FUJITSU Storage ETERNUS Multipath Driver (Oracle Solaris Version) Installation Information

Feb. 2021

Preface

FUJITSU Storage ETERNUS Multipath Driver 3.1.0 is bundling two drivers.

·the driver for Solaris 11 OS and Solaris 10 OS

·the driver for Solaris 10 OS and Solaris 9 OS

HBA	OS	the driver for Solaris 11 OS and Solaris 10 OS	the driver for Solaris 10 OS and Solaris 9 OS
SE0X7F31F, SE0X7F32F, SP1X7FAB2F, SE0X7F21F, SE0X7F22F, SP1X7FBA2F, SP1X7FAA2F, SP1X7FAR2F, SP1X7FAS2F, SP1X7FBR2F, SP1X7FBS2F, SP1X5FAR2F, SP1X5FAS2F, SP1X5FBR2F, SP1X5FBS2F, SP1X5FAA2F, SP1X5FBA2F (SE0X7F11F, SE0X7F12F*1)	Solaris11 Solaris10	✔	
SE0X7F11F, SE0X7F12F, SE0X7SA1F, Emulex LP10000	Solaris10		✔

*1 Please refer to notes (the driver for Solaris 11 OS and Solaris 10 OS).

Contents

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Supported OS

FUJITSU Storage ETERNUS Multipath Driver (MPD) supports the following Solaris OS versions:

OS Versions	MPD Version Levels/Patch
Solaris 11 OS	3.1.0
Solaris 10 OS 8/11 ~ 1/13	3.0.4 or later
Solaris 10 OS 3/05 ~ 9/10	2.0.0 or later

Note1: MPD 3.0.0 or later consists of the following one driver.

- the driver for Solaris 10 OS and Solaris 9 OS

Note2: MPD 3.1.0 or later consists of the following drivers. The driver to install varies with the type of Solaris OS/HBA.

- the driver for Solaris 11 OS and Solaris 10 OS
- the driver for Solaris 10 OS and Solaris 9 OS

Restrictions and Resolution schedule (the driver for Solaris 11 OS and Solaris 10 OS)

ETERNUS Multipath Driver Restrictions with Solaris 11 OS and Solaris 10 OS

Restrictions	Resolution schedule
This software cannot be used on the guest domain of Oracle VM.	3.1.1
TPG Referrals function is not support in Non-global-zone	T011535SP-05

Restrictions and Resolution schedule (the driver for Solaris 10 OS and Solaris 9)

ETERNUS Multipath Driver Restrictions with Solaris 10 OS

Restrictions	Resolution schedule
11 ETERNUS or more cannot be connected.	3.0.0 914267-06
SAS interface is not supported.	3.0.0 914267-06
When setting mplb-special files, ZFS is not supported.	3.0.0 914267-06
When setting mplb-special files, EFI partition tables are not supported.	3.0.0 914267-06
lpfc 6.20 or later is not supported.	3.0.1 914267-09
Solaris 10 8/11 or later is not supported.	3.0.4 914267-14
Kernel patch 144500-19 is not supported.	3.0.4 914267-14

Related Products Requirements

Supported Related Products are as follows:

Related Hardware Product Requirements

- FC Card

FC Card Types	MPD Version Levels/Patch
Emulex LP10000 *1	2.0.1 or later 3.0.1 or later *2 914267-09 or later *2
Emulex LP10000DC *1	2.0.1 or later 3.0.1 or later *2 914267-09 or later *2
SE0X7F11F, SE0X7F12F	2.0.3 or later 914267-04 or later
SE0X7F31F, SE0X7F32F, SP1X7FAB2F, SE0X7F21F, SE0X7F22F, SP1X7FBA2F, SP1X7FAA2F	3.1.0 or later

*1: LPFC 6.20j, LPFC 6.21f and LPFC 6.21g are not supported.

*2: LPFC 6.30g is supported by this MPD Version Levels/Patch.

- FCoE

FCoE Card Types	MPD Version Levels/Patch
SP1X7FAR2F, SP1X7FAS2F, SP1X7FBR2F, SP1X7FBS2F	3.1.0 or later

- SAS

SAS Card Types	MPD Version Levels/Patch
SE0X7SA1F	3.0.0 or later 914267-06 or later

- PCIe ExpressModule

PCIe ExpressModule Types	MPD Version Levels/Patch
SP1X5FAR2F, SP1X5FAS2F, SP1X5FBR2F, SP1X5FBS2F, SP1X5FAA2F, SP1X5FBA2F	3.1.0 or later

Related Software Product Requirements (the driver for Solaris 11 OS and Solaris 10 OS)

Related Software Product Names, Version Levels	Patch	MPD Version Levels / Patch
PRIMECLUSTER 4.2 or later	-	3.1.0 or later
ETERNUS SF Storage Cruiser V13 or later	-	3.1.0 or later

Related Software Product Requirements (the driver for Solaris 10 OS and Solaris 9 OS)

