

NEC Express5800/R320f 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

Specification

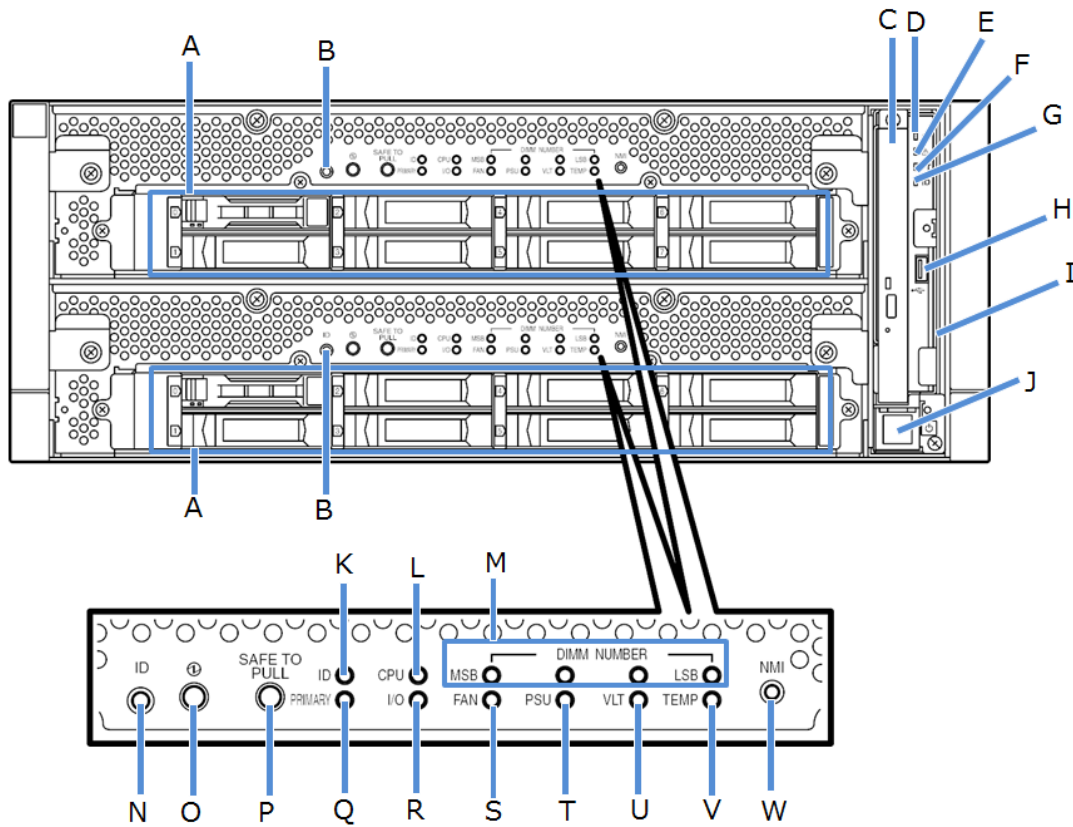
Model		R320f-E4	R320f-M4
Part Number		N8800-218F	N8800-219F
Processor	Type	Intel® Xeon® processor E5-2630 v4	Intel® Xeon® processor E5-2671 v4
	Clock speed	2.20 GHz	2.30 GHz
	Logical Number of Processors	1 or 2	
	Cache	25MB	35MB
	Cores and Threads	10C / 20T	14C / 28T
Chipset		Intel® C612 Chipset with GeminiEngine™	
Memory	Type	DDR4-2400 Registered DIMM (8/16/32 GB DIMM)	
	Memory Clock	2133 MHz	
	Logical Standard Capacity	0 GB	
	Logical Maximum Capacity	512GB (16 x 32 GB)	
	Memory protection	ECC, x4 SDDC	
Internal Storage	Standard Capacity	0GB	
	Maximum Logical Capacity	HDD : SAS 9.6 TB (8x 1.2TB) SSD : SAS 1.6 TB (8x 200GB)	
	Disk Controller	SAS: 12Gb/s (Standard)	
	RAID	SAS : RAID 1 (Standard)	
	Hot Plug	Supported	
	Optical Disk Drive	DVD Super Multi drive (Standard) ¹	
	Optical Drive Bays	1	
	Logical Disk Drive Bays	8	
