
FUJITSU Storage ETERNUS Multipath Driver 2 (for AIX) Installation Information

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Supported Operating System (OS) Versions

The following table shows the version of AIX supported by the ETERNUS Multipath Driver (MPD).

Operating System	Fix Level	MPD Version
AIX 5L V5.2 *1 *2	Technology Level 09-CSP or later	2.0.0 ~ 2.3.0
AIX 5L V5.3	Technology Level 05-CSP or later	2.0.0 ~ 2.3.0
AIX 6.1		2.0.0 or later
AIX 7.1		2.1.0 or later
Virtual I/O Server (VIOS) 1.5 *1		2.1.0 or later
Virtual I/O Server (VIOS) 2.1 *1		2.0.0 or later
Virtual I/O Server (VIOS) 2.2 *1		2.2.0 or later

*1 SAN Boot environments are not supported.

*2 iSCSI interface is not supported.

Supported Disk Storage Systems

Supported disk storage systems and available path numbers depend on the model of ETERNUS Multipath Driver. Please check the table below.

Model of ETERNUS MPD	Disk Storage System	Maximum number of available path
ETERNUS Multipath Driver	ETERNUS DX60/DX60 S2/DX60 S3	2 - 8
	ETERNUS DX80 *1/DX80 S2	
	ETERNUS DX90/DX90 S2	
	ETERNUS DX100 S3/DX200 S3	
	ETERNUS DX200F	
	ETERNUS DX400/DX400 S2 series	
	ETERNUS DX500 S3/DX600 S3	
	ETERNUS DX8000/DX8000 S2 series	
	ETERNUS DX8700 S3/DX8900 S3	
	ETERNUS2000	
	ETERNUS4000 *2	
	ETERNUS8000	
	ETERNUS3000 *3 *4	
	ETERNUS6000 *3 *4	

*1 The firmware version of ETERNUS DX80 must be V10L31 or later.

*2 SAN Boot from ETERNUS4000 model 80 and model 100 is not supported.

*3 SAN Boot is not supported.

*4 iSCSI interface is not supported.

The version of ETERNUS Multipath Driver which supports the disk storage system is as below.

Disk Storage System	Interface	MPD Version
ETERNUS DX60/DX80/DX90	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX60 S2/DX80 S2/DX90 S2	FC	2.1.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX60 S3	FC	2.3.0 or later
	iSCSI	2.3.0 or later
ETERNUS DX100 S3/DX200 S3	FC	2.3.0 or later
	iSCSI	2.3.0 or later
ETERNUS DX200F	FC	2.3.0 or later
	iSCSI	2.3.0 or later
ETERNUS DX400 series	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX500 S3/DX600 S3	FC	2.3.0 or later
	iSCSI	2.3.0 or later
ETERNUS DX400 S2 series	FC	2.1.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX8000 series	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX8000 S2 series	FC	2.1.0 or later
	iSCSI	2.2.0 or later
ETERNUS DX8700 S3/DX8900 S3	FC	2.4.0 or later
	iSCSI	2.4.0 or later
ETERNUS2000	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS4000	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS8000	FC	2.0.0 or later
	iSCSI	2.2.0 or later
ETERNUS3000	FC	2.0.0 or later
ETERNUS6000	FC	2.0.0 or later

Connection Requirements

The tables below shows related products supported by ETERNUS Multipath Driver.

Hardware Requirements

- Server

Server	MPD Version
IBM RS/6000	2.0.0 or later
IBM pSeries	2.0.0 or later
IBM System p	2.0.0 or later
IBM Power Systems	2.0.0 or later

- HBA

HBAs from IBM are supported. Please use the same cards of product ID to configure a multipath access. If using the different cards of product ID, a multipath access cannot work well.

Interface	HBAs	MPD Version
FC	FC cards from IBM	2.0.0 or later
iSCSI*1	NIC from IBM Only software initiator is supported.	2.2.0 or later

*1 SAN Boot is not supported.

