

System Configuration Guide Express5800/R320a-E4,R320b-M4 (Windows2008 R2 model)

[2010.10]



R320a-E4/R320b-M4 (Windows2008 R2 model)



Fault Tolerant technology GeminiArchitecture™

- Intel® Xeon® Processor E5504(R320a-E4)/
X5670(R320b-M4)
- 4U Rackmount form factor
- Windows Server® 2008 R2 Enterprise and Hyper-V supported

Model		NEC Express5800/R320a-E4	NEC Express5800/R320b-M4	Redundancy
Product Code		N8800-155F	N8800-154F	
CPU*1	Type	Intel® Xeon® Processor E5504	Intel® Xeon® Processor X5670	Redundant
	Clock Speed	2GHz	2.93GHz	
	Number of processors (std./max.)	1/2		
	L3 Cache	4MB	12MB	
	Core and Thread (per processor)	4C/4T	6C/12T	
Chipset		Intel®5500 + GeminiEngine™ (FPGA)		Redundant
Memory*1	Standard	-		Redundant
	Max	48GB (4GBDIMM x3x4)	96GB (8GBDIMM x3x4)	
	Supported Memory	DDR3 SDRAM DIMM, Registered		
	Native Speed (max.)	800MHz	1333MHz	
	Error detection and correction	ECC, x4 SDDC		
Storage	Hard drive	Capacity (std.)	-	Redundant
		Capacity (max.)	2.5-inch HDD: SAS 4.8TB (8 x600GB)*2	
		Hot swap	Supported	
	I/F and RAID	SAS 3Gb/s: RAID1 (Standard)		
	Optical disk drive	DVD-RAM drive*3		
Floppy disk drive	Internal/External drive (option)			
Expansion Slots	Type	2 x PCI Express 1.0 (x4 lane, x8 socket)*4	2 x PCI Express 2.0 (x4 lane, x8 socket)*4 2 x PCI Express 1.0 (x4 lane, x8 socket)*4	Redundant
	Controller/Video RAM	Integrated in Server Management Controller / 32MB		
Graphics	Color depth and Resolution	16,777,216-color: 800x600, 1024x768 65,536-color: 1280x1024		
	Interface	1 x Analog RGB (Mini D-Sub15 pin, 1xRear), 4 x USB2.0 (1xFront, 3x Rear), 2x 1000BASE-T LAN connector (1000BASE-T/100BASE-TX, RJ-45, 2xRear)*4, 1x Management LAN connector (100BASE-TX/10BASE-T, RJ-45, 1x Rear)*4		Redundant
Dimensions (W x D x H)		483x736x178mm		
Weight (min./max.)		46kg/52kg		
Power supply		AC100/240V±10%, 50/60Hz±3Hz		Redundant
Power consumption (Max. config, Operating)		1400VA/1390W		
Temperature, Relative Humidity		Operating: 10 to 35°C/Non-Operating: -10 to 55°C, 20 to 80% (non condensation)		
Included Accessories		NEC EXPRESSBUILDER (NEC ESMPRO/Manager(Windows), NEC ESMPRO/Agent(Windows), ExpressSetup), User's Guide, User's Guide (Setup), Key		
Software for Availability		Active Upgrade™		Redundant
Supported operating system		Windows Server® 2008 R2 Enterprise (Hyper-V 2.0 supported)		

Notes

*1 Specifications are for each CPU/IO module. Actual number is double that is specified due to duplication.

*2 Logical Capacity

*3 Writing software is not provided for this DVD drive.

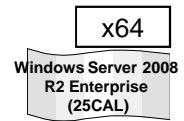
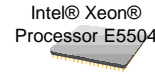
*4 The number of Slots per CPU/IO module.

Express5800/R320a-E4, R320b-M4(Windows2008 R2 model)

Low-End Rack mount model

N8800-155 Express5800/R320a-E4(4C/E5504-W28EX64) no-Memory, no-HDD

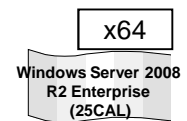
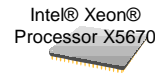
Intel® Xeon® Processor E5504 (2.0GHz) x1, 4MB 3rd cache, QPI speed 4.8GT/s
no-Memory, no-HDD,
DVD-RAM drive x1, 1000BASE-T 2ch, PCI slot x2
Windows Server 2008 R2 Enterprise supported.
NEC EXPRESSBUILDER (NEC ESMPRO Manager/Agent included)
Active Upgrade™ include as standard



Mid-Range Rack mount model

N8800-154 Express5800/R320b-M4(6C/X5670-W28EX64)no-Memory,no-HDD

Intel® Xeon® Processor X5670 (2.93GHz) x1, 12MB 3rd cache, QPI speed 6.4GT/s
no-Memory, no-HDD,
DVD-RAM drive x1, 1000BASE-T 2ch, PCI slot x4
Windows Server 2008 R2 Enterprise Edition supported.
EXPRESSBUILDER(NEC ESMPRO Manager/Agent included)
Active Upgrade™ included as standard



Tower conversion kit

N8843-003 Tower conversion kit

About ft Server Control Software

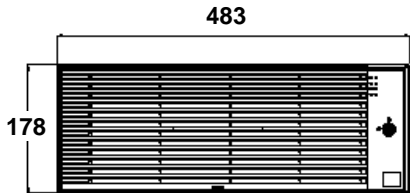
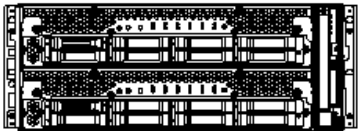
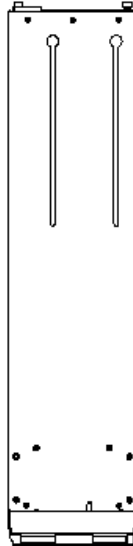
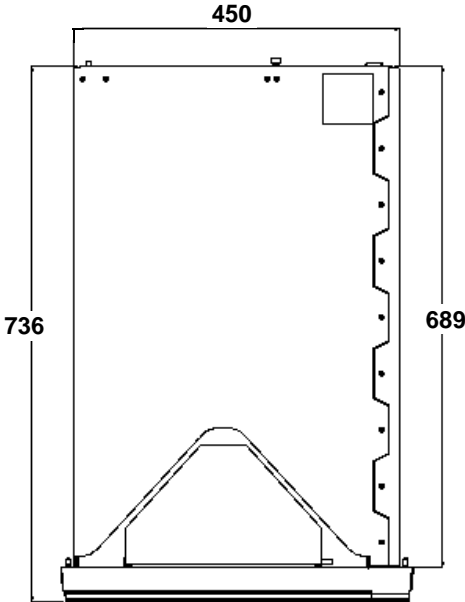
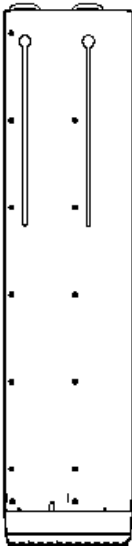
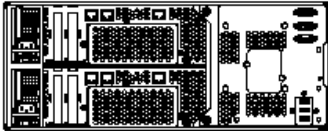
ft Server Control Software controls the operations of the NEC Express5800/ft series main components.ft Server Control Software update may be required to support a new option.

