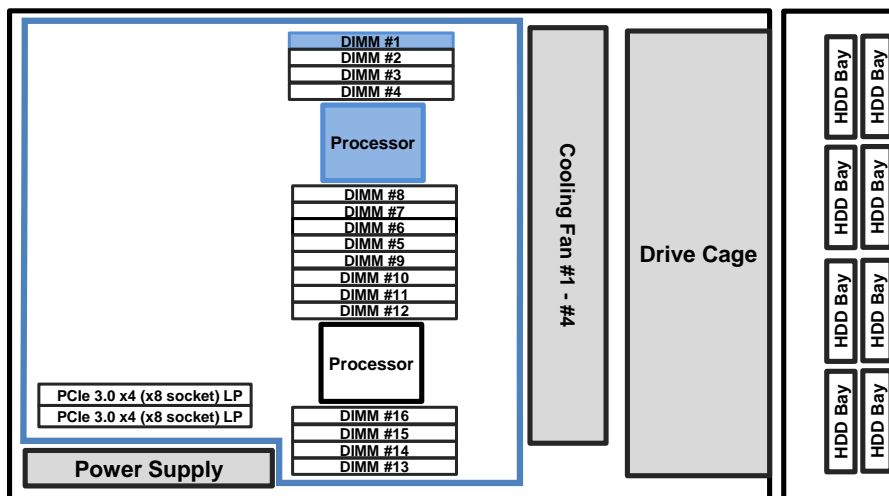


## CPU/IO Module

CPU/IO module #0 :



CPU/IO module #1 :



Legend:  Minimum required components  Standard components



# Server Configuration

## 1 Base Models

Product Name / Description	Part Number
<b>Express5800/R320e-E4(8C/E5-2630v3)</b> no RAM, no 2.5-inch HDD Including: Intel Xeon Processor E5-2630 v3, 1 x DVD Super Multi, EXPRESSBUILDER DVD <b>NOTE:</b> - The base model is common for Windows and VMware. For VMware installation, ft Server Control Software for VMware is required separately.	N8800-201F
<b>Express5800/R320e-E4(8C/E5-2630v3)</b> no RAM, no 2.5-inch HDD Including: Intel Xeon Processor E5-2630 v3, 1 x DVD Super Multi, EXPRESSBUILDER DVD, ftSys for VMware vSphere6.0 <b>NOTE:</b> - This is a set product of N8800-201F and UL1377-007E.	NP8800-201FP1

## 2 2nd Processor

Available logical sockets: 1

Product Name / Description	Part Number
<b>Xeon E5-2630v3 Processor Kit</b> : 2.40 GHz / 8C-16T / 20 MB, 2 processors included	N8801-048

## 3 Memory

Available logical slots: 8 per processor

Product Name / Description	Part Number
<b>8GB DDR4-1866 REG Memory Kit</b> : 2 x 1 x 8GB DIMM included	N8802-063
<b>64GB DDR4-1866 REG Memory Kit</b> : 2 x 4 x 16GB DIMM included	N8802-064
<b>128GB DDR4-2400 REG Memory Kit</b> : 2 x 4 x 32GB DIMM included	N8802-068

**NOTE:**

- Minimum one memory kit must be installed.
- N8802-068 and N8802-065 can't be mixed.

## Memory Configuration Guideline

See the table below for the number of memory kits required in accordance with logical main memory size and number of logical processors. Memory configurations which are not listed below are not supported in the system.

Number of Logical Processors	Logical Main Memory Size	Number of Memory Kits Required			
		8GB	64GB	128GB	
1	8GB <sup>1</sup>	1	-	-	
	16GB	2	-	-	
	24GB	3	-	-	
	32GB	4	-	-	
	48GB	6	-	-	
	64GB	8	-	-	
			-	1	-
	96GB	4	1	-	
	128GB	-	2	-	
			-	-	1
	256GB	-	-	2	
2	8GB <sup>1</sup>	1	-	-	
	16GB <sup>1</sup>	2	-	-	
	24GB <sup>1</sup>	3	-	-	
	32GB	4	-	-	
	48GB	6	-	-	
	64GB	8	-	-	
	96GB	12	-	-	
	128GB	16	-	-	
			-	2	-
	256GB	-	4	-	
		-	-	2	
	512GB	-	-	4	

<sup>1</sup> Interleave is not supported.