- Topology

Interface	Topology	MPD Version
FC	FC-AL	2.0.0 or later
	Fabric	
iSCSI	Point-to-Point	2.2.0 or later
	Switch	2.2.0 or later

Software Requirements

- Clustering Software

Clustering Software	MPD Version
PowerHA (HACMP) 5.3 or later	2.0.0 or later
PowerHA 7.1	Not supported
Oracle RAC	2.1.0 or later

Restrictions and Limit release

The ETERNUS Multipath Driver has following restrictions.

Restrictions	Limit release MPD Version
The hot deletion of paths cannot be executed.	2.2.0
PCI Hot Plug is not supported.	2.2.0
On AIX 5.2 and AIX 5.3 the dynamic tracking of the fscsi device ("dyntrk" attribute) is not supported.	2.1.0
On AIX 6.1 and AIX 7.1, The dynamic tracking of the fscsi device ("dyntrk" attribute) is not supported.	2.4.0

Restrictions	Limit release MPD Version
On Virtual I/O Server (VIOS) 2.1, only Virtual SCSI Adapter connection is supported.	-
In the SAN Boot environment, the hot deletion of paths and PCI Hot Plug are not supported.	-
When using iSCSI to connect storage systems, do not use iompadm change adapter and iompadm restart adapter commands. Use iompadm change controller and iompadm restart controller commands instead.	-

Adapter Port Number of Disk Storage Systems

The iompadm info command shows attached disks information with adapter port number as the following example. The adapter port number means a connection point and is uniquely defined on each disk storage system. The figures below show the adapter port number of supported disk storage systems.

Example:

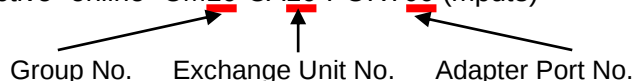
```
# /usr/lpp/FJSVmpd/iompadm info
```

```
Multipath Group 0x00
```

```
hdisk2 : E2000-000AD7-0000
```

```
  fscsi0 : standby "online" CM11-CA11-PORT03 (mpdt0)
```

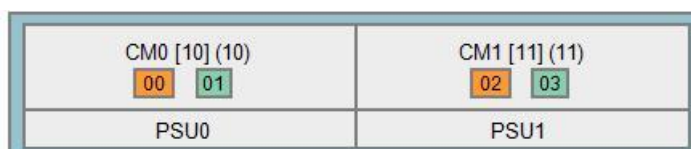
```
  fscsi1 : active "online" CM10-CA10-PORT00 (mpdt3)
```



Note:

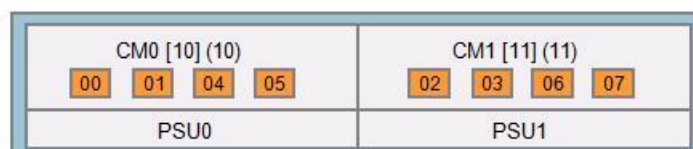
An adapter port number is different from a port number. Please refer to the User Guide of a storage system to check a port number. The relation between the port number and the physical position of the port depends on a storage system.

ETERNUS DX60/DX60 S2/DX60 S3, DX80 rear view



[] : Group No. () : Exchange Unit No. 00 : Adapter Port No. 03 : When using 2 port CM

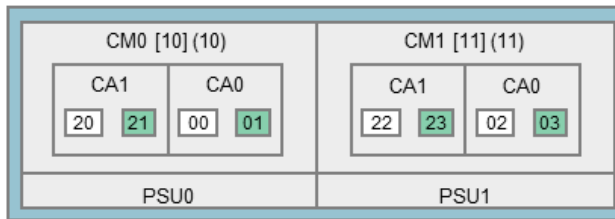
ETERNUS DX90 rear view



[] : Group No. () : Exchange Unit No. 00 : Adapter Port No.