How to confirm the ft Server Control Software Version

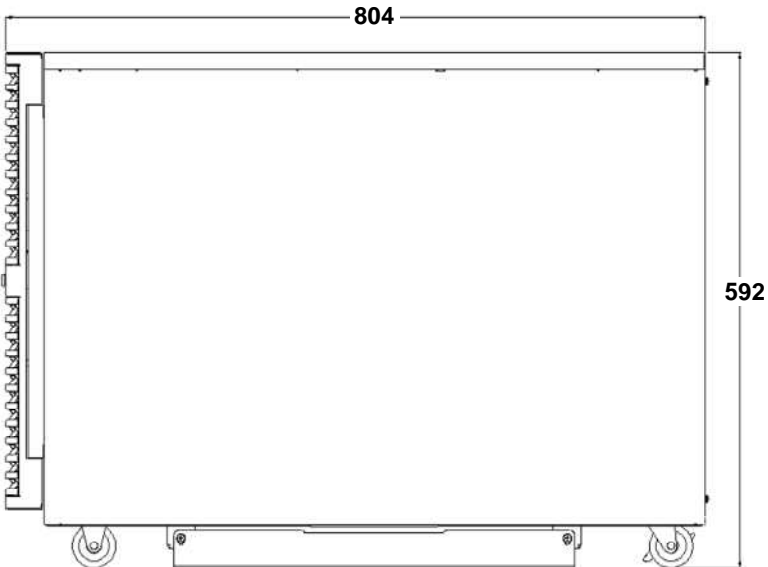
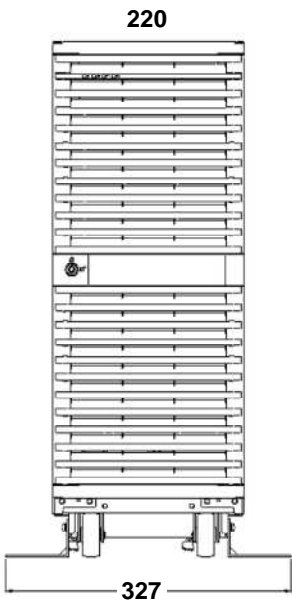
On the "Programs and Features" of the Control Panel,
select "ftServer Control Software" from the list of programs.

The current version is Ver. 7.0. (As of October, 2010)