Expansion Slots		Total: 2 slots available 2 PCIe 3.0 x4 (x8 connector)	Total: 4 slots available 2 PCIe 3.0 x8 (x8 connector) 2 PCIe 3.0 x4 (x8 connector)
Video	Controller (VRAM)	Integrated in Server Management Controller (32MB)	
	Resolution / Color Supported	800 x 600, 1024 x 768, 1280 x 1024, 1,600x1,200/ 16.7M	
Interfaces		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)	1 VGA (15-pin mini D-sub, 1 rear per system) 4 USB2.0 (1 front, 3 rear per system) 4 10GBASE-T LAN connector (RJ-45, 2 rear per module) 4 1000BASE-T LAN connector (RJ-45, 2 rear per module) 2 Management LAN connector (RJ-45, 1 rear per module)
Server Management		EXPRESSSCOPE Engine 3	
Power Supply		2 x 800 Watt (1 per module, 80 PLUS® Platinum certified) 100-240 VAC ± 10% 50 / 60 Hz ± 3 Hz	
Power Consumption	(Max. Config, Operating)	1,430 VA / 1,420 Watt	
Dimensions (W x D x H)		483.0 x 734.0 x 176 mm / 19.0 x 29.0 x 7.0 in (4U)	
Weight (Minimum / Maximum)		45 kg / 51 kg, 99.21 lbs. / 112.44 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	
Operating Systems		VMware® ESXi™ 6.5	