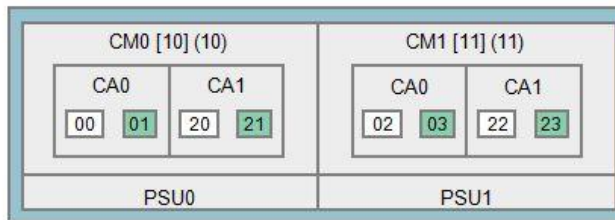
ETERNUS DX100 S3 rear view

When CA of FC is installed in the basic host interface

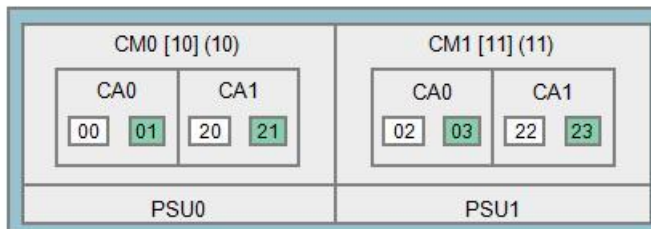


[]: Group No. (): Exchange unit No. : adapter Port No. ☒ : When using 2port-CA

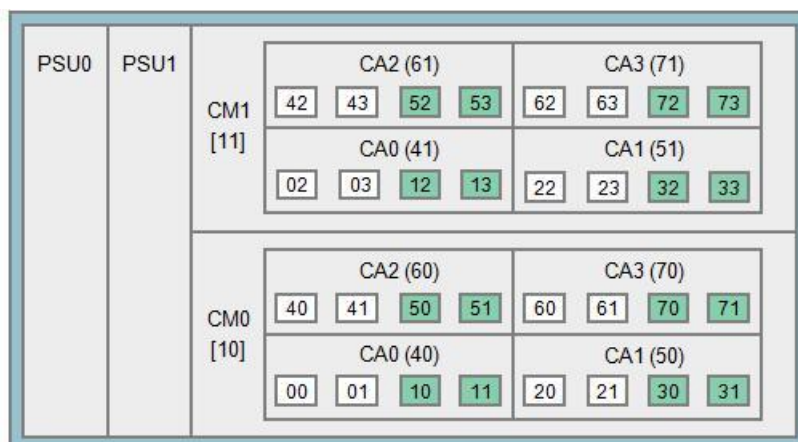
When CA other than FC are installed in the basic host interface



[]: Group No. (): Exchange unit No. : adapter Port No. ☒ : When using 2port-CA

ETERNUS DX80 S2/DX90 S2, ETERNUS DX200 S3, ETERNUS DX200F rear view

[]: Group No. (): Exchange unit No. : adapter Port No. ☒ : When using 2port-CA

ETERNUS DX400 S2 series, ETERNUS DX500 S3, DX600 S3 rear view

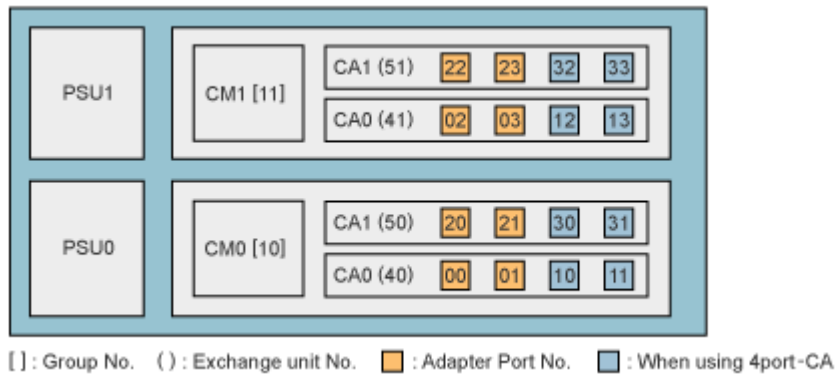
[]: Group No. (): Exchange unit No. : adapter Port No. ☒ : When using 4port-CA