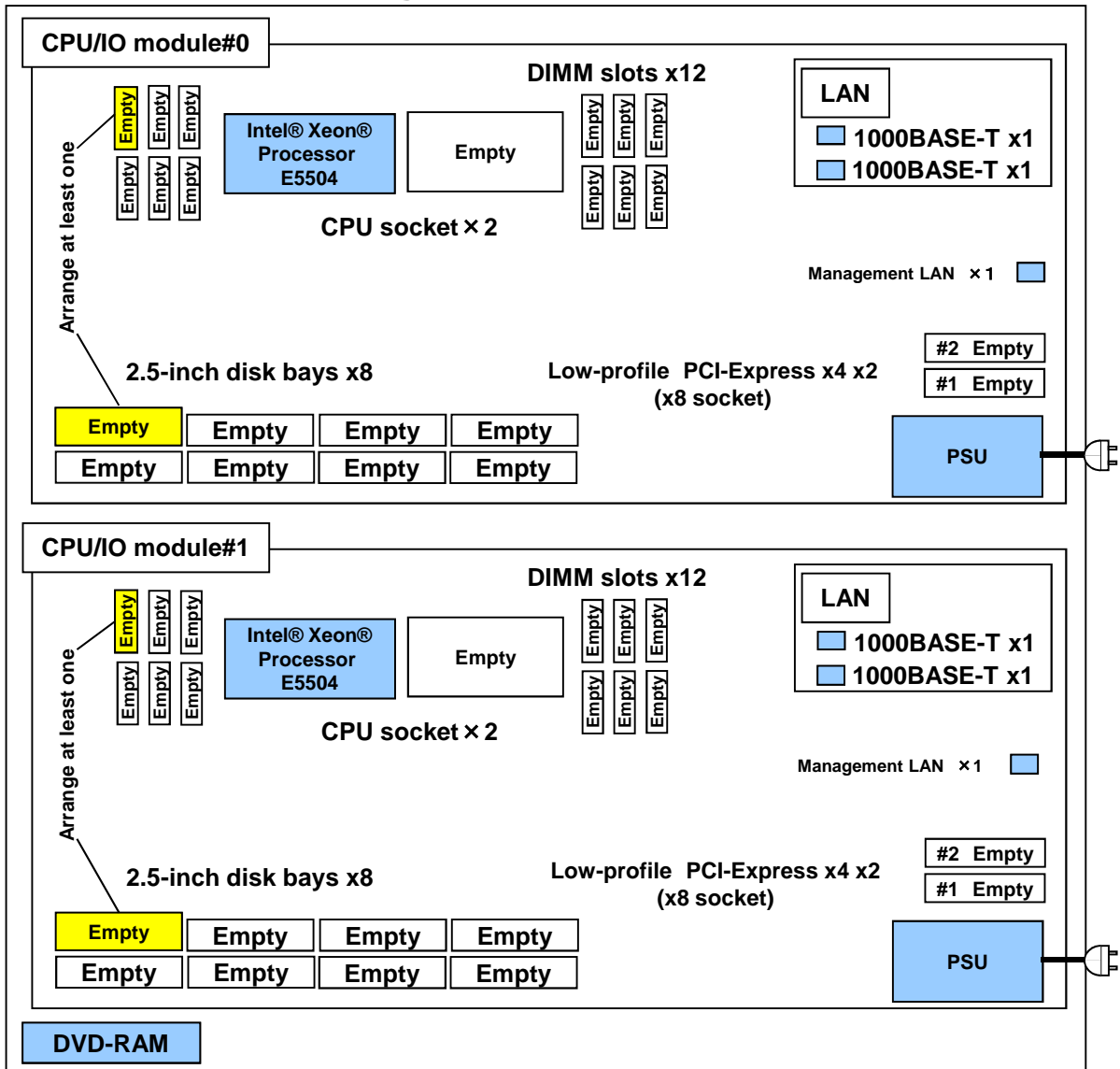
R320a-E4, R320b-M4
External Design



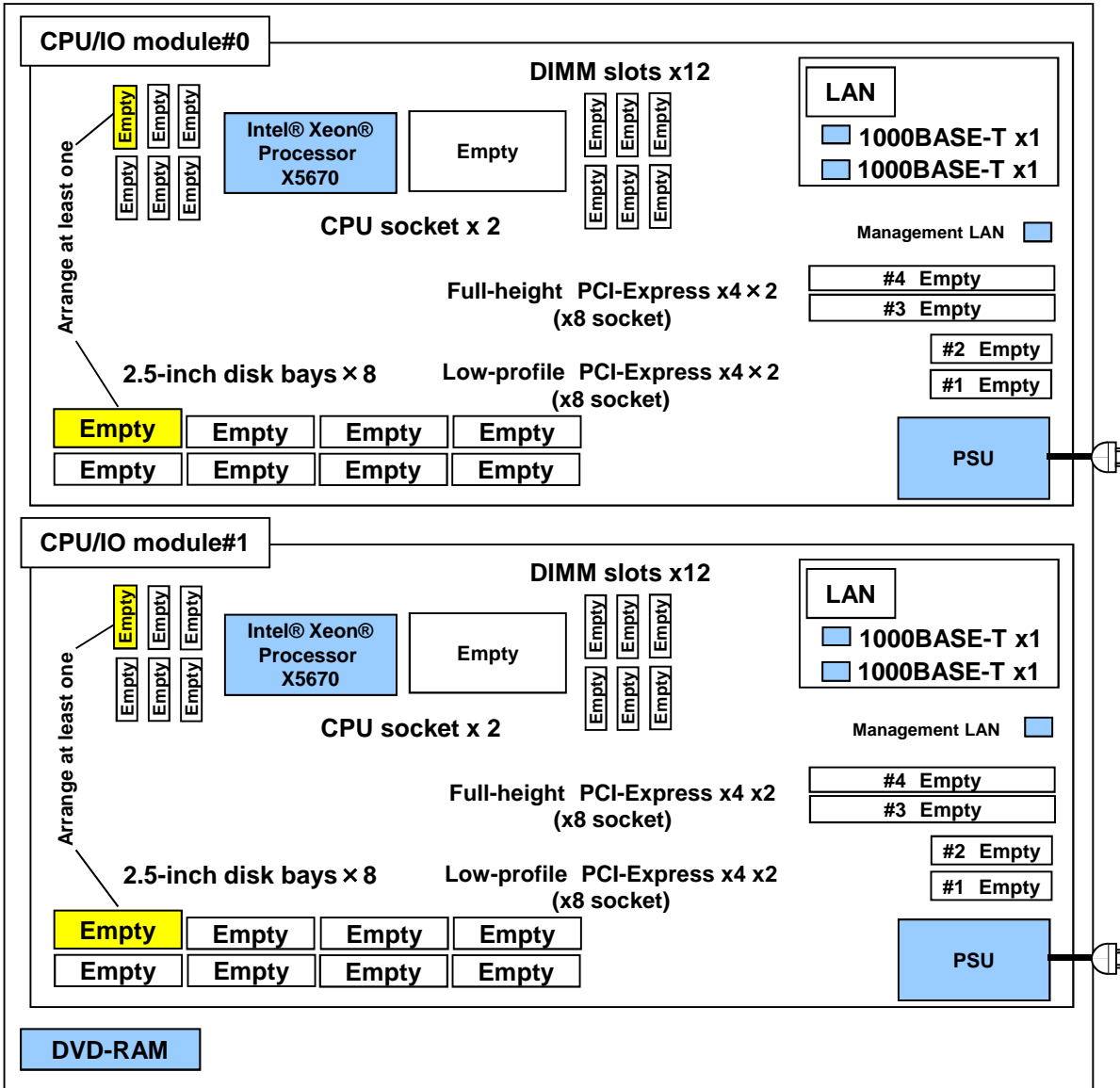
Tower conversion kit



R320a-E4 Quick configuration sheet

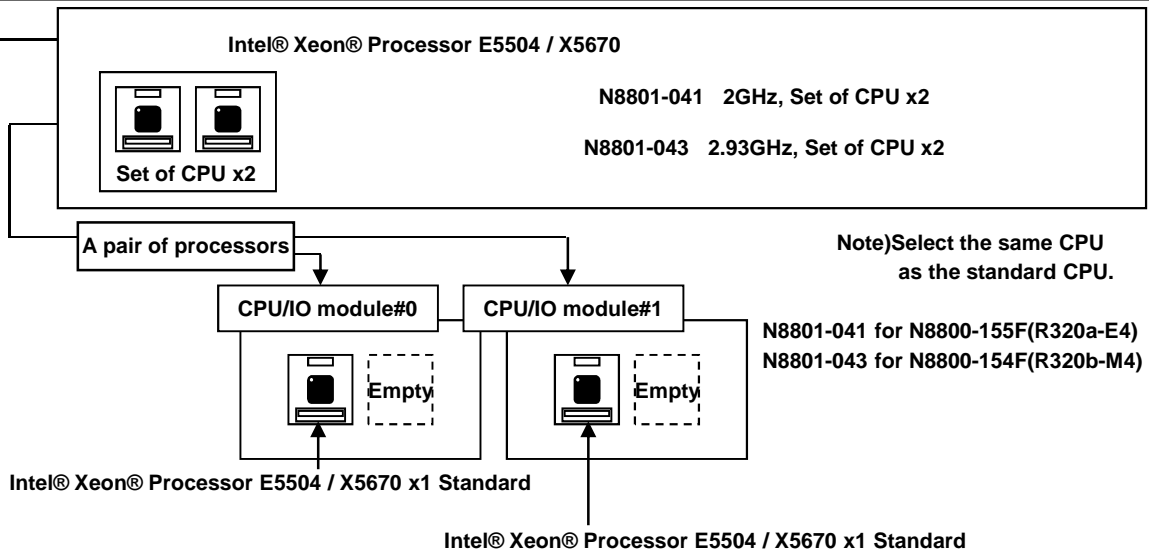


R320b-M4 Quick configuration sheet



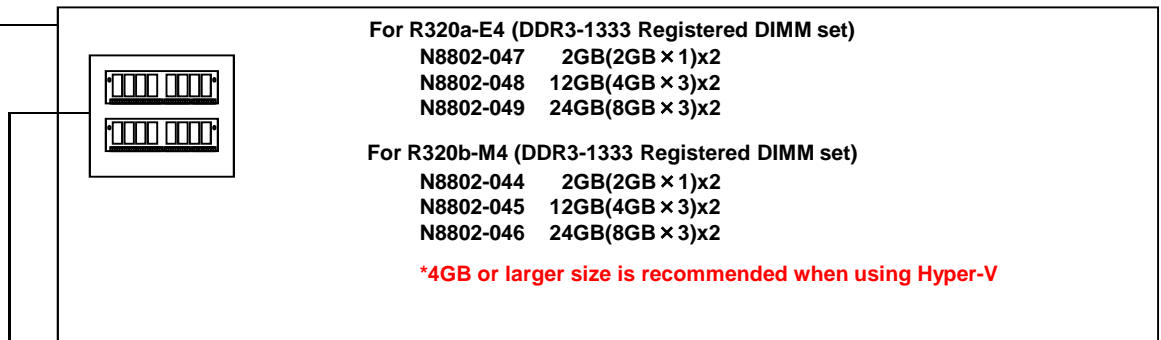
CPU

CPU socket



Memory

DIMM slots



Set of 2 or 6 DIMMs

Memory configuration pattern * Only the following patterns are supported.

CPU	Total MEM	DIMM Slot number										Notes				
		Standard CPU side					2nd CPU side									
		1	2	3	4	5	6	12	11	10	9	8	7			
Single	2GB*1	2													Required system disk	
	4GB	2		2												
	6GB	2		2		2										
	8GB	2	2	2		2										
	10GB	2	2	2	2	2										
	12GB	2	2	2	2	2	2								73.2GB or larger	
	12GB	4		4		4										
	24GB	4	4	4	4	4	4									
	24GB	8		8		8										
	36GB	8	4	8	4	8	4									
48GB	8	8	8	8	8	8								146.5GB or larger		
Twin	2GB*1	2													Required system disk	
	4GB*1	2												2		
	6GB	2		2		2										
	8GB	2		2							2			2		
	10GB	2	2	2	2	2										
	12GB	2	2	2	2	2			2		2			2	73.2GB or larger	
	16GB	2	2	2		2			2		2	2	2	2		
	20GB	2	2	2	2	2			2	2	2	2	2	2		
	24GB	2	2	2	2	2	2	2	2	2	2	2	2	2		
	24GB	4		4		4			4		4		4	4		
	36GB	4	2	4	2	4	2	2	4	2	4	2	4	2	4	146.5GB or larger
	48GB	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	48GB	8		8		8			8		8		8	8		
	72GB	8	4	8	4	8	4	4	8	4	8	4	8	4	8	
96GB	8	8	8	8	8	8	8	8	8	8	8	8	8	8		

*1: Interleave is enabled except 2GB DIMM x1 per CPU configuration.