Related Software Product Names, Version Levels	Patch	MPD Version Levels / Patch
PRIMECLUSTER 4.1A40 or later	4.1A40 or later	2.0.1 or later
PRIMECLUSTER 4.1A30	914112-01 or later	2.0.1 or later
SafeCLUSTER 2.0	910910-30 or later	2.0.1 or later
SafeCLUSTER 2.0.x	911820-20 or later	2.0.1 or later
SafeCLUSTER 1.x	-	Not available
Softek Storage Cruiser 1.2.1 Softek Storage Cruiser V01L21	914057-02 or later (Agent) 913708-05 or later (Solaris Manager) TP38107 or later (Windows Manager) TP38104 or later (Windows Client)	2.0.1 or later
Softek Storage Cruiser 1.2 Softek Storage Cruiser V01L20	913305-04 or later (Agent) 913323-05 or later (Solaris Manager) TP28107 or later (Windows Manager) TP28104 or later (Windows Client)	2.0.1 or later
Softek Storage Cruiser 1.1.1 Softek Storage Cruiser V01L12	913304-04 or later (Agent) 913322-06 or later (Solaris Manager) TP18107 or later (Windows Manager) TP18104 or later (Windows Client)	2.0.1 or later
Softek Storage Cruiser 1.1 Softek Storage Cruiser V01L11	913078-05 or later (Agent) 913114-07 or later (Solaris Manager) TP08107 or later (Windows Manager) TP08104 or later (Windows Client)	2.0.1 or later
ETERNUS SF Storage Cruiser V13 or later	V13 or later	2.0.1 or later
Softek Storage Cruiser 1.2.2 or later Softek Storage Cruiser V01L22	1.2.2 or later V01L22 or later	2.0.1 or later
Systemwalker Resource Coordinator V12L20 or later	V12L20 or later	2.0.1 or later
Systemwalker Resource Coordinator V11L01	914057-02 or later (Agent) 913708-05 or later (Solaris Manager) TP38104 or later (Windows Client)	2.0.1 or later
Systemwalker Resource Coordinator V11L01E	914057-02 or later (Agent) 913708-05 or later (Solaris Manager) TP38104 or later (Windows Client)	2.0.1 or later
Systemwalker Resource Coordinator V11L00	913305-04 or later (Agent) 913323-05 or later (Solaris Manager) TP28104 or later (Windows Client)	2.0.1 or later

Softek Storage Cruiser and Systemwalker Resource Coordinator V11 agents can connect with the same or higher level manager and client. However, the manager and client must be at the same level.

Notes (the driver for Solaris 11 OS and Solaris 10 OS)

1. Support HBA

HBA that had been supported before ETERNUS Multipath Driver 3.0.4 cannot be used.

SE0X7F11F and SE0X7F12F can be used with the following limitations in ETERNUS Multipath Driver 3.1.1 or later.

・ "fjpfca.conf" must be set manually.
・ A definition must be manually added to "sd.conf" for a LUN to be recognized.
・ When an error occurs, it takes more time to switch a path than other HBAs.
・ OVM guest domains are not supported.
・ SAN Boot is not supported.
・ For Oracle Solaris 11, SE0X7F11F and SE0X7F12F cannot be used.

2. Upgrade Install from ETERNUS Multipath Driver 2.0.x/3.0.x

The overwrite install cannot be done. Refer to Software Information.

3. ETERNUS Multipath Driver 2.0.x/3.0.x

This product cannot be used together with the following software. ETERNUS Multipath Driver 2.0.x/3.0.x

4. Migration from MPxIO

Refer to Software Information.

5. Oracle VM

This software cannot be used on the guest domain of Oracle VM.

The disk allocation to the guest domain of Oracle VM supports only block device and s2 (/dev/FJSVmplb/dsk/mplb*s2).

6. SVM (Solaris Volume Manager)

SVM is not supported.

7. Solaris Containers

ETERNUS Multipath Driver only supports the installation on global-zone.

8. EFI Disk Label

The entire disk is represented by mplb*s7 when the mplb compatible files is selected for a disk with an EFI label.

9. boot archive

When shutdown cannot be normally done with Panic, the change in the composition might not be reflected in 3.1.0 or 3.1.1. Please renew boot archive to prevent it after changing the composition.

- Boot archive is renewed from 3.1.2 or T011535SP-01 with grmpdautoconf.

  When the load of I/O is high, update of boot-archive might take time. Please execute when the load of I/O is few.

- Boot archive is renewed from T011535SP-05 with PRIMECLUSTER automatic resource registration and mplbconfig.

10. iompadm change

The iompadm change command might fail. In that case, please reexecute it.

11. About uninstall

The following errors might be output when uninstalling in 3.1.0 and 3.1.1. Please uninstall again in that case. Uninstallation is a success if displayed, "Successful".

pkgrm: ERROR: unable to remove existing directory at </dev/FJSVmplb/rdsk>

pkgrm: ERROR: unable to remove existing directory at </dev/FJSVmplb/dsk>

12. About offline when server starts

Please execute the following action when the following messages are output when the server boot and path becomes offline in 3.1.0 and 3.1.1.

Messages:

NOTICE: mplbxx: I/O Lun degraded.

Action:

Please add "forceload: drv/ssd" ahead of the line of "forceload: drv/mplb" of /etc/system.

Ex)# vi /etc/system

forceload: drv/ssd

forceload: drv/mplb

13. About I/O might not respond.

In ETERNUS Multipath Driver 3.1.1, I/O might not respond when 256 IO or more is issued at the same time. Please apply T011535SP-01 or execute the following evasion procedures.

1. Please add "mplb-max-recv-io=10000000;" to /kernel/drv/mplb.conf.

Ex) # vi /kernel/drv/mplb.conf

Global user option define

mplb-max-recv-io=10000000;

2. Please reboot the server.

14. About silent installation

In ETERNUS Multipath Driver 3.1.1, The error message is not notified of when silent installation. Moreover, the unwanted message might be output. In that case, please install ETERNUS Multipath Driver in the superscription by non-silent installation.

15. About SAN BOOT

- When the system volume is made ZFS file system, you need to prepare two same size LUN.

- When the system volume is made UFS file system, the ssd path is displayed by the format command etc.

16. About installation

Please reboot the server after the installation.

17. About mplbstrtrc that is the resting process

The mplbstrtrc process does not accept the signal with the system call issued to the mplb driver. Therefore, pfiles and prctl, etc. that keep waiting for the response of the system call become no responses. Do not execute those commands.