ETERNUS DX8700 S3/DX8900 S3 rear view

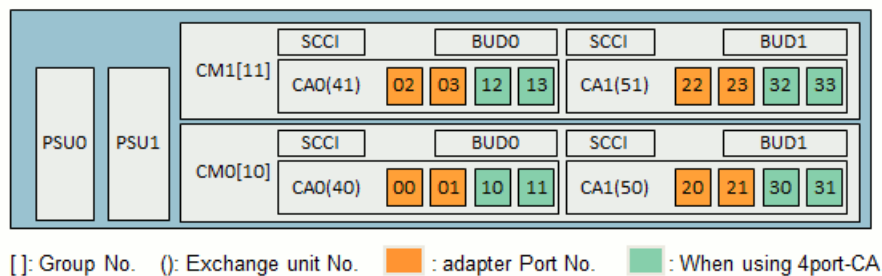
CE0		PSU0	PSU1	CM1 [20]	CA2 (61)	0042	0043	0052	0053	CA3 (71)	0062	0063	0072	0073
					CA0 (41)	0002	0003	0012	0013	CA1 (51)	0022	0023	0032	0033
				CM0 [10]	CA2 (60)	0040	0041	0050	0051	CA3 (70)	0060	0061	0070	0071
					CA0 (40)	0000	0001	0010	0011	CA1 (50)	0020	0021	0030	0031
CE1		PSU0	PSU1	CM1 [21]	CA2 (63)	0046	0047	0056	0057	CA3 (73)	0066	0067	0076	0077
					CA0 (43)	0006	0007	0016	0017	CA1 (53)	0026	0027	0036	0037
				CM0 [11]	CA2 (62)	0044	0045	0054	0055	CA3 (72)	0064	0065	0074	0075
					CA0 (42)	0004	0005	0014	0015	CA1 (52)	0024	0025	0034	0035
CE2		PSU0	PSU1	CM1 [22]	CA2 (65)	004A	004B	005A	005B	CA3 (75)	006A	006B	007A	007B
					CA0 (45)	000A	000B	001A	001B	CA1 (55)	002A	002B	003A	003B
				CM0 [12]	CA2 (64)	0048	0049	0058	0059	CA3 (74)	0068	0069	0078	0079
					CA0 (44)	0008	0009	0018	0019	CA1 (54)	0028	0029	0038	0039
CE3		PSU0	PSU1	CM1 [23]	CA2 (67)	004E	004F	005E	005F	CA3 (77)	006E	006F	007E	007F
					CA0 (47)	000E	000F	001E	001F	CA1 (57)	002E	002F	003E	003F
				CM0 [13]	CA2 (66)	004C	004D	005C	005D	CA3 (76)	006C	006D	007C	007D
					CA0 (46)	000C	000D	001C	001D	CA1 (56)	002C	002D	003C	003D