Internal HDD

Diskbays

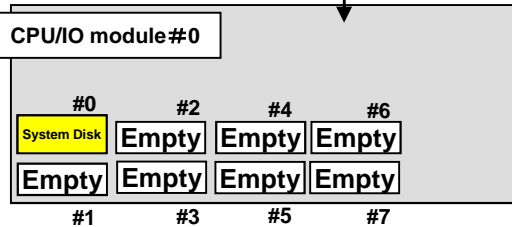
Be sure to install by double of hard disk drives in order to have the RAID-1 configuration. Also, both of the hard disk drives must have same capacity and rotational speed.



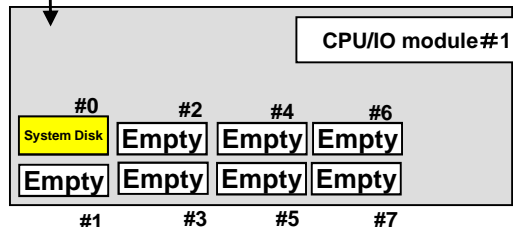
N8850-042	146.5GB HDD (10,000rpm)
N8850-043	300GB HDD (10,000rpm)
N8850-044	600GB HDD (10,000rpm)
N8850-045	73.2GB HDD (15,000rpm)
N8850-046	146.5GB HDD (15,000rpm)

Install 2x HDD (Same product code) as one set

Disk bays x8



Disk bays x8



Mirroring

The 73.2 GB of hard disk drive is recommended to install as system drive in order to reduce the time to resynchronize, when the system memory is below 20GB. When the system memory is 20GB or more, the system Disk needs to be 146.5GB or larger. Also, 300GB HDD is required when the system memory is 48GB or more.

*The RDR resumes disk mirroring by performing quick copies of only data changes, helping reduce the resynchronization time. However, please note that it would be the whole copy when replacing with a new disk.

Server Management (EXPRESSSCOPE Engine2)

CPU/IO module#0

Onboard RAS chip

Onboard RAS chip

CPU/IO module#1

R320a-E4 and R320b-M4 have the enhanced remote management function "EXPRESSSCOPE Engine2" as standard.



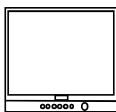
EXPRESSSCOPE Engine 2 (Standard)

*There is Management LAN port (100/10BASE-TX) on each CPU/IO module.

Display

D-sub 15 pin Interface

Local procurement.



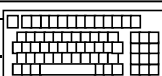
Display is NOT provided with the main unit. Please arrange locally.

Keyboard

USB



USB cable
[K410-177(1A)]
(1.5m)
Arrange as needed.



N8870-002AF Keyboard (USB) (Cable length 1.8m)
Not included in the main unit.

Mouse

Connect via keyboard



N8870-010A Mouse (USB) (Cable length 1.8m)
Not included in the main unit.

[Notes for Keyboard/Mouse]

Do not connect non-NEC-authorized USB devices.

FDD

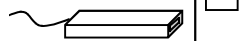
[Notes for FDD]

Choose one form the following (Exclusive use)

USB



USB cable
[K410-177(1A)]
(1.5m)
Arrange as needed.



Cable length 0.9m

N8160-81 External FDD
3.5-inch FDD(720KB/1.44MB)

[Discontinued on 2010/11/29]

A tray to install the floppy disk drive is needed to install in the rack mount system. (local procurement)

*Necessary when using a tray

USB



N8160-86 Flash FDD
1.44MB

[Notes for Flash FDD]

For more details to use Flash FDD, please refer to Flash FDD User's Guide and the main unit's User's Guide. Only one floppy drive or equivalent drive can be installed in the system.

The flash FDD does not support disaster recovery feature supported with backup software, including OS standard feature.

DVD-RAM

DVD-RAM



DVD-RAM drive (Standard)

[Notes for DVD-RAM drive]

The writing software is not provided for the DVD drive.

KVM switch unit

Required when connecting two or more servers.

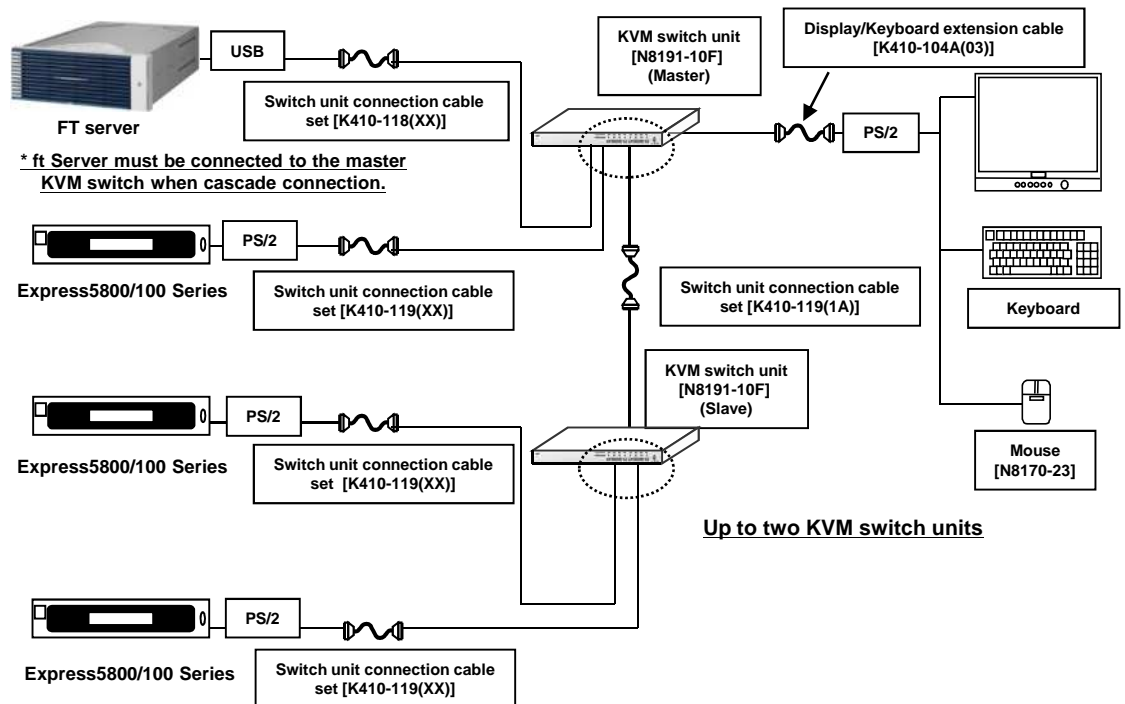


N8191-10F

KVM switch unit(8Server/USB)

*When Keyboard/Mouse do not work after fail over of CPU/IO module, disconnect and reconnect the USB cable or press the reset switch of the KVM Switch.