¹ Writing software is not provided for this DVD drive.

External Views

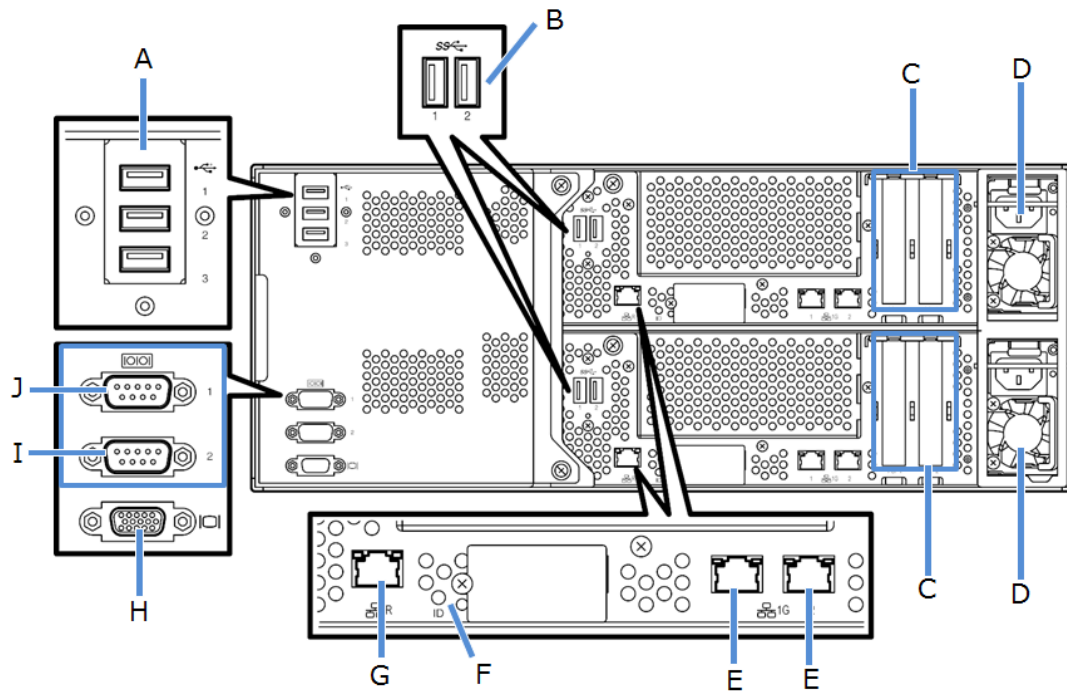
Front and Rear Views

Front View



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

Rear View for R320f-E4

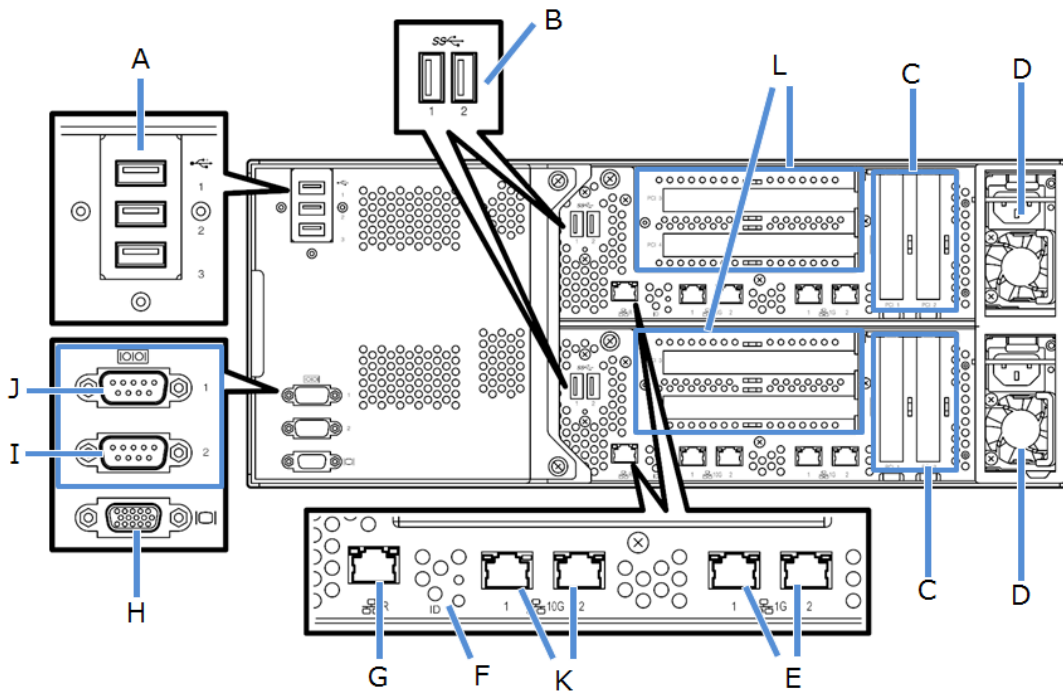


Legend	
A.	USB Connectors
B.	USB Connectors (option, for backup use) ²
C.	PCI Slots (Low-Profile)
D.	Power supply unit
E.	Data LAN Connector
F.	Module ID LED
G.	Management LAN Connector
H.	VGA Connector
I.	Serial Port Connector 2 ¹
J.	Serial Port Connector 1 ¹

¹ For service personnel only.

² Backup devices are not supported on VMware model.