## 4 Internal Hard Disk Drives

Available bays: 8

Category	Product Name / Description	Part Number
SAS HDD	300GB 15K Hot Plug 2.5-inch SAS HDD : 1 x 300GB	N8850-063
	600GB 15K Hot Plug 2.5-inch SAS HDD : 1 x 600GB	N8850-064
	900GB 10K Hot Plug 2.5-inch SAS HDD : 1 x 900GB	N8850-065
	1.2TB 10K Hot Plug 2.5-inch SAS HDD : 1 x 1.2TB	N8850-066
SAS SSD (ME)	200GB Hot Plug 2.5-inch SSD: 1 x 200GB	N8850-067

### NOTE:

- Hard drives must be installed in identical pairs to configure RAID 1.
- The 300GB HDD is recommended to install as the system drive in order to reduce the time to resynchronize.

## 5 Optical Drive

Available bays: 1

Product Name / Description	Part Number
Internal DVD Super Multi Drive : 1 x DVD Super Multi drive, not including writing software	(Standard)

## 6 PCI Card

### 6.1 LAN Controller

Category	Product Name / Description	Part Number
LAN Controller	1000BASE-T 2ch board kit : 2 x GbE NIC Intel® Ethernet Server Adapter I350-T2V2	N8804-012
	10GBASE-T 1ch Adapter Kit : 2 x 10GbE NIC Intel® X540-T1	N8804-011

**NOTE:**

- Up to one controller per module
- FCoE functionality is not supported

### NOTE:

- For iSCSI (data) connection, NEC Storage M110, M310 are supported. For NEC Storage, contact your sales representative or refer to the NEC Storage WEB site. (<http://www.nec.com/global/prod/storage/>)

### 6.2 Fibre Channel / SAS Controller

Category	Product Name / Description	Part Number
Fibre Channel Controller	Fibre Channel 1ch Adapter Kit : 2 x FC Controller QLogic QLE2670 16Gbps Fibre Channel Adapters	N8803-040F

### NOTE:

- For supported NEC Storage products to connect with N8803-040F, contact your sales representative or refer to the NEC Storage WEB site. (<http://www.nec.com/global/prod/storage/>)

## 7 Other Add-in Components

### 7.1 Input Devices

Category	Product Name / Description	Part Number
Keyboard	USB Keyboard	N8870-002AF
Mouse	USB Optical Wheel Mouse	N8870-012
Cable	USB cable : 1.5m USB extension cable	K410-177(1A)

## 8 Add-on Components

### 8.1 17-inch LCD Console Drawer

Category	Product Name / Description	Part Number
Drawer w/ KVM Switch	Drawer <b>17-inch LCD Console Drawer (8port)</b> 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height, black	N8143-106F
	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, 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)
Drawer w/o KVM Switch	Drawer <b>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 2 m, PS/2 Y-splitter cable 2m, 15-pin mini D-sub VGA cable 2 m, black	N8143-105F
	<b>17inch LCD Console Drawer (1port)</b> 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, black	N8143-108F
	Keypad <b>Keyboard Unit (JP)</b> JP 108-keys Keyboard with 10-key for N8143-108F 17inch LCD Console Drawer (1port)	N8143-109
	<b>Keyboard Unit (UK)</b> UK 104-keys Keyboard with 10-key, for N8143-108F 17inch LCD Console Drawer (1port)	N8143-111

### 8.2 KVM Switch

Category	Product Name / Description	Part Number
KVM Switch	<b>Server Switch Unit (8 server)</b> 1U USB 8 port KVM switch, black	N8191-14F
Cable	KVM <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)
Cascading	<b>Switch Unit Connection Cable 1.8 m</b> 1.8 m, 1 x 15-pin mini D-sub - 1x 15-pin mini D-Sub / 2x PS/2	K410-119(1A)

### 8.3 Flash FDD

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

Product Name / Description	Part Number
<b>Flash FDD</b> USB flash emulating USB floppy disk, Native capacity 1.44 MB	N8160-96

### 8.4 Operating System

The R320e VMware models support VMware ESXi 6.0 Update 1b. For installation, please download the image data from VMware website. Please note that the Part Number differs by the end user’s country.