Sample configuration with KVM switch [N8191-10F]



17 inch LCD console unit

USB Interface

D-sub 15pin Interface

Switch Unit Connection Cable Set (1.8m/3m/5m)
 [K410-118(1A)] (1.8m)
 [K410-118(03)] (3m)
 [K410-118(05)] (5m)

•Up to eight servers can be connected directly to the LCD console unit. Use optional Server Switch Units to connect more than eight servers.

LCD Console Unit



A 17-inch LCD, keyboard, mouse, and Server Switch Unit (x8) are integrated into the 1U LCD Console Unit.

- 17-inch LCD Console Unit (1U/8port) [N8143-69F]
 Consists of the following components:

17-inch LCD

1280x1024 max. Full color

Keyboard (no ten-key numeric keypad)

Optical Mouse

Server Switch Unit

- Supports up to eight servers.
 - Allows the connection of up to 64 servers by cascading the Server Switch Units [N8191-10F].

Switch Unit Connection Cable Set (1.8m)
 [K410-119(1A)]

Server Switch Unit



- Server Switch Unit (8 ports) [N8191-10F]

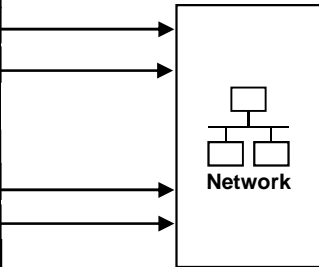
•The 17-inch LCD Console Unit [N8143-69F] allows the connection of up to 8 servers by cascading eight Server Switch Units [N8191-10F].

•The 17-inch LCD Console Unit [N8143-69F] does not support other SSUs [N8191-09F/-09AF].

LAN

CPU/IO module#0
Onboard
1000BASE-T
LAN port #1
LAN port #2
1000BASE-T
1000BASE-T
LAN port #1
LAN port #2
1000BASE-T

2x Standard LAN ports per CPU/IO module.



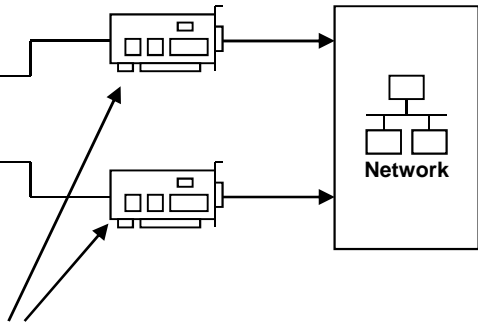
Be sure to connect four physical LAN interfaces to the network HUB.
Each of two pairs of 1000BASE-T on the CPU/IO module is redundant configuration.

CPU/IO module#1
Onboard

Optional LAN cards

- on the same PCI slot# of each CPU/IO module

CPU/IO module#0
PCI-Ex slot
CPU/IO module#1
PCI-Ex slot



A set of two cards
N8804-009 2-channel 1000BASE-T controller set

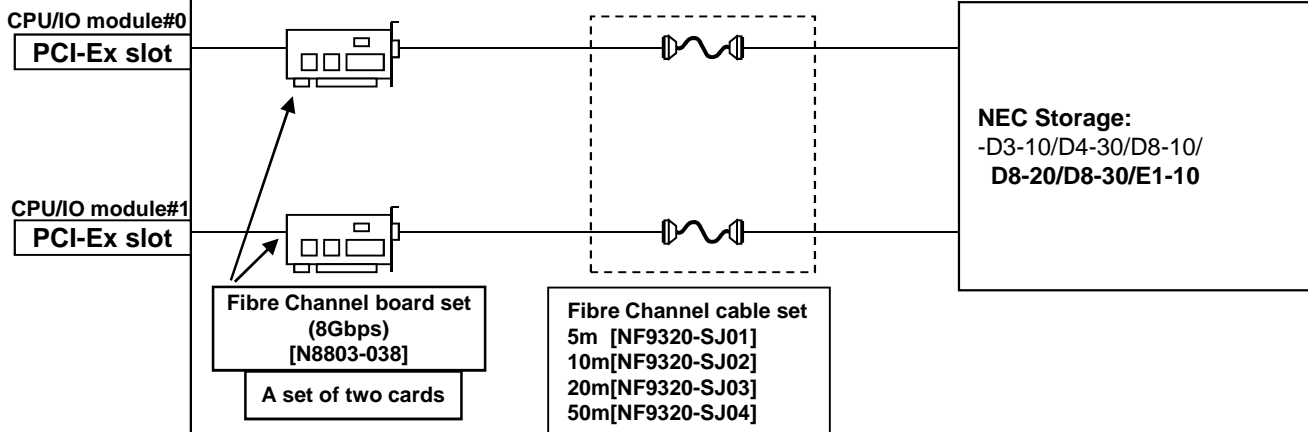
[Note for optional LAN cards]

N8804-007 is not supported on R320b-M4/R320a-E4 Windows Server 2008 R2 model.

Storage D3-10/D4-30/D8-10/D8-20/D8-30/E1-10

Note! - Be sure to procure the control software according to the sales region.

Direct connection



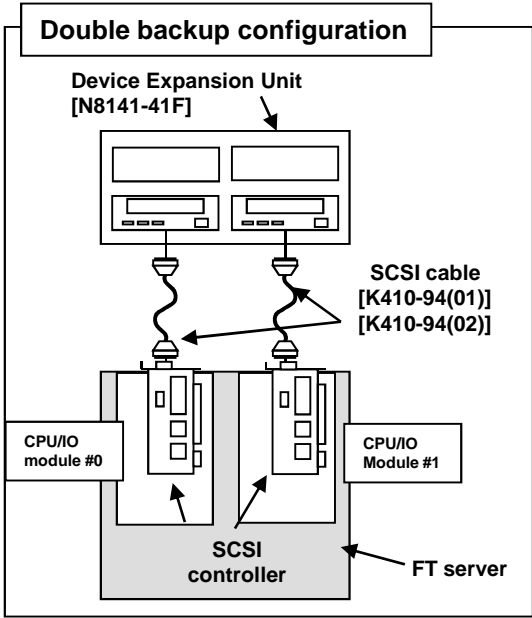
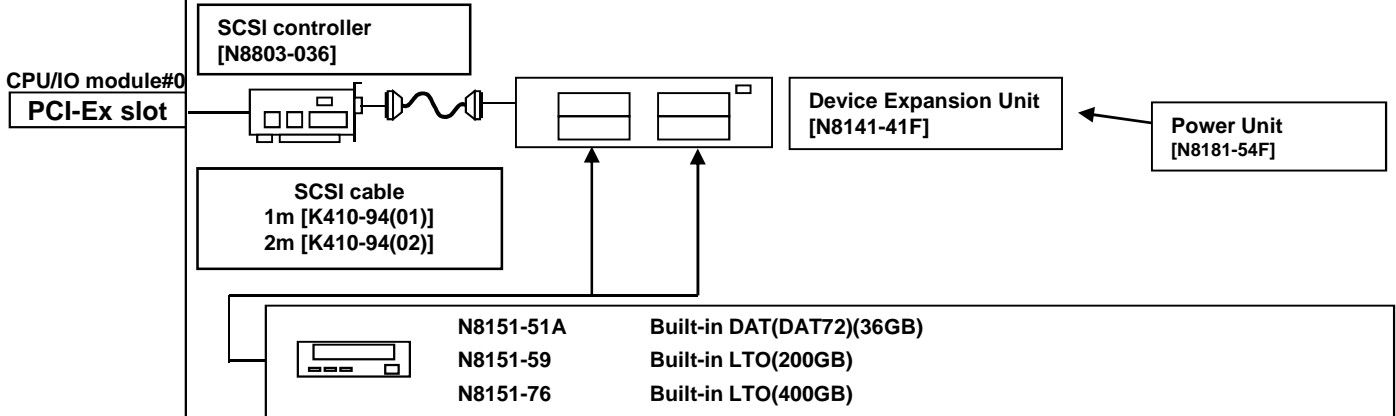
[Notes for FC controller]

On R320a-E4, it operates at 4Gbps bandwidth due to system bus performance.
N8803-035 Fibre Channel board set (4Gbps) is not supported.