Rear View for R320f-M4



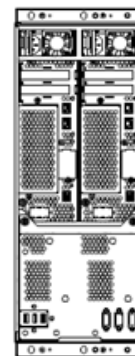
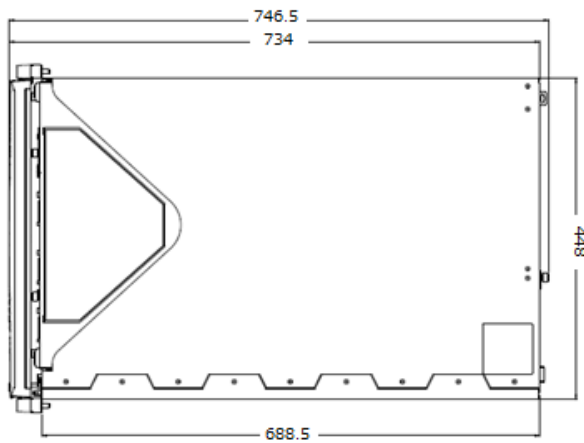
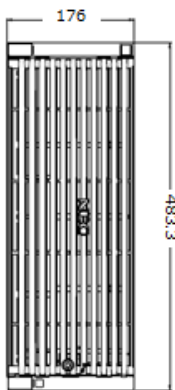
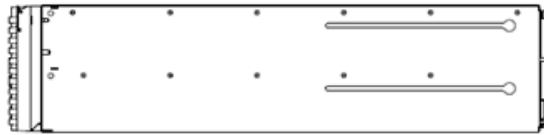
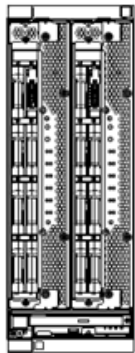
Legend			
A.	USB Connectors	G.	Management LAN Connector
B.	USB Connectors (option, for backup use) ²	H.	VGA Connector
C.	PCI Slots (Low-Profile)	I.	Serial Port Connector 2 ¹
D.	Power supply unit	J.	Serial Port Connector 1 ¹
E.	Data LAN Connector	K.	Data LAN Connector (10GBase-T)
F.	Module ID LED	L.	PCI Slots (Full-height)

¹ For service personnel only.

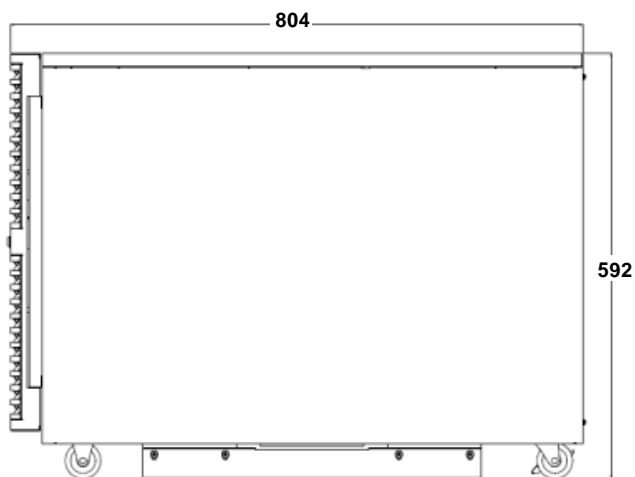
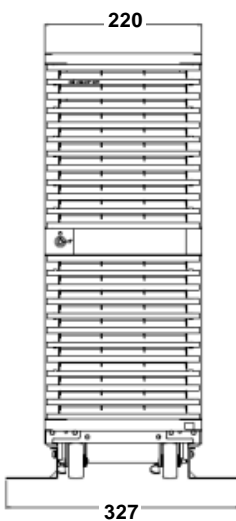
² Backup devices are not supported on VMware model.

Dimensions (mm)

Rack mount

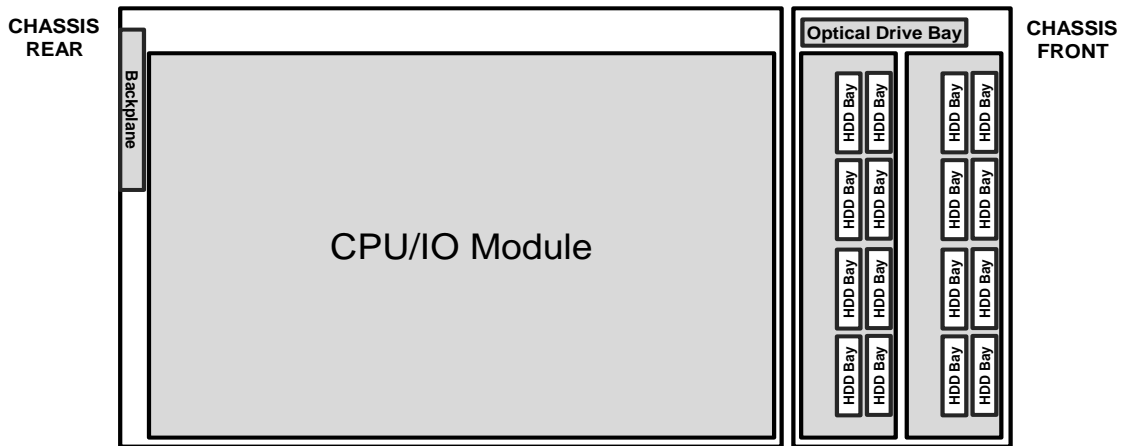


Tower Conversion (Optional)