18. About OracleASM

If the EFI label is used under the OracleASM to which T011535SP-03 is applied, path status might become warning. In that case, please set the slice (/dev/FJSVmplb/rdsk/ mplb*s7) that shows the entire disk of EFI off the subject by the ASM_DISKSTRING parameter of OracleASM.   Please refer to the manual of OracleASM about the setting method.

19. About ZFS

- Please note the following when you make zpool with the entire disk of the EFI label(/dev/FJSVmplb/dsk/mplb$X$s7, X is an instance number) in Solaris11.
    - Please disregard it though an unnecessary slice might be made with zpool create.
    - In the environment before SRU16031 (SRU11.3.6.5.0) or after SRU17021 (SRU11.3.17.5.0), when zpool is exported, cannot do importing of zpool with mplbXs7. Do importing according to the following procedures.
        1. The symbolic link of /dev/FJSVmplb/[r]dsk/mplb$X$ is made.
           Example)
           # ln -s /dev/FJSVmplb/rdsk/mplb2s7 /dev/FJSVmplb/rdsk/mplb2
           # ln -s /dev/FJSVmplb/dsk/mplb2s7 /dev/FJSVmplb/dsk/mplb2
        2. zpool import is done specifying the symbolic link.
           Example)
           # zpool import -d /dev/FJSVmplb/dsk/mplb2 *zpoolname*
    - In the environment SRU16042(SRU11.3.7.6.0) - SRU17011(SRU11.3.16.3.0), import is possible with mplbXs7.

- In the environment since SRU16042(SRU11.3.7.6.0), all paths might become warning status at import. The path will return to online in 5 minutes for the diagnosis. Please execute the iompadm restart command when you want to return online the path at once.

20. Uninstall

/dev/FJSVmplb/[r]dsk/* files and directorys might not be deleted. Please delete them if necessary.
Example)
 # rm -rf /dev/FJSVmplb

21. About Solaris 11.4

Refer to About Solaris 11.4

Notes (the driver for Solaris 10 OS and Solaris 9 OS)

1. Routing through multiple FC switches

The grmpdautoconf command cannot choose a path routed through multiple FC switches. This is because path redundancy is not verified by the MPD driver or the grmpdautoconf command.

To use a path routed through multiple FC switches, verify the path redundancy, and then execute the grmpdautoconf command with the –X option.

2. Boot devices and Swap devices

When setting a Solaris-standard-special file with Solaris 10 OS, the devices controlled by Multipath Driver cannot be used as Boot devices or Swap devices. In addition, boot on disks greater than 1 Tbyte is not supported.

3. Migration from Multipath Disk Control (MPHD)

Migration from Multipath Disk Control is not possible.

4. SVM(Solaris Volume Manager)

SVM is not supported.

5. DR (Dynamic Reconfiguration)

Dynamic Reconfiguration is not supported when setting a Solaris-standard-special file. For a server with Dynamic Reconfiguration function, an mplb special file is automatically selected if the "grmpdautoconf" command is not executed with the "-p" option.

6. 8Gbit/s Fibre Channel Card

8Gbit/s Fibre Channel Card, SE0X7F21F/SE0X7F22F, or later are not supported.

7. Solaris Containers

ETERNUS Multipath Driver only supports the installation on global-zone.

8. EFI Disk Label

The entire disk is represented by mplb*s7 when the mplb compatible files is selected for a disk with an EFI label.

9. grmpdautoconf command

In MPD 3.0.4 or patch 914267-15, ETERNUS DX60 S2 is displayed that DXL and ETERNUS DX8000 S2 series are DXM2. It is possible to use it though the device name is not displayed in the annotation.

```
switch              WWN           device              slot/port
---------------------------------------------------------------------------------
   1      500000e0d0xxxxxx         DXL                 CM0P0
   1      500000e0d4yyyyyy         DXM2                CM1CA0P0
 *DXL   :ETERNUS DX Entry Model(DX60, DX80, DX90)
 *DXM2 :ETERNUS DX400 S2 series
```

10. boot archive

When shutdown cannot be normally done with Panic, the change in the composition might not be reflected in 3.1.0 or 3.1.1. Please renew boot archive to prevent it after changing the composition.

Boot archive is renewed from 914267-18 with grmpdautoconf.

When the load of I/O is high, update of boot-archive might take time. Please execute when the load of I/O is few.

Patch Information

The following are the most recent patches for the Multipath Driver. The patch to install depends on which driver is installed.

Type of installed driver	Patch
The driver for Solaris 11 OS and Solaris 10 OS	T011535SP-07
The driver for Solaris 10 OS and Solaris 9 OS	914267-18

Product Names & IDs

Product names	Product IDs(with media)
FUJITSU Storage ETERNUS Multipath Driver3 (for Oracle Solaris)	B011103H0H

Supported Storage Systems

ETERNUS Multipath Driver supports the following storage systems:
- ETERNUS DX60 S5/DX60 S4
- ETERNUS DX100 S5/DX200 S5/DX100 S4/DX200 S4
- ETERNUS DX500 S5/DX600 S5/DX500 S4/DX600 S4
- ETERNUS DX900 S5
- ETERNUS DX8900 S4
- ETERNUS AF150 S3/AF250 S3/AF250 S2/AF250
- ETERNUS AF650 S3/AF650 S2/AF650
- ETERNUS DX60 S2
- ETERNUS DX60 S3
- ETERNUS DX80 S2/DX90 S2
- ETERNUS DX100 S3/DX200 S3
- ETERNUS DX200F
- ETERNUS DX400 S2 series
- ETERNUS DX500 S3/DX600 S3
- ETERNUS DX8000 S2 series
- ETERNUS DX8700 S3/ DX8900 S3

ETERNUS DX60 S5/DX60 S4

Supported Storage Systems	Version Level
ETERNUS DX60 S5	3.1.1 or later
ETERNUS DX60 S4	914267-18 or later *1

*1 Refer to "Preparation that uses ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F,

   ETERNUS AF250/AF250 S2 shipped after June, 2016 and ETERNUS DX60 S4, DX100 S4,

   DX200 S4 (the driver for Solaris 10 OS and Solaris 9 OS)".