[]: Group No. (): Exchange unit No. : adapter Port No. : When using 4port-CA

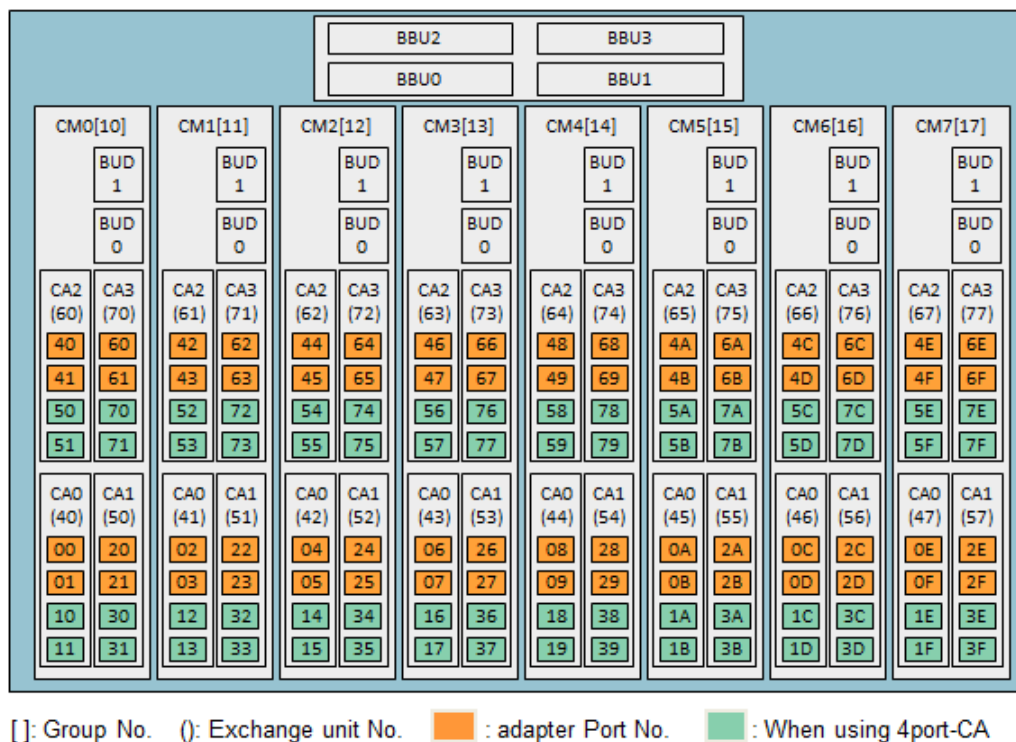
ETERNUS DX400 series, ETERNUS DX8100, ETERNUS4000 model 300/400/500/600, ETERNUS8000 model 700/800 rear view