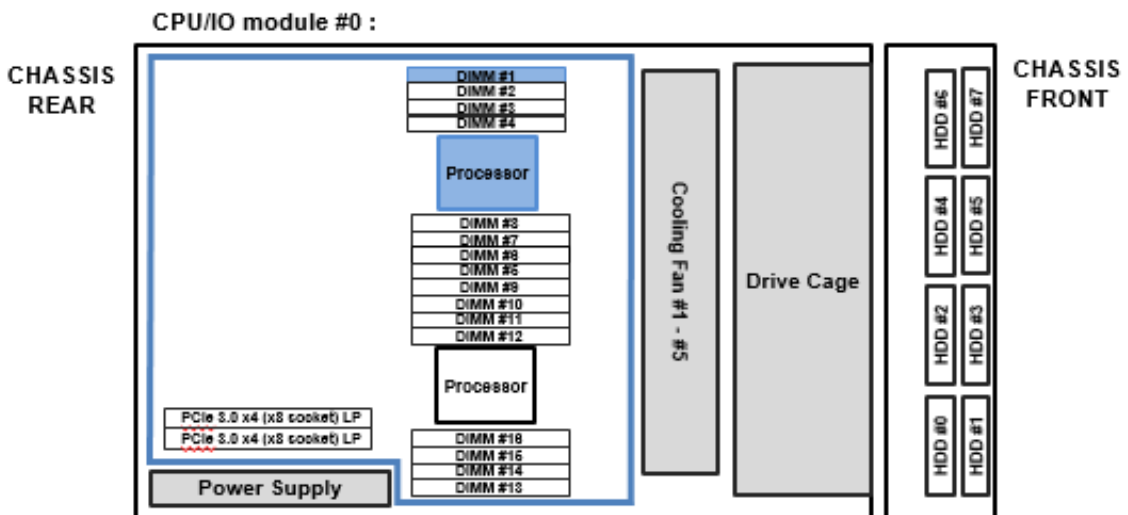
Configuration Diagram

Server

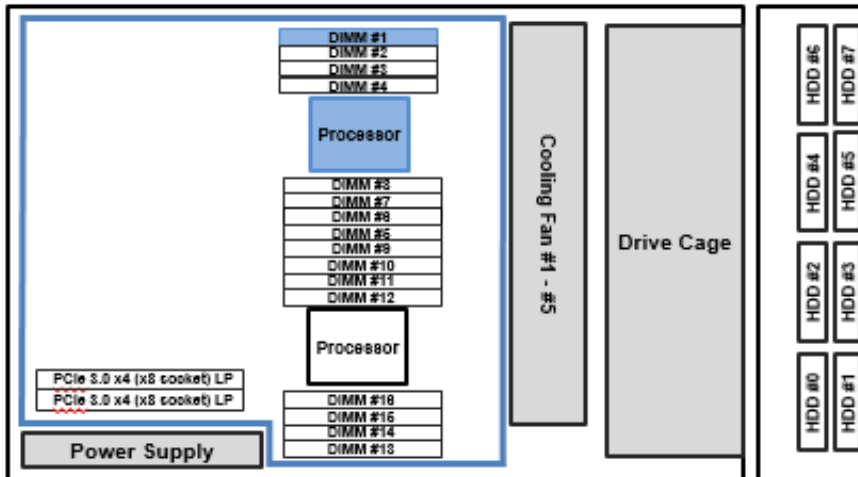


CPU/IO Module

R320f-E4

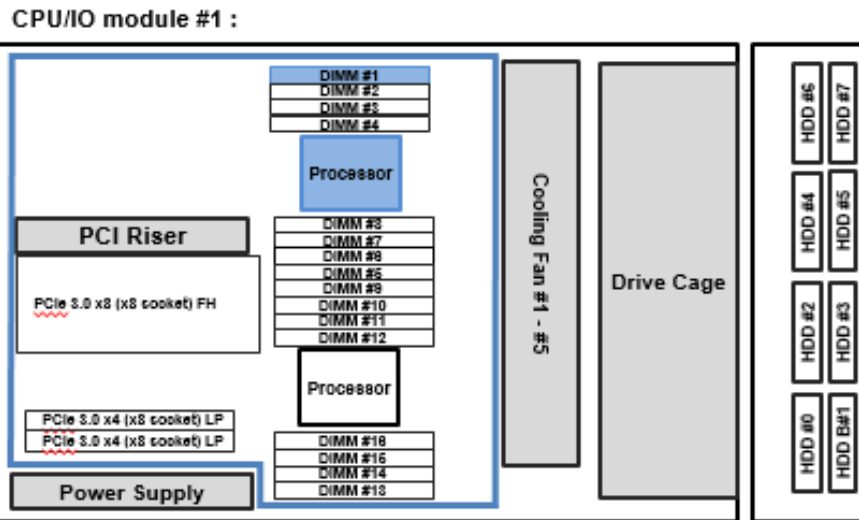
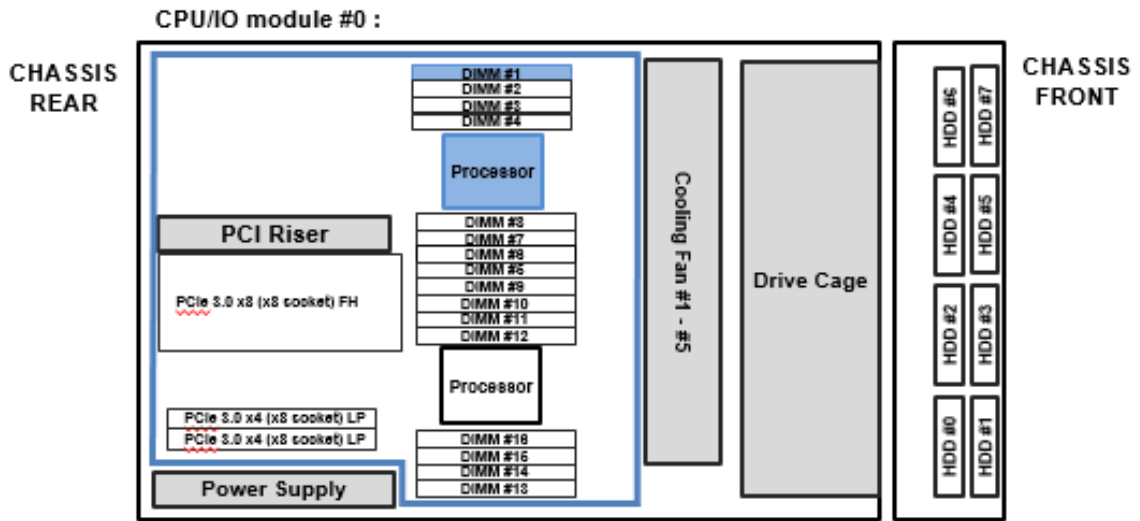


CPU/IO module #1 :



Legend: ■ Mandatory components Standard components

R320f-M4



Legend: Mandatory components Standard components

Server Configuration

1 Base Models

Product Name / Description	Part Number
Express5800/R320f-E4(10C/E5-2630v4) no RAM, no 2.5-inch HDD Including: Intel Xeon Processor E5-2630 v4, 1 x DVD Super Multi, EXPRESSBUILDER DVD	N8800-218F
Express5800/R320f-M4(14C/E5-2671v4) no RAM, no 2.5-inch HDD Including: Intel Xeon Processor E5-2671 v4, 1 x DVD Super Multi, EXPRESSBUILDER DVD	N8800-219F