Product Name / Description	Part Number For APAC&LATAM	Part Number For EMEA & Russia	Part Number For Australia	Part Number For China
<b>VMware vSphere 6 license for Small Business:</b>				
<b>VMware vSphere 6 Essentials for 3 hosts</b> ESX license for up to 3 Physical servers (Max 2 CPUs each) and VMware vCenter Server license for 3 ESX servers.	UL1560-2A1E-I	*1	UL1560-2K1E-I	UL1560-2G1E-I
<b>PPSupportPack(VMware vSphere 6 Essentials for 3 hosts)(1year)</b>	ULH1S1560109E-I	*1	ULH1S1560133E-I	ULH1S1560117E-I
<b>VMware vSphere 6 Essentials Plus for 3 hosts</b> ESX license for up to 3 Physical servers (Max 2 CPUs each) and VMware vCenter Server license for 3 ESX servers. Also, Data Recovery and HA license for 6 CPUs included.	UL1560-2A2E-I	*1	UL1560-2K2E-I	UL1560-2G2E-I
<b>PPSupportPack(VMware vSphere 6 Essentials Plus for 3 hosts)(1year)</b>	ULH1S1560110E-I	*1	ULH1S1560134E-I	ULH1S1560118E-I
<b>VMware vSphere 6 license for Medium and Large-sized Business</b>				
<b>VMware vSphere 6 Standard for 1processor</b> Note: VMware vCenter Server license is not included.	UL1560-2A3E-I	*1	UL1560-2K3E-I	UL1560-2G3E-I
<b>PPSupportPack(VMware vSphere 6 Standard for 1processor)(1year)</b>	ULH1S1560111E-I	*1	ULH1S1560135E-I	ULH1S1560119E-I
<b>VMware vSphere 6 Enterprise Plus for 1processor</b> Note: VMware vCenter Server license is not included.	UL1560-2A5E-I	*1	UL1560-2K5E-I	UL1560-2G5E-I
<b>PPSupportPack(VMware vSphere 6 Enterprise Plus for 1processor)(1year)</b>	ULH1S1560113E-I	*1	ULH1S1560137E-I	ULH1S1560121E-I
<b>VMware vSphere 6 vCenter Server</b>				
<b>VMware vCenter Server 6 Foundation</b>	UL1560-2A7E-I	*1	UL1560-2K7E-I	UL1560-2G7E-I
<b>PPSupportPack(VMware vCenter Server 6 Foundation)(1year)</b>	ULH1S1560115E-I	*1	ULH1S1560139E-I	ULH1S1560123E-I
<b>VMware vCenter Server 6 Standard</b>	UL1560-2A8E-I	*1	UL1560-2K8E-I	UL1560-2G8E-I
<b>PPSupportPack(VMware vCenter Server 6 Standard)(1year)</b>	ULH1S1560116E-I	*1	ULH1S1560140E-I	ULH1S1560124E-I

\*1: Contact your sales representative for the part number.

### 8.5 ft Server Control Software

Product Name / Description	Part Number
<b>ftSys for VMware vSphere6.0 for R320e</b>	UL1377-007E

**NOTE:**

- ft Server Control Software for VMware is not included in the base model N8800-201F. Be sure to order UL1377-007E to install VMware ESXi 6.0 Update 1b on R320e series.

## 8.6 ft Server Control Software Support Service

For R320e VMware model, please also order below support product for ft Server Control Software support.