ETERNUS DX100 S5, DX200 S5, ETERNUS DX500 S5, DX600 S5, ETERNUS DX100 S4, DX200 S4, ETERNUS DX500 S4, DX600 S4

Supported Storage Systems	Version Level
ETERNUS DX100 S5 ETERNUS DX200 S5 ETERNUS DX100 S4 ETERNUS DX200 S4	3.1.1 or later 914267-18 or later *1
ETERNUS DX500 S5 ETERNUS DX600 S5 ETERNUS DX500 S4 ETERNUS DX600 S4	3.1.1 or later 914267-18 or later

*1 Refer to "Preparation that uses ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F, ETERNUS AF250/AF250 S2 shipped after June, 2016 and ETERNUS DX60 S4, DX100 S4, DX200 S4 (the driver for Solaris 10 OS and Solaris 9 OS)".

ETERNUS DX900 S5

Supported Storage Systems	Version Level / Patch
ETERNUS DX900 S5	3.1.3 or later T011535SP-05 914267-18 or later

ETERNUS DX8900 S4

Supported Storage Systems	Version Level / Patch
ETERNUS DX8900 S4	3.1.3 or later T011535SP-05 914267-18 or later

ETERNUS AF150 S3, AF250 S3, AF250 S2, AF250, AF650 S3, AF650 S2, AF650

Supported Storage Systems	Version Level
ETERNUS AF150 S3 ETERNUS AF250 S3, AF250 S2, AF250	3.1.2 or later 914267-18 or later *1
ETERNUS AF650 S3, AF650 S2, AF650	3.1.2 or later 914267-18 or later

*1 Refer to "Preparation that uses ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F, ETERNUS AF250/AF250 S2 shipped after June, 2016 and ETERNUS DX60 S4, DX100 S4, DX200 S4 (the driver for Solaris 10 OS and Solaris 9 OS)".

ETERNUS DX60 S2

FC interface

Supported Storage Systems	Version Level
ETERNUS DX60 S2	3.0.4 or later 914267-14 or later

SAS interface

Supported Storage Systems	Version Level
ETERNUS DX60 S2	3.0.4 or later 914267-14 or later

ETERNUS DX60 S3

Supported Storage Systems	Version Level
ETERNUS DX60 S2	3.1.0 or later 914267-17 or later *1

*1 Refer to "Preparation that uses ETERNUS DX S3, ETERNUS DX200F with patch 914267-17".

ETERNUS DX100 S3/DX200 S3/DX500 S3/DX600 S3, ETERNUS DX200F

Supported Storage Systems	Version Level
ETERNUS DX100 S3/DX200 S3 ETERNUS DX500 S3/DX600 S3 ETERNUS DX200F	3.1.0 or later 914267-17 or later *1

*1 Refer to "Preparation that uses ETERNUS DX S3, ETERNUS DX200F with patch 914267-17".

ETERNUS DX80 S2/DX90 S2

FC interface

Supported Storage Systems	Version Level
ETERNUS DX80 S2/DX90 S2	3.0.3 or later 914267-13 or later 912651-23 or later

SAS interface

Supported Storage Systems	Version Level
ETERNUS DX80 S2/DX90 S2	3.0.3 or later 914267-13 or later

ETERNUS DX400 S2 series

Supported Storage Systems	Version Level / Patch
ETERNUS DX400 S2 ETERNUS DX410 S2 ETERNUS DX440 S2	3.0.3 or later 914267-13 or later 912651-23 or later

ETERNUS DX8000 S2 series

Supported Storage Systems	Version Level / Patch
ETERNUS DX8100 S2 ETERNUS DX8700 S2	3.0.4 or later 914267-15 or later 912651-23 or later

ETERNUS DX8700 S3/DX8900 S3

Supported Storage Systems	Version Level / Patch
ETERNUS DX8700 S3 ETERNUS DX8900 S3	3.1.2 or later T011535SP-01 914267-18 or later

Supplementary information

This section provides supplementary information not included in the manuals supplied with this product. Refer to this information in addition to the manuals supplied with this product.

Assigned-Non-assigned-CM Type Storage Systems

There are two types of supported disk storage system: "Assigned-CM" and "Non-assigned-CM." With Assigned-CM storage systems, the preferred paths for each LUN are assigned to a particular controller. With Non-assigned-CM storage systems, there are no assigned preferred LUN access paths.

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

The table below shows the "Assigned-CM" and "Non-assigned-CM" storage systems.

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

Assigned-CM type	ETERNUS DX60 S5, DX60 S4, DX60 S3
	ETERNUS DX100 S5, DX100 S4, DX100 S3
	ETERNUS DX200 S5, DX200 S4, DX200 S3
	ETERNUS DX500 S5, DX500 S4, DX500 S3
	ETERNUS DX600 S5, DX600 S4, DX600 S3
	ETERNUS DX60 S2
	ETERNUS DX80 S2
	ETERNUS DX90 S2
	ETERNUS DX400 S2 series
	ETERNUS AF150 S3
	ETERNUS AF250 S3, AF250 S2, AF250
	ETERNUS AF650 S3, AF650 S2, AF650
	ETERNUS DX200F
Non-assigned-CM type	ETERNUS DX900 S5
	ETERNUS DX8900 S4
	ETERNUS DX8000 S3 series
	ETERNUS DX8000 S2 seies

Change unit

The table below shows the change unit and the corresponding replacement.