2 2nd Processor

Available logical sockets: 1

Product Name / Description	Part Number
Xeon E5-2630v4 Processor Kit : 2.20 GHz / 10C-20T / 25 MB, 2 processors included	N8801-050
Xeon E5-2671v4 Processor Kit : 2.30 GHz / 14C-28T / 35 MB, 2 processors included	N8801-051

NOTE:

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

3 Memory

Available logical slots: 8 per processor

Product Name / Description	Part Number
8GB DDR4-2400 REG Memory Kit : 2 x 1 x 8GB DIMM included	N8802-066
64GB DDR4-2400 REG Memory Kit : 2 x 4 x 16GB DIMM included	N8802-067
128GB DDR4-2400 REG Memory Kit : 2 x 4 x 32GB DIMM included	N8802-068

NOTE:

- Minimum one memory kit must be installed.
- More than 16GB memory are recommended on R320f, vSphere6.5.

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.

More than 16GB memory are recommended on R320f, vSphere6.5.

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

¹ 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 or 200GB SSD 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 NOTE: - Up to one controller per module - Installation in full height slots only supported on R320f-M4 - FCoE functionality is not supported	N8804-011

NOTE:

- For iSCSI (data) connection, NEC Storage M11e, 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

Category	Product Name / Description	Part Number
Fibre Channel Controller	Fibre Channel 1ch Adapter Kit : 2 x FC Controller QLogic QLE2670 16Gbps Fibre Channel Adapters NOTE: - Installation in full height slots only supported on R320f-M4	N8803-040AF

NOTE:

- For supported NEC Storage products to connect with N8803-040AF, 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 17-inch LCD Console Drawer (8port) 17-inch LCD, US 83-keys Keyboard, Optical mouse, 8 port KVM switch, 1U height, black	N8143-106F
	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 Switch	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, black	N8143-105F
	Drawer 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, black	N8143-108F
	Keypad Keyboard Unit (JP) JP 108-keys Keyboard with 10-key for N8143-108F 17inch LCD Console Drawer (1port)	N8143-109
	Keyboard Unit (UK) 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	Server Switch Unit (8 server) 1U USB 8 port KVM switch, black	N8191-14F
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 Flash FDD

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

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

8.4 Operating System

The R320f VMware models support VMware ESXi 6.5. 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
VMware vSphere 6 license for Small Business:				
VMware vSphere 6 Essentials for 3 hosts ESX license for up to 3 Physical servers (Max 2 CPUs each) and VMware vCenter Server license for 3 ESX servers.	UL1560-3A1E-I	*1	UL1560-3K1E-I	UL1560-3G1E-I
PPSupportPack(VMware vSphere 6 Essentials for 3 hosts)(1year)	ULH1S1560161E-I	*1	ULH1S1560185E-I	ULH1S1560169E-I
VMware vSphere 6 Essentials Plus for 3 hosts 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.	UL1560-3A2E-I	*1	UL1560-3K2E-I	UL1560-3G2E-I
PPSupportPack(VMware vSphere 6 Essentials Plus for 3 hosts)(1year)	ULH1S1560162E-I	*1	ULH1S1560186E-I	ULH1S1560170E-I
VMware vSphere 6 license for Medium and Large-sized Business				
VMware vSphere 6 Standard for 1processor Note: VMware vCenter Server license is not included.	UL1560-3A3E-I	*1	UL1560-3K3E-I	UL1560-3G3E-I
PPSupportPack(VMware vSphere 6 Standard for 1processor)(1year)	ULH1S1560163E-I	*1	ULH1S1560187E-I	ULH1S1560171E-I
VMware vSphere 6 Enterprise Plus for 1processor Note: VMware vCenter Server license is not included.	UL1560-3A5E-I	*1	UL1560-3K5E-I	UL1560-3G5E-I
PPSupportPack(VMware vSphere 6 Enterprise Plus for 1processor)(1year)	ULH1S1560165E-I	*1	ULH1S1560189E-I	ULH1S1560173E-I
VMware vSphere 6 vCenter Server				
VMware vCenter Server 6 Foundation	UL1560-3A7E-I	*1	UL1560-3K7E-I	UL1560-3G7E-I
PPSupportPack(VMware vCenter Server 6 Foundation)(1year)	ULH1S1560167E-I	*1	ULH1S1560191E-I	ULH1S1560175E-I
VMware vCenter Server 6 Standard	UL1560-3A8E-I	*1	UL1560-3K8E-I	UL1560-3G8E-I
PPSupportPack(VMware vCenter Server 6 Standard)(1year)	ULH1S1560168E-I	*1	ULH1S1560192E-I	ULH1S1560176E-I