Product Name / Description	Part Number
<b>PPSupportPack(1year support of ftSys for VMware vSphere6.0)</b> Software support service for ft Server Control Software for vSphere 6.0	ULH1S-1377-004F

## 8.7 Tower Conversion Kit

Product Name / Description	Part Number
<b>Tower Conversion Kit</b> 23 inch height pedestal with front bezel	N8843-005

## 8.8 Dust Proof Filter

The server supports the dust resistant feature. Choose the following kit to install the system in dusty places.

Category	Product Name / Description	Part Number
<b>Filter</b>	<b>4U-FT Dust Filter</b> For R320e Dust Proof filter 10 pcs, attachment brackets for the front bezel included	N8847-002

## 8.9 Boot Mode Setup Option

Product Name / Description	Part Number
<b>Boot Mode Setup Option (Legacy Mode)</b> Setup option to change the OS Boot Mode to Legacy mode	NESV16-003

### NOTE:

- As the default settings at the factory, UEFI mode is set as OS Boot mode. Order NESV16-003 Boot Mode Setup Option (Legacy Mode) for VMware vSphere 6.0 that requires Legacy Mode.
- Before installing VMware ESXi on R320e, please be sure to set [XHCl mode] to [Auto] by referring to the installation guide (VMware) for R320e.

# References

## Server Management

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

<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	✓
<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	✓
	Panic screen, Boot screen	✓
	Text-based screen (OS console)	-
	GUI-based screen (OS console)	✓
<b>Remote control (via LAN)</b>	Remote reset/power on-off/ dump	✓
	OS shutdown	-
	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)	-
<b>Maintenance</b>	EXPRESSSCOPE® Profile key (Backup/restore BIOS/BMC setup information)	-
<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	✓
<b>Industry standard</b>	IPMI	2.0

## Supported PCI Cards and Installable Slots

Part Number	Product Name	Slots		Notes
	Slot # :	#1	#2	
	PCI Slot:	x4	x4	
	Card height:	LP	LP	
	Slot type:	x8	x8	
<b>N8804-012</b>	1000BASE-T 2ch board kit	✓	✓	
<b>N8804-011</b>	10GBASE-T 1ch board set	✓	✓	Max. 1
<b>N8803-040F</b>	Fibre Channel board kit	✓ <sup>1</sup>	✓ <sup>1</sup>	

<sup>1</sup> Not installable when using Tower Conversion Kit.

## Notes for using VMware vSphere 6.0 on Express5800/R320e

### Functional Limitations

The following features of VMware ESXi are not supported.

- VMware Fault Tolerance (FT)
- VMware Distributed Power Management (DPM)
- Fibre Channel N-Port ID Virtualization (NPIV)
- Modifying the DVSwitch Configuration
- RAW Device Mapping (RDM) (Internal HDDs only)
- VMDirectPath
- Single-Root I/O Virtualization
- VMware vSphere Flash Read Cache
- vCenter Server lockdown mode
- LACP
- vSphere Client performance chart (power)

### Supported Guest OS

Guest Operating Systems supported on NEC Express5800/ft series are the same as other general purpose servers. Refer to the [VMware web site](#) for the Supported Guest Operating Systems on VMware vSphere ESXi 6.0 U1b

### VMware vSphere Client

For maintenance of VMware ESXi on the NEC Express5800/ft series, a dedicated terminal (e.g. a Windows PC) is required

### Backup

A dedicated server for data backup is recommended.

### Network Adapter Types

Do not choose E1000 or E1000E for the virtual machines on the NEC Express5800/ft series. If you choose E1000 or E1000E, the CPU modules may not synchronize.



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

## Revision History

Revision	Date	Description
1.2	2017.10.31	<b>New products added:</b> 128GB DDR4-2400 REG Memory Kit / N8802-068 <b>Discontinued product deleted:</b> 128GB DDR4-1866 LR Memory Kit / N8802-065
1.1	2016.8.22	<b>Others:</b> Corrected the specification table (Resolution / Color, Power Consumption)
1.0	2016.6.20	Initial release