Storage Systems	cu/controllerunit	g/groupmodule
ETERNUS DX60 S5, DX60 S4, DX60 S3 ETERNUS DX100 S5, DX100 S4, DX100 S3 ETERNUS DX200 S5, DX200 S4, DX200 S3 ETERNUS DX60 S2 ETERNUS DX80 S2 ETERNUS DX90 S2 ETERNUS DX200F ETERNUS AF150 S3 ETERNUS AF250 S3, AF250 S2, AF250	-	CM
ETERNUS DX500 S5, DX500 S4, DX500 S3 ETERNUS DX600 S5, DX600 S4, DX600 S3 ETERNUS DX900 S5 ETERNUS DX8900 S4 ETERNUS DX8700 S3/DX8900 S3 ETERNUS DX400 S2 series ETERNUS DX8000 S2 series ETERNUS AF650 S3, AF650 S2, AF650	CA	CM

LPFC Driver 6.30g

When LPFC Driver 6.30g and ETERNUS Multipath driver (the driver for Solaris 10 OS and Solaris 9 OS) are used, the following procedures are executed.

[HBA Configuration]
  Edit /kernel/drv//lpfc.conf file to set target-disk.
   lpfc#-target-disk="mplbt"
   Example:
    lpfc0-target-disk="mplbt";
    lpfc1-target-disk="mplbt";

[Adding a LUN]
 hbacmd or server reboot is necessary before the grmpdautoconf command is executed.
   hbacmd RescanLuns HBA-WWN ETERNUS-WWN
   Example:
   /opt/HBAnyware/hbacmd RescanLuns 10:00:00:00:c9:5a:d7:0e 20:00:00:0B:5D:6A:02:99

[Adding a Path or Storage System Device]
 hbacmd or server reboot is necessary before the grmpdautoconf command is executed.
   hbacmd SetPersistentBinding HBA-WWN B P ETERNUS-WWN 0 targetID
   Example:

/opt/HBAnyware/hbacmd SetPersistentBinding 10:00:00:00:c9:51:38:c3 B P 20:40:00:0B:5D:6A:02:99 0 16

[Note]

When grmpdautoconf is executed in the environment where the lpfc driver and the sd driver connect devices other than the storage systems, the devices might be detached. If any devices are detached, please reattach by executing the hbacmd command with RescanLuns option or reboot the server.

Please refer to HBAnyware User Manual for hbacmd.

Performing "add device" for mplb Special Files in Non-Global Zones

Perform the following procedure to "add device" for the mplb special files in a non-global zone.

1.   Create a non-global zone (example: test-zone).

2.   Create a directory for mplb under /dev/ in the non-global zone.

```
# mkdir /export/test-zone/dev/FJSVmplb
# mkdir /export/test-zone/dev/FJSVmplb/dsk
# mkdir /export/test-zone/dev/FJSVmplb/rdsk
```

3.   Select the target multipath device from the test-zone, and check the device major and minor numbers.

The following example is for when "mplb0s0" is added:

```
# ls -l /dev/FJSVmplb/rdsk/mplb0s0
lrwxrwxrwx 1 root root 36 Aug 28 20:28 /dev/FJSVmplb/rdsk/mplb0s0
-> ../../../devices/pseudo/mplb@0:a,raw
# ls -l /devices/pseudo/mplb@0:a,raw
crw-r----- 1 root sys 253, 0 Aug 30 04:19 /devices/pseudo/mplb@0:a,raw
# ls -l /devices/pseudo/mplb@0:a
brw-r----- 1 root sys 253, 0 Aug 30 04:19 /devices/pseudo/mplb@0:a
```

The underlined parts are the major and minor numbers.

4.   Create a special file under /export/test-zone/dev/FJSVmplb using the "mknod" command.

```
# mknod /export/test-zone/dev/FJSVmplb/rdsk/mplb0s0 c 253 0
# mknod /export/test-zone/dev/FJSVmplb/dsk/mplb0s0 b 253 0
```

5.   Log in to the non-global zone and then access the mplb device.

Note1: Kernel-zone is not supported.

Method of "add device" to Non-global zone of Solaris11 (the driver for Solaris 11 OS and Solaris 10 OS)

1. Create a non-global zone (example: sol11-zone).

2. Execute Add device.

```
# zonecfg -z sol11-zone
    zonecfg:sol11-zone> add device
    zonecfg:sol11-zone:device> set match=/dev/FJSVmplb/*dsk/mplb0s*
    zonecfg:sol11-zone:device> end
```

Note1: USCSI command is not support in Non-global-zone

Note2: Kernel-zone is not supported.

ZFS (the driver for Solaris 10 OS and Solaris 9 OS)

If ETERNUS Multipath Driver devices are under the control of ZFS, the following message may be output when the server is rebooted.

```
    SUNW-MSG-ID: ZFS-8000-CS, TYPE: Fault, VER: 1, SEVERITY: Major
    EVENT-TIME: Mon Jun 25 14:43:42 JST 2007
    PLATFORM: FJSV,GPUZC-M, CSN: -, HOSTNAME: raid-server2
    SOURCE: zfs-diagnosis, REV: 1.0
    EVENT-ID: ad895d1d-c04f-6686-88e8-bb23b276f467
    DESC: A ZFS pool failed to open.   Refer to http://sun.com/msg/ZFS-8000-CS for more
information.
    AUTO-RESPONSE: No automated response will occur.
    IMPACT: The pool data is unavailable
    REC-ACTION: Run 'zpool status -x' and either attach the missing device or
                        restore from backup.
```

This message is not displayed if the setting forceload of mplbt is defined in /etc/system file. Edit /etc/system file to set forceload.