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

8.5 ft Server Control Software

Product Name / Description	Part Number
ftSys for VMware vSphere6.5 for R320e/R320f	UL1377-008E

NOTE:

- ft Server Control Software for VMware is not included in the base model N8800-218F/219F. Be sure to order UL1377-008E to install VMware ESXi 6.5 on R320f series.

8.6 ft Server Control Software Support Service

For R320e/R320f VMware model, please also order below support product for ft Server Control Software support.

Product Name / Description	Part Number
PPSupportPack(1year support of ftSys for VMware vSphere6.5) Software support service for ft Server Control Software for vSphere 6.5	ULH1S-1377-005F

8.7 Tower Conversion Kit

Product Name / Description	Part Number
Tower Conversion Kit 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
Filter	4U-FT Dust Filter For R320e/R320f 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
Boot Mode Setup Option (Legacy Mode) Setup option to change the OS Boot Mode to Legacy mode	NESV16-012

NOTE:

- As the default settings at the factory, UEFI mode is set as OS Boot mode. Order NESV16-012 Boot Mode Setup Option (Legacy Mode) for VMware vSphere 6.5 that requires Legacy Mode.
- Before installing VMware ESXi on R320f, please be sure to set [XHCl mode] to [Auto] by referring to the installation guide (VMware) for R320f.

References

Server Management

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

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	✓
	Panic screen, Boot screen	✓
	Text-based screen (OS console)	✓
	GUI-based screen (OS console)	✓
Remote control (via LAN)	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)	✓
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

Supported PCI Cards and Installable Slots

R320f-E4

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

¹ Not installable when using Tower Conversion Kit.

² On R320f +vSphere6.5, N8804-011 and N8804-012 can be installed at same time.

R320f-M4

Part Number	Product Name	Slots				Notes
	Slot # :	#1	#2	#3	#4	
	PCI Slot:	x4	x4	x8	x8	
	Card height:	LP	LP	FH	FH	
	Slot type:	x8	x8	x8	x8	
N8804-012	1000BASE-T 2ch board kit	✓ ²	✓ ²	✓ ²	✓ ²	
N8804-011	10GBASE-T 1ch board set	-	-	✓	✓	Max. 1
N8803-040AF	Fibre Channel board kit	-	-	✓ ¹	✓ ¹	

¹ Not installable when using Tower Conversion Kit.

² On R320f-M4 +vSphere6.5, 4pair N8804-012 can be installed. But N8804-011 and N8804-012 cannot be installed at same time by the limitation of network configuration on vSphere6.5.

Notes for using VMware vSphere 6.5 on Express5800/R320f

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
- Web 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 6.5

LAN Controller

When additional LAN controller is required, please pay attention to the limitation on network port configuration on VMware. If you would like to choose 10GBASE-T 2ch board kit on R320f-M4, please consult with your sales representative. And if you would like to choose 10GBASE-T 1ch board kit on R320f-E4, please consult with your sales representative, too.

VMware define the configuration maximum. In the use of combination of 10 Gb and 1Gb Ethernet ports, please take care of the limitation, Sixteen 10 Gb and four 1 Gb ports on one server.

VMware Host 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
1.0	January 19, 2018	Initial release
2.0	February 13, 2018	Deleted the description of the Network configuration limitation on vSphere6.5
3.0	May 21,2018	New Part number of VMware license is defined.