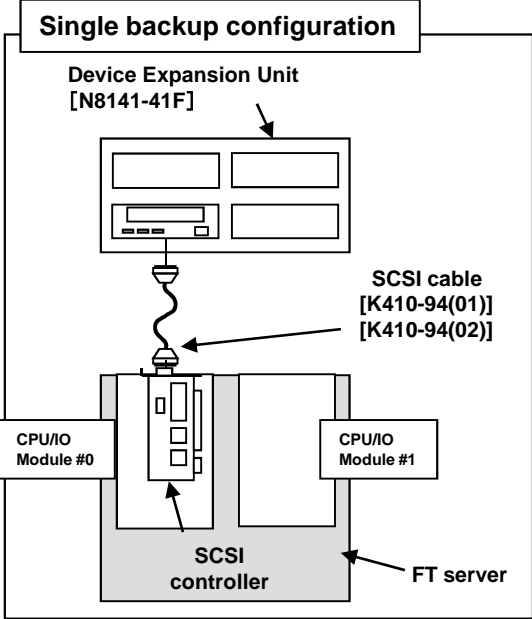
Connection via Fiber Channel switch:

To be supported in November.

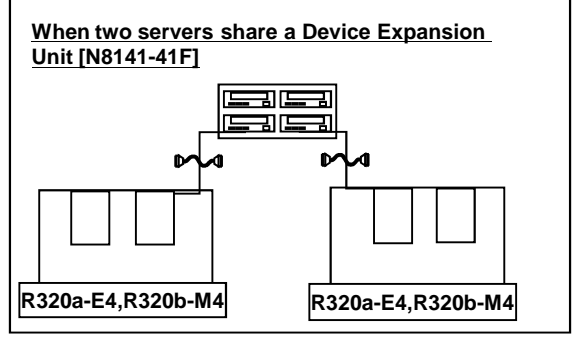
Tape backup

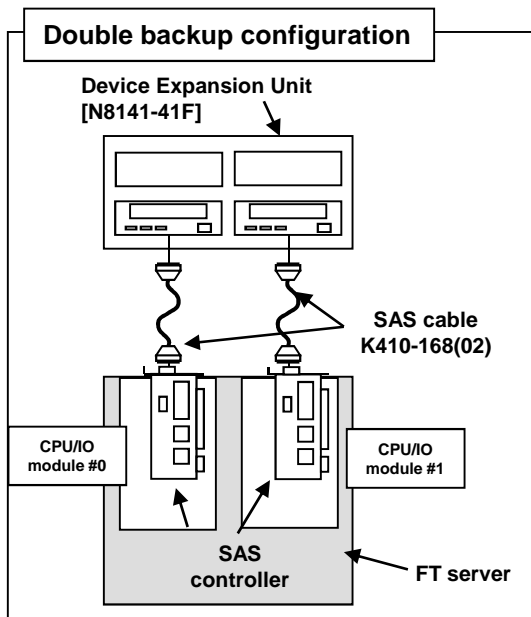
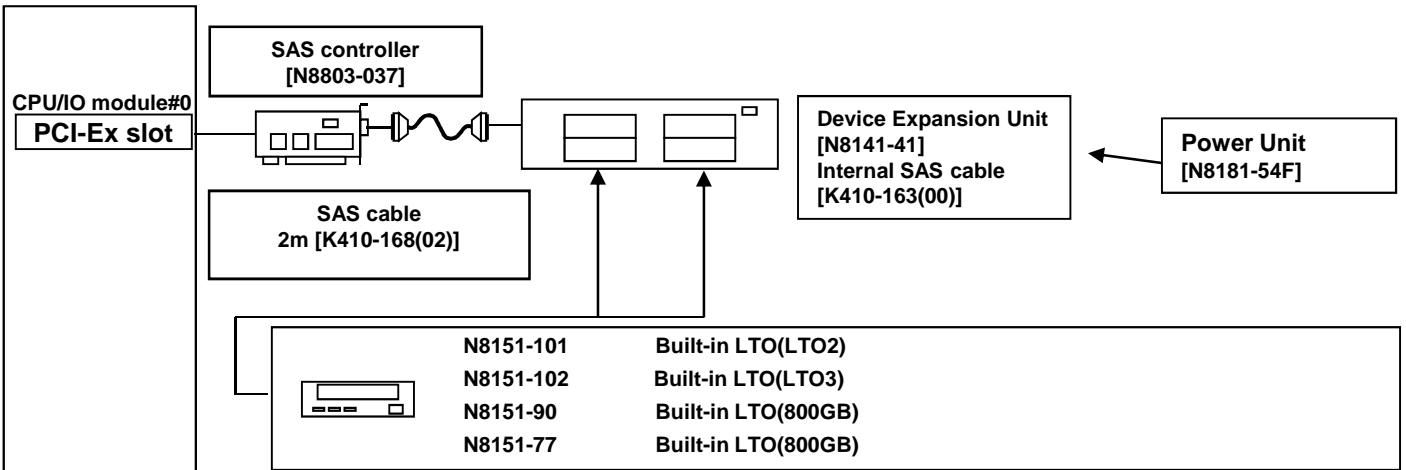


[Notes for double backup]
(1) Backup job
 There are the following notes for double backup configuration.
 Configure 2 sets of SCSI controller/SCSI cable/Backup device. Two backup devices are recognized separately by OS.
 When automatically backup by a job, make a job for each backup device so that each device can backup. In case one device fails, the other backup device can backup.
(2) Note for BrightStor ARCserve backup
 When making a job, backup is not performed if you put [*] in the [group] of destination tab.
 Be sure to configure two backup jobs with setting the device group at the group on the destination tab and the media definition as "*" or the name of the media.



[Notes for single backup]
 Configure 1 set of SCSI controller/SCSI cable/Backup device. In case a CPU/IO module or backup device fails, backup is not possible until the failed part is repaired or replaced.