Example.

```
                                            :
    * forceload:
    *
    *          Cause these modules to be loaded at boot time, (just before mounting
    *          the root filesystem) rather than at first reference. Note that
    *          forceload expects a filename which includes the directory. Also
    *          note that loading a module does not necessarily imply that it will
    *          be installed.
    *
    *          Example:
    *                    forceload: drv/foo
    forceload: drv/mplbt


    * set:
    *
    *          Set an integer variable in the kernel or a module to a new value.
    *          This facility should be used with caution.   See system(4).
                                            :
```

Upgrade Install from GR Multipath Driver

If PRIMECLUSTER is installed, execute the following command after uninstalling the GR Multipath Driver.

```
# rm /etc/opt/FJSVcluster/sys/cldiskadm
# ln –s /opt/FJSVclapi/sys/cldiskadm /etc/opt/FJSVcluster/sys/cldiskadm
```

Disk_device_controller_id and Connection Points

The iompadm command with "info" option shows information for the attached disks. The example below shows the Adapter port No. The Adapter port No is the connection path and is uniquely defined on each storage system.

```
  Example:
 # iompadm -c mplb info /dev/FJSVmplb/fiomp/adm0
 IOMP : /dev/FJSVmplb/fiomp/adm0
 Element :
 /dev/rdsk/c4t500000E0D46EB981d0s2 online standby block "good status
                    [ETERNUS_DXL-   112EB9-CM10-CA10-PORT01] (ssd7)"
 /dev/rdsk/c5t500000E0D46EB991d0s2 online active block "good status
                    [ETERNUS_DXL-   112EB9-CM11-CA11-PORT03] (ssd23)"
```

Group No.   Exchange unit No.   Adapter port No.
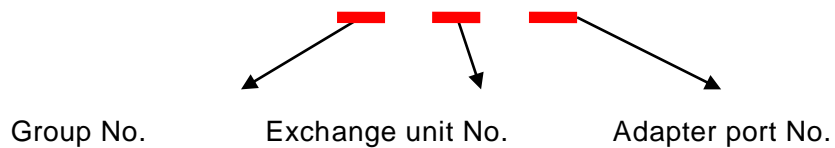
The figures below show the Adapter port No of supported storage systems.

The adapter port No is different from the physical port number. Refer to the manual of your storage system device for further information of the physical port number. Please note that the port position and the physical port number depend on the type of storage system.
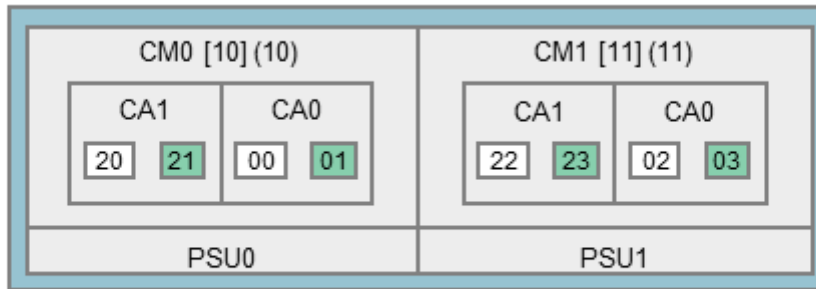
ETERNUS DX60 S5, ETERNUS DX60 S4, ETERNUS DX60 S3

[ ]: Group No.   (): Exchange unit No.   ☐ : adapter Port No.   ▮ : When using 2port-CM

20

ETERNUS DX100 S5, ETERNUS DX100 S4, ETERNUS DX100 S3

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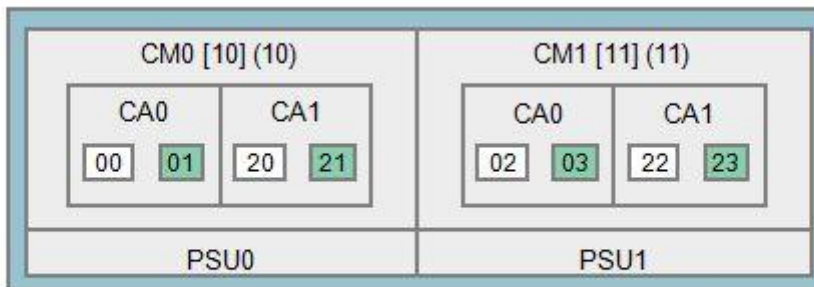
[ ]: Group No.   ( ): Exchange unit No.   ☐ : adapter Port No.   ■ : When using 2port-CA

ETERNUS DX200 S4, ETERNUS DX200 S3, ETERNUS AF150 S3, ETERNUS AF250 S2, ETERNUS AF250, ETERNUS DX200F, ETERNUS DX80 S2, ETERNUS DX90 S2
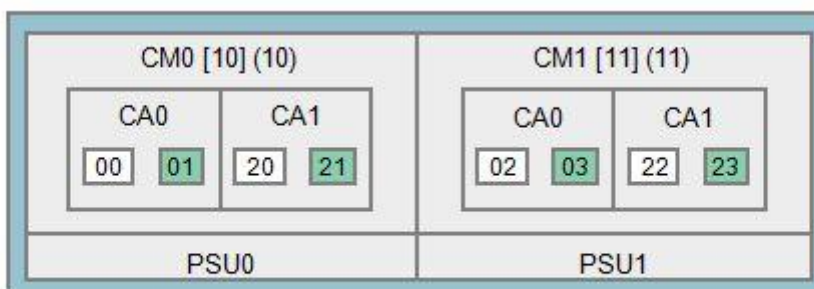
[ ]: Group No.   ( ): Exchange unit No.   ☐ : adapter Port No.   ■ : When using 2port-CA