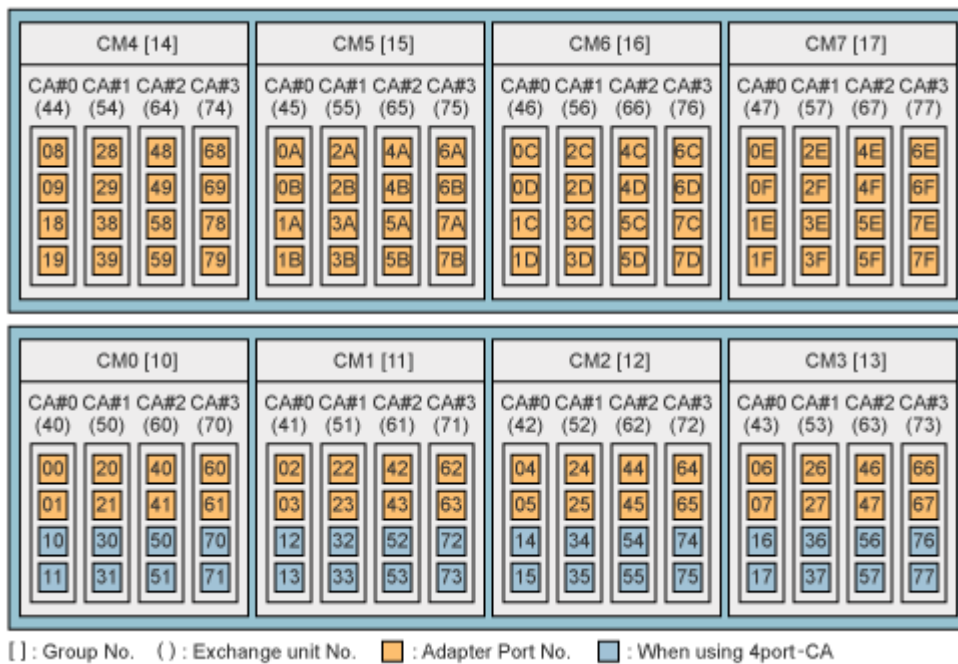
ETERNUS DX8100 S2 rear view



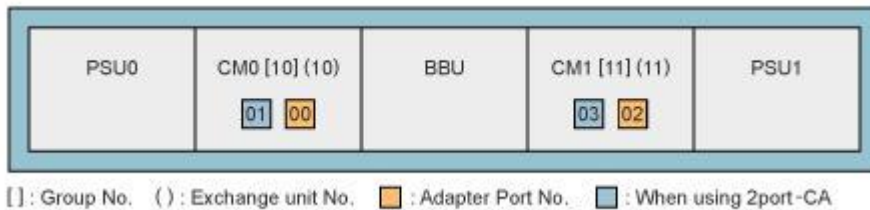
ETERNUS DX8700 S2 rear view



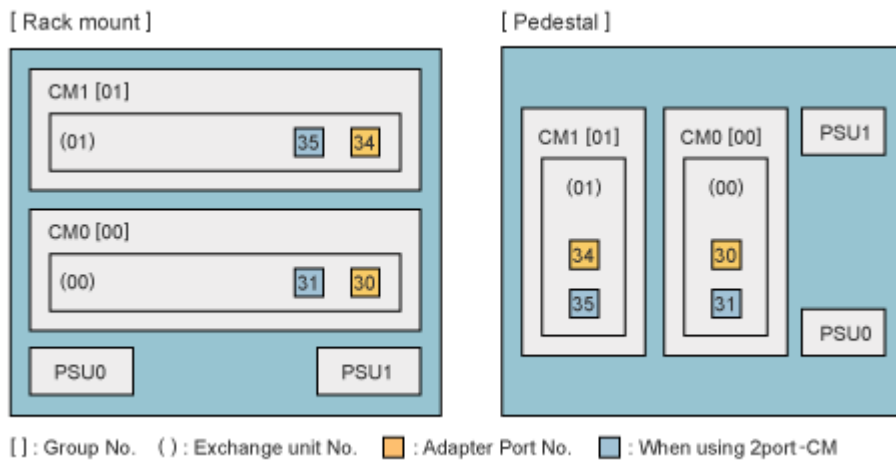
ETERNUS DX8400, ETERNUS DX8700, ETERNUS8000 model 900/1100/1200/2100/2200 rear view