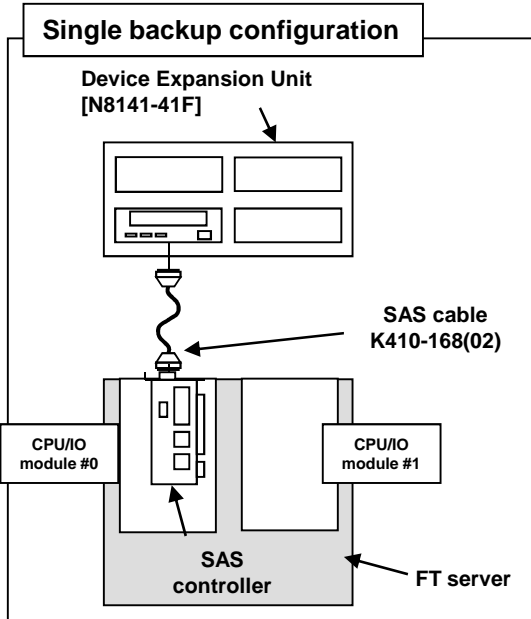
[Notes for double backup]

(1) Backup job
There are the following notes for double backup configuration.

Configure 2 sets of SAS controller/SAS cable/Backup device. Two backup devices are recognized separately by OS.
When automatically backup by a job, make a job for each backup device so that each device can backup. In case one device fails, the other backup device can backup.

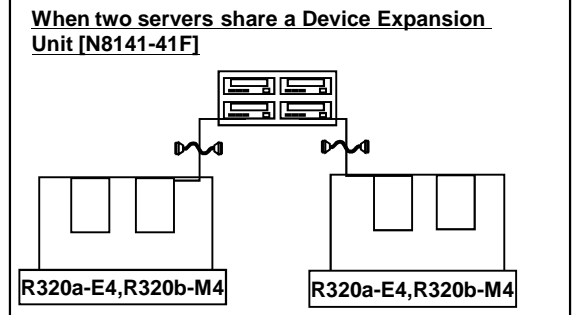
(2) Note for BrightStor ARCserve backup
When making a job, backup is not performed if you put [*] in the [group] of destination tab.

Be sure to configure two backup jobs with setting the device group at the group on the destination tab and the media definition as "*" or the name of the media.



[Notes for single backup]

Configure 1 set of SAS controller/SAS cable/Backup device. In case a CPU/I/O module or backup device fails, backup is not possible until the failed part is repaired or replaced.



Supported software for tape backup

The following table shows the support matrix of backup software and backup devices.

	Product code	Type			ARCserve	Backup Exec
					ARCserve r15	Backup Exec 2010
OS					W2K8	W2K8
DAT	N8151-51A	Built-in DAT	DAT72	SCSI	O	O*b1
LTO	N8151-59	Built-in LTO (Half-Hight)	Ultrium-2	SCSI	O	X
	N8151-76	Built-in LTO (Half-Hight)	Ultrium-3	SCSI	O	O*b1
	N8151-101	Built-in LTO(Half-Hight)	Ultrium-2	SAS	O*a1	O*b2
	N8151-102	Built-in LTO(Half-Hight)	Ultrium-3	SAS	O	O*b2
	N8151-90	Built-in LTO(Half-Hight)	Ultrium-4	SAS	O	O*b3
	N8151-77	Built-in LTO (Full-Hight)	Ultrium-4	SAS	O	O

O: supported X: not supported

Notes

<ARCserve>

*a1: Do not disable the tape driver on the device manager.

<Backup Exec>

*b1: Do not install the Symantec driver. Apply the OS standard driver.

*b2: Do not install the Symantec driver. Apply the driver which comes with the tape device.

*b3: Use the latest driver which can be downloaded from the Symantec website.

- Disaster Recovery Option“ is not supported on the ft server system.

- Regarding NetBackup, client function only supported.

Notes for using the backup software

- When using **BrightStor ARCserve** for restore, please use the same tape drive product used at the backup. A data exchange between different tape drives is not supported. Even if the same specification tape is used, there may be an error or some problems since the BrightStor ARCserve controls differently depending on the type of tape device.

ServicePack and update modules for BrightStor ARCserve can be downloaded from the CA website (<http://www.ca.com/>).

"Disaster Recovery Option" is not supported on the FT server system.

- Update modules/drivers for **Backup Exec** can be downloaded from the Symantec website (<http://www.symantec.com/>). You need to change the registry setting before reboot after applying update module or driver installation. Refer to the User's Guide for the procedure.

"Intelligent Disaster Recovery option" is not supported on the FT server system.

- It is not supported to backup from NEC Express5800/ft series to a backup device directly using **NetBackup**. However, NEC Express5800/ft series can be a backup-client machine of NetBackup.

"Disaster Recovery Option" is not supported on the ft server system.

- When using Windows Server 2008 Hyper-V on FT server, prepare a separate server for backup. For backup patterns, refer to each backup software company's web site.

Supported PCI cards and installable slots

R320a-E4

Product code		CPU/IO module		Notes	O: Supported
		Low-Profile			
		Slot#1	Slot #2		
N8804-007	1000BASE-T 2ch board kit	-	-	For previous R320a only	
N8804-009	1000BASE-T 2ch board kit	O	O	*1	
N8803-036	SCSI board	O	O	*2	
N8803-037	SAS board	O	O	*2	
N8803-035	FibreChannel controller (4Gbps)	-	-	For previous R320a only	
N8803-038	FibreChannel controller (8Gbps)	O	O	*1	

*1: Be sure to install a pair of controller on the same slot# of both of CPU/IO modules.

*2: N8803-036/037 can not be installed at the same time. Limited up to one board/module.

R320b-M4

Product code		CPU/IO module				Notes	O: Supported
		Low-Profile		Full-Height			
		Slot#1	Slot #2	Slot #3	Slot #4		
N8804-007	1000BASE-T 2ch board kit	-	-	-	-	For previous R320a only	
N8804-009	1000BASE-T 2ch board kit	O	O	O	O	*1	
N8803-036	SCSI board	O	O	O	O	*2	
N8803-037	SAS board	O	O	O	O	*2	
N8803-035	FibreChannel controller (4Gbps)	-	-	-	-	For previous R320a only	
N8803-038	FibreChannel controller (8Gbps)	-	-	O	O	*1	

*1: Be sure to install a pair of controller on the same slot# of both of CPU/IO modules.

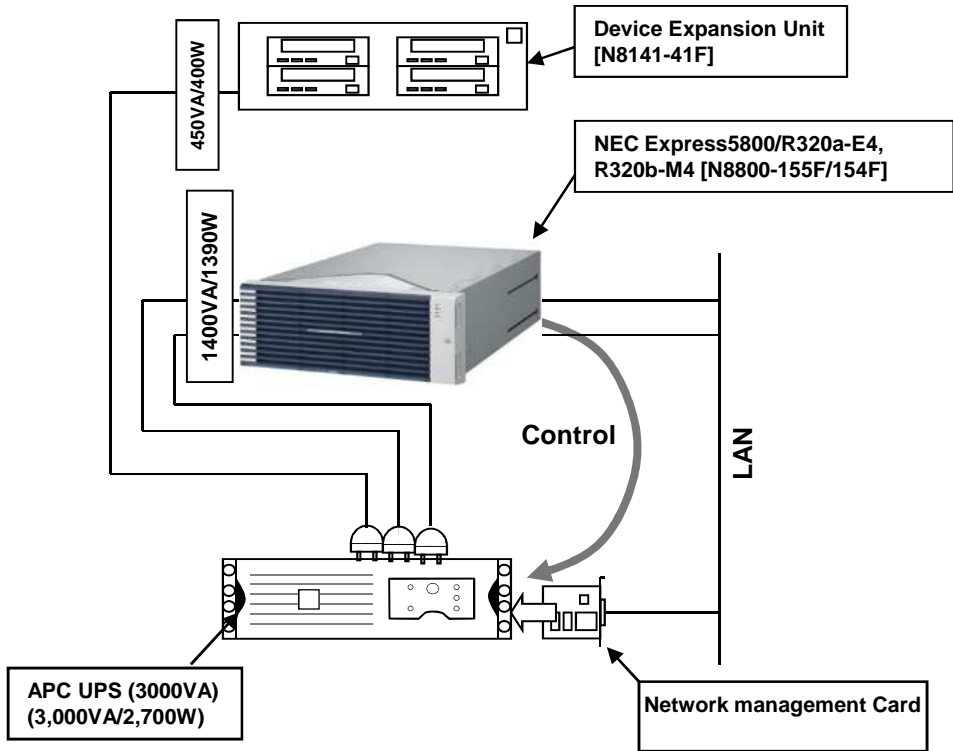
*2: N8803-036/037 can not be installed at the same time. Limited up to one board/module.