ETERNUS DX200 S5, ETERNUS AF250 S3

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

ETERNUS DX500 S5, ETERNUS DX500 S4, ETERNUS DX500 S3, ETERNUS DX 600 S5, ETERNUS DX 600 S4, ETERNUS DX 600 S3, ETERNUS AF650 S3, ETERNUS AF650 S2, ETERNUS AF650, ETERNUS DX400 S2 series
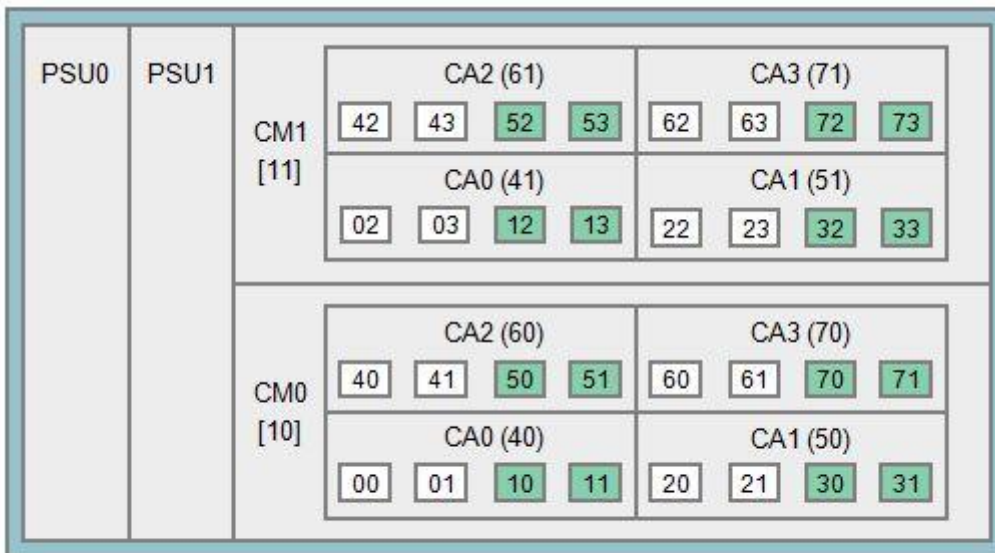
[ ]: Group No.   (): Exchange unit No.   ☐ : adapter Port No.   ▇ : When using 4port-CA
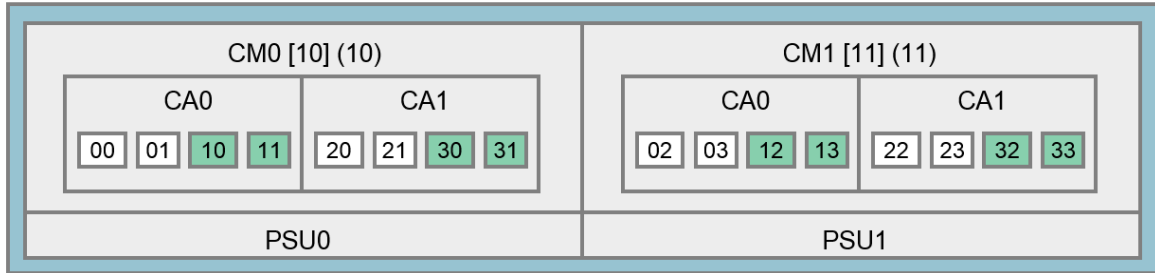
ETERNUS DX 900 S5

CE0			CM1 [20]	CA2 (61)	0042	0043	0052	0053	CA3 (71)	0062	0063	0072	0073

CE0
PSU0 | PSU1

CM1 [20]
- CA2 (61): 0042 0043 0052 0053
- CA0 (41): 0002 0003 0012 0013
- CA3 (71): 0062 0063 0072 0073
- CA1 (51): 0022 0023 0032 0033

CM0 [10]
- CA2 (60): 0040 0041 0050 0051
- CA0 (40): 0000 0001 0010 0011
- CA3 (70): 0060 0061 0070 0071
- CA1 (50): 0020 0021 0030 0031

CE1
PSU0 | PSU1

CM1 [21]
- CA2 (63): 0046 0047 0056 0057
- CA0 (43): 0006 0007 0016 0017
- CA3 (73): 0066 0067 0076 0077
- CA1 (53): 0026 0027 0036 0037

CM0 [11]
- CA2 (62): 0044 0045 0054 0055
- CA0 (42): 0004 0005 0014 0015
- CA3 (72): 0064 0065 0074 0075
- CA1 (52): 0024 0025 0034 0035

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

ETERNUS DX8900 S4, ETERNUS DX8700 S3/DX8900 S3

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

CE4

PSU0 | PSU1

CM1 [24]
| CA2 (A1) | 00C2 | 00C3 | 00D2 | 00D3 | CA3 (B1) | 00E2 | 00E3 | 00F2 | 00F3 |
| CA0 (81) | 0082 | 0083 | 0092 | 0093 | CA1 (91) | 00A2 | 00A3 | 00B2 | 00B3 |

CM0 [14]
| CA2 (A0) | 00C0 | 00C1 | 00D0 | 00D1 | CA3 (B0) | 00E0 | 00E1 | 00F0 | 00F1 |
| CA0 (80) | 0080 | 0081 | 0090 | 0091 | CA1 (90) | 00A0 | 00A1 | 00B0 | 00B1 |

CE5

PSU0 | PSU1

CM1 [25]
| CA2 (A3) | 00C6 | 00C7 | 00D6 | 00D7 | CA3 (B3) | 00E6 | 00E7 | 00F6 | 00F7 |
| CA0 (83) | 0086 | 0087 | 0096 | 0097 | CA1 (93) | 00A6 | 00A7 | 00B6 | 00B7 |

CM0 [15]
| CA2 (A2) | 00C4 | 00C5 | 00D4 | 00D5 | CA3 (B2) | 00E4 | 00E5 | 00F4 | 00F5 |
| CA0 (82) | 0084 | 0085 | 0094 | 0095 | CA1 (92) | 00A4 | 00A5 | 00B4 | 00B5 |