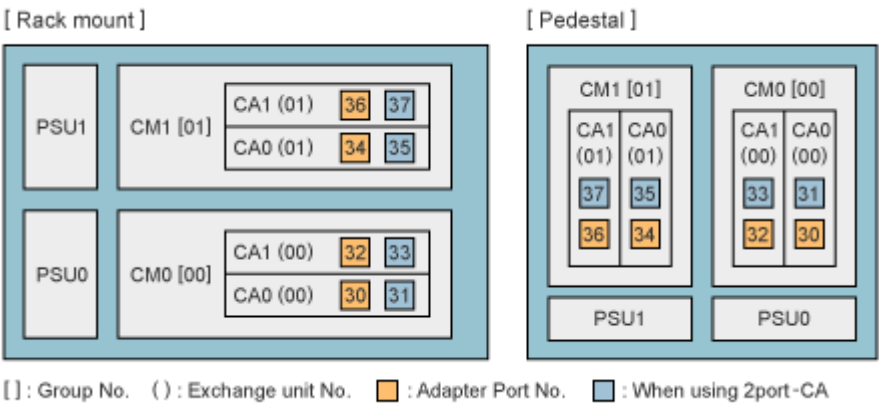
ETERNUS2000 rear view



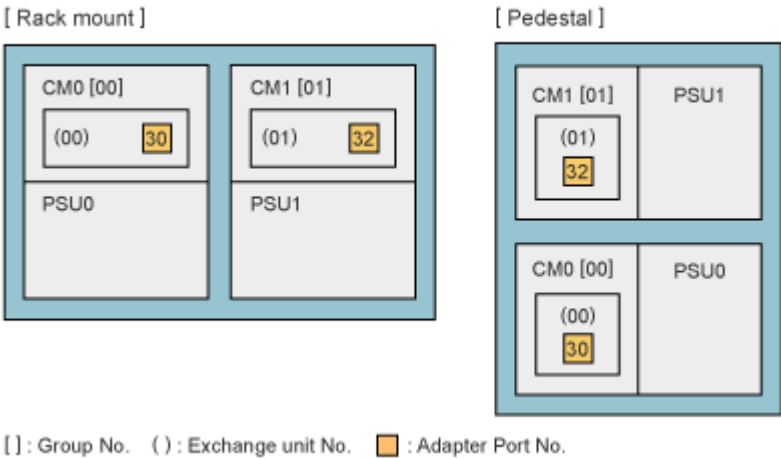
ETERNUS4000 model 80/100, ETERNUS3000 model 80/100 rear view



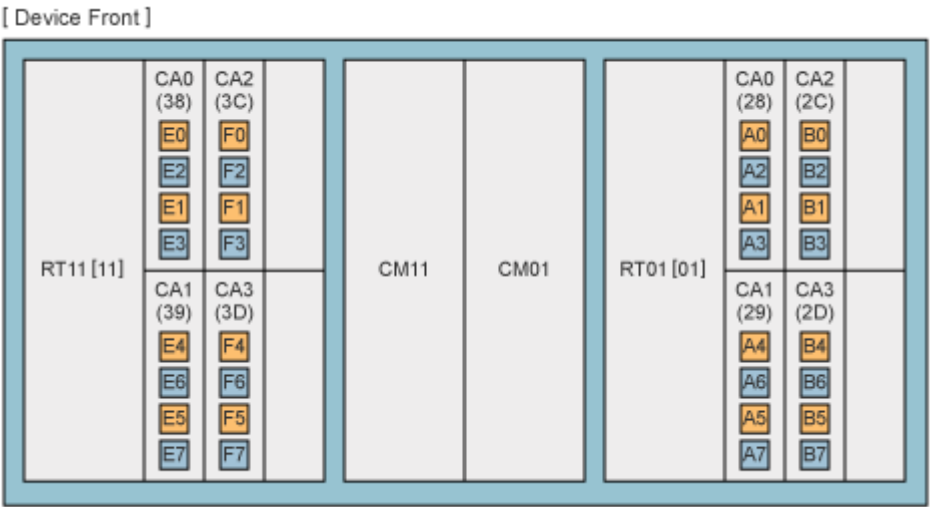
ETERNUS3000 model 200/300/400/500/600/700 rear view