UPS

[Note]

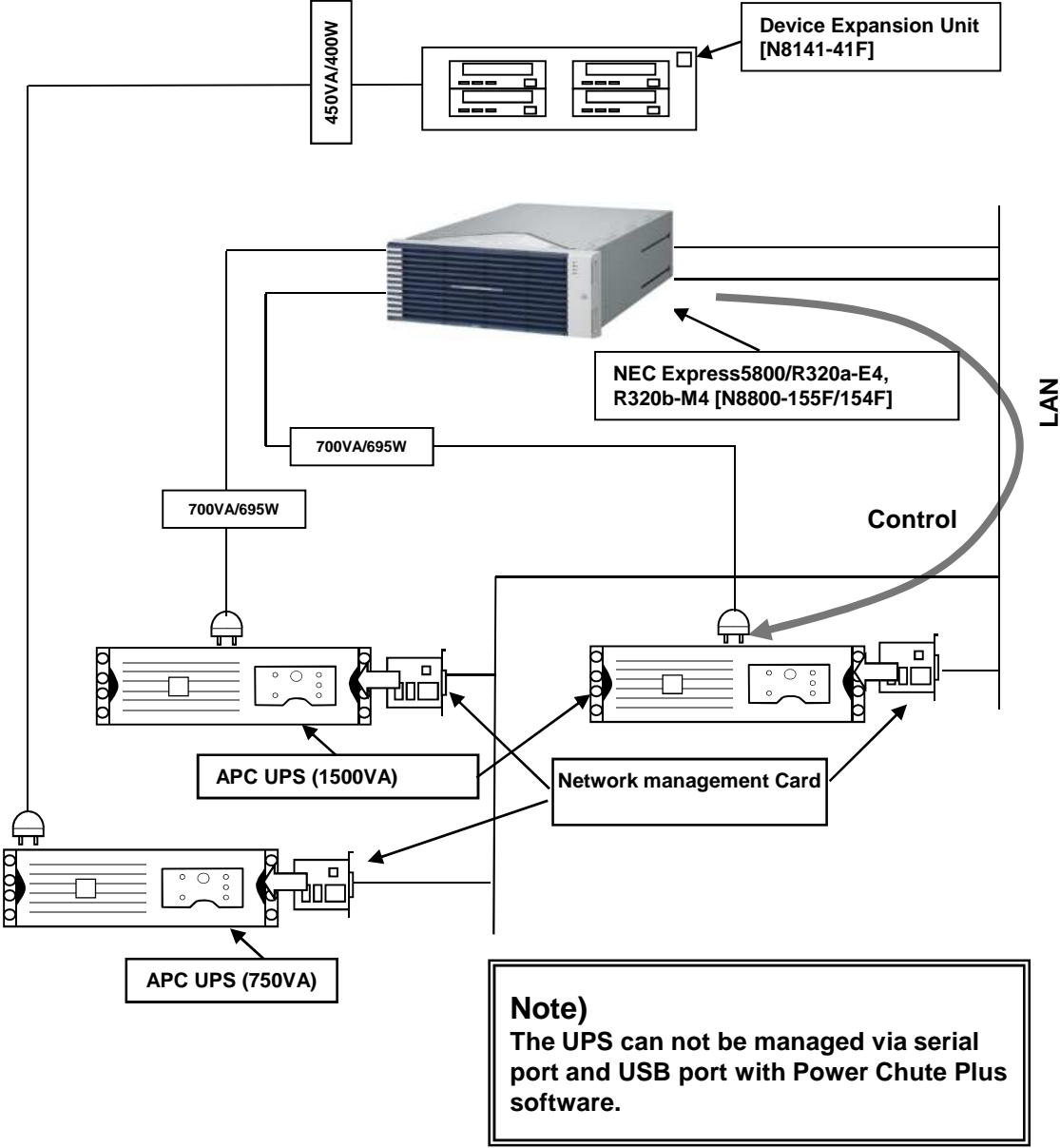
- Be sure to manage the UPS via network with Network shutdown software. The UPS can not be managed via serial port and USB port with Power Chute Plus software.

Example configuration (UPS Non-Redundant):



Note)
The UPS can not be managed via serial port and USB port with Power Chute Plus software.

Example configuration (UPS Redundant):



Tower conversion kit



N8843-003 **Tower conversion kit**
23 inch height pedestal rack with Front bezel for R320a/R320b
327(W)x 804(D)x 592(H)mm, 27kg (including stabilizer)

Operating System

- Microsoft Windows Server® 2008 R2 Enterprise (1-2 Processor, 25CAL Version)
UL0999-436EN English
UL0999-436CT Chinese Traditional
UL0999-436CS Chinese Simplified
UL0999-436KR Korean

Notes for using Hyper-V

System halt Time when Duplexing CPU Module

In the synchronization process of CPU modules, a memory copy is performed to duplex memory on both CPU modules. Some part of memory area can be copied without stopping the system while the other part requires the system to stop. When using Hyper-V, the system cannot use the function to copy without stopping the system. Therefore, the system does not respond for a longer period of time during the synchronization process of CPU modules as compared to when Hyper-V is not used. The following are the reference values of each model.

Note:

- 1) Memory copy time depends on the memory size installed in the system.
- 2) When a large amount of memory is installed, non-responding time will be longer and the connection from a client may time out. Adjust the timeout values of TCP/IP, etc., on the client side as necessary.

Model / Memory size	4GB	12GB	24GB	48GB	96GB
R320a-E4	9 sec	29 sec	57 sec	113 sec	-
R320b-M4	4 sec	8 sec	15 sec	29 sec	57 sec

* Actual time may differ depending on the status of use.

About Guest OS

1. Guest Operating Systems supported on NEC Express5800/ft series are the same as other general purpose servers.
2. Windows Server 2008 R2 Enterprise licence includes the use right to run up to four additional virtual instances of Windows Server

Notes for using Hyper-V

Backup

When using Hyper-V on FT server, prepare a separate server for backup. For backup patterns, refer to each backup software company's web site.

NEC ESM PRO Agent

For monitoring guest OS, NEC ESM PRO Agent for Guest OS is required.

Active Upgrade

A team assigned to the virtual network by Hyper-V Virtual Network Manager cannot be used in Active Upgrade. To use Active Upgrade, at least two teams are required.

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