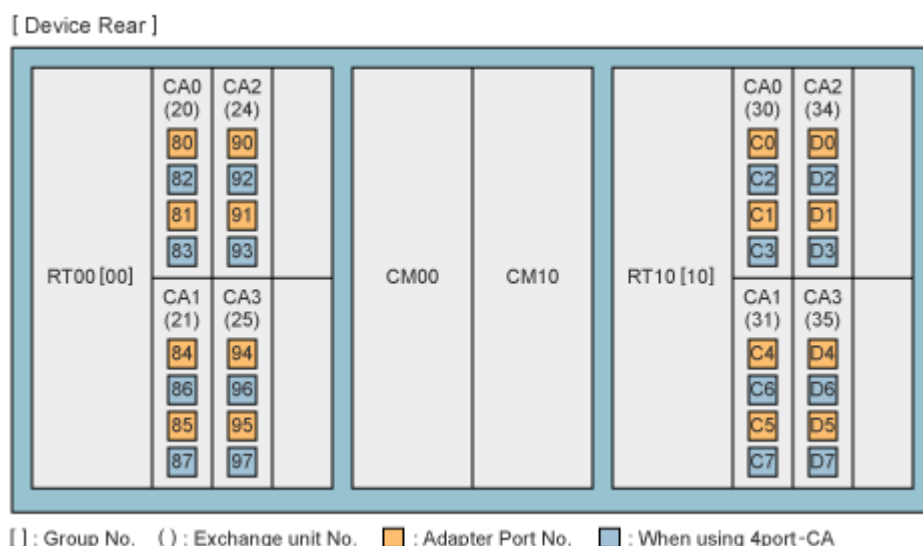


ETERNUS3000 model 50



ETERNUS6000 front & rear view





Assigned-/Non-assigned CM Type Disk Storage Systems

For ETERNUS disk storage systems, there are two system types: “Assigned-CM” and “Non-assigned-CM.” With Assigned-CM disk storage systems, the main access path for each LU is assigned to a particular controller. With Non-assigned-CM disk storage systems, there are no assigned LU access paths as such.

With “Assigned-CM” type disk storage systems, the path connected to the assigned controller is active. Paths to other controllers are on standby. With “Non-assigned-CM” type disk storage systems, all paths are active and used for access.

The table below shows the “Assigned-CM” and “Non-assigned-CM” disk storage systems.

Load balancing/Failover performance can differ depending on “Assigned-CM” and “Non-assigned-CM” use and the number of paths employed. For details, refer to the supplied product manual.

Assigned CM type	ETERNUS DX60/DX60 S2/DX60 S3, DX80/DX80 S2, DX90/DX90 S2, ETERNUS DX100 S3/DX200 S3/DX500 S3/DX600 S3, ETERNUS DX200F, ETERNUS DX400/DX400 S2 series, ETERNUS2000, ETERNUS4000, ETERNUS3000
Non-assigned CM type	ETERNUS DX8000/DX8000 S2 series, ETERNUS DX8700 S3/DX8900 S3, ETERNUS8000, ETERNUS6000

Change Unit of Disk Storage Systems

The `iompadm change/restart` command has a “change unit” parameter. The change unit represents a module of a disk storage system as follows.

Disk Storage System	cu/controllerunit	g/groupmodule
ETERNUS DX60/DX60 S2/DX60 S3, ETERNUS DX80/DX80 S2, DX90/DX90 S2, ETERNUS DX100 S3/DX200 S3, ETERNUS DX200F, ETERNUS2000, ETERNUS4000 model 80/100, ETERNUS3000	-	CM
ETERNUS6000	CA	ROUTER

ETERNUS DX400/DX400 S2 series, ETERNUS DX500 S3/DX600 S3, ETERNUS DX8000/DX8000 S2 series, ETERNUS DX8700 S3/DX8900 S3, ETERNUS4000 model 300/400/500/600, ETERNUS8000	CA	CM
--	----	----

When a CA of ETERNUS DX400 series is exchanged, the change unit must be cu or controllerunit. When a CM of ETERNUS DX60 is exchanged, the change unit must be g or groupmodule.

Notes

FC Switch

When using ETERNUS Multipath Driver with FC switches, zone settings must be defined. For the details of setting up zoning, please refer to the manual of FC switches.

About Storage Cluster

"dyntrk" attribute of fscsi should be "yes" to use Storage Cluster.

In AIX7.1, an initial value is "yes".

In AIX6.1, an initial value is "no".

Procedure

1. Check the current dyntrk value.
lsattr -El fscsi0 -a dyntrk
dyntrk no Dynamic Tracking of FC Devices True+
2. Set the "dyntrk" attribute to "yes" for all of the fscsi devices.
chdev -Pl fscsi0 -a dyntrk=yes
fscsi0 changed
3. Check the new dyntrk value is yes
lsattr -El fscsi0 -a dyntrk
dyntrk yes Dynamic Tracking of FC Devices True+
4. Procedure 1~3 is executed to all fscsi.
5. Reboot the server.
shutdown -Fr

About This Installation Information

This Installation Information is devoted to providing technical information and an overview of the basic facilities of ETERNUS Multipath Driver. The contents of this document may be modified without any prior notice. Please contact FUJITSU LIMITED if you find any error in descriptions.

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