CE6

PSU0 | PSU1

CM1 [26]
| CA2 (A5) | 00CA | 00CB | 00DA | 00DB | CA3 (B5) | 00EA | 00EB | 00FA | 00FB |
| CA0 (85) | 008A | 008B | 009A | 009B | CA1 (95) | 00AA | 00AB | 00BA | 00BB |

CM0 [16]
| CA2 (A4) | 00C8 | 00C9 | 00D8 | 00D9 | CA3 (B4) | 00E8 | 00E9 | 00F8 | 00F9 |
| CA0 (84) | 0088 | 0089 | 0098 | 0099 | CA1 (94) | 00A8 | 00A9 | 00B8 | 00B9 |

CE7

PSU0 | PSU1

CM1 [27]
| CA2 (A7) | 00CE | 00CF | 00DE | 00DF | CA3 (B7) | 00EE | 00EF | 00FE | 00FF |
| CA0 (87) | 008E | 008F | 009E | 009F | CA1 (97) | 00AE | 00AF | 00BE | 00BF |

CM0 [17]
| CA2 (A6) | 00CC | 00CD | 00DC | 00DD | CA3 (B6) | 00EC | 00ED | 00FC | 00FD |
| CA0 (86) | 008C | 008D | 009C | 009D | CA1 (96) | 00AC | 00AD | 00BC | 00BD |

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

CE8		
PSU0 / PSU1	CM1 [28]	CA2 (E1) 0142 0143 0152 0153 CA3 (F1) 0162 0163 0172 0173
		CA0 (C1) 0102 0103 0112 0113 CA1 (D1) 0122 0123 0132 0133
	CM0 [18]	CA2 (E0) 0140 0141 0150 0151 CA3 (F0) 0160 0161 0170 0171
		CA0 (C0) 0100 0101 0110 0111 CA1 (D0) 0120 0121 0130 0131

CE9		
PSU0 / PSU1	CM1 [29]	CA2 (E3) 0146 0147 0156 0157 CA3 (F3) 0166 0167 0176 0177
		CA0 (C3) 0106 0107 0116 0117 CA1 (D3) 0126 0127 0136 0137
	CM0 [19]	CA2 (E2) 0144 0145 0154 0155 CA3 (F2) 0164 0165 0174 0175
		CA0 (C2) 0104 0105 0114 0115 CA1 (D2) 0124 0125 0134 0135

CE10		
PSU0 / PSU1	CM1 [2A]	CA2 (E5) 014A 014B 015A 015B CA3 (F5) 016A 016B 017A 017B
		CA0 (C5) 010A 010B 011A 011B CA1 (D5) 012A 012B 013A 013B
	CM0 [1A]	CA2 (E4) 0148 0149 0158 0159 CA3 (F4) 0168 0169 0178 0179
		CA0 (C4) 0108 0109 0118 0119 CA1 (D4) 0128 0129 0138 0139

CE11		
PSU0 / PSU1	CM1 [2B]	CA2 (E7) 014E 014F 015E 015F CA3 (F7) 016E 016F 017E 017F
		CA0 (C7) 010E 010F 011E 011F CA1 (D7) 012E 012F 013E 013F
	CM0 [1B]	CA2 (E6) 014C 014D 015C 015D CA3 (F6) 016C 016D 017C 017D
		CA0 (C6) 010C 010D 011C 011D CA1 (D6) 012C 012D 013C 013D

[ ]: Group No.   ( ): Exchange unit No.   ▬ : adapter Port No.   ▬ : When using 4port-CA
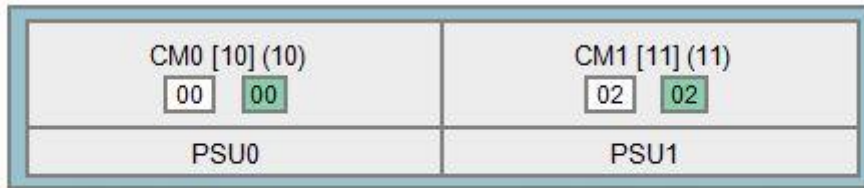
ETERNUS DX60 S2
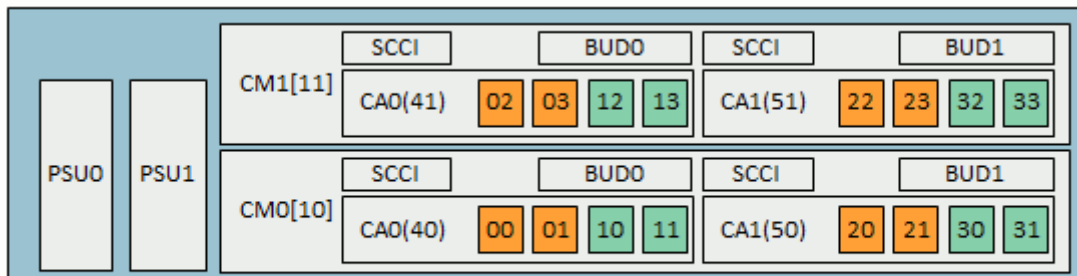
FC interface
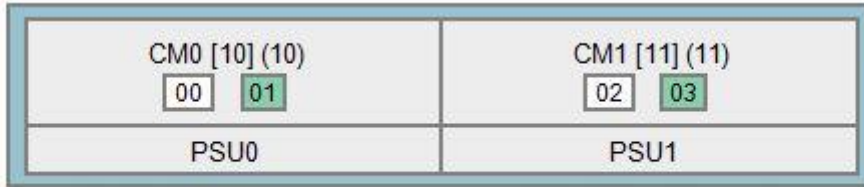
[ ]: Group No.   (): Exchange unit No.   □ : adapter Port No.   ▨ : When using 2port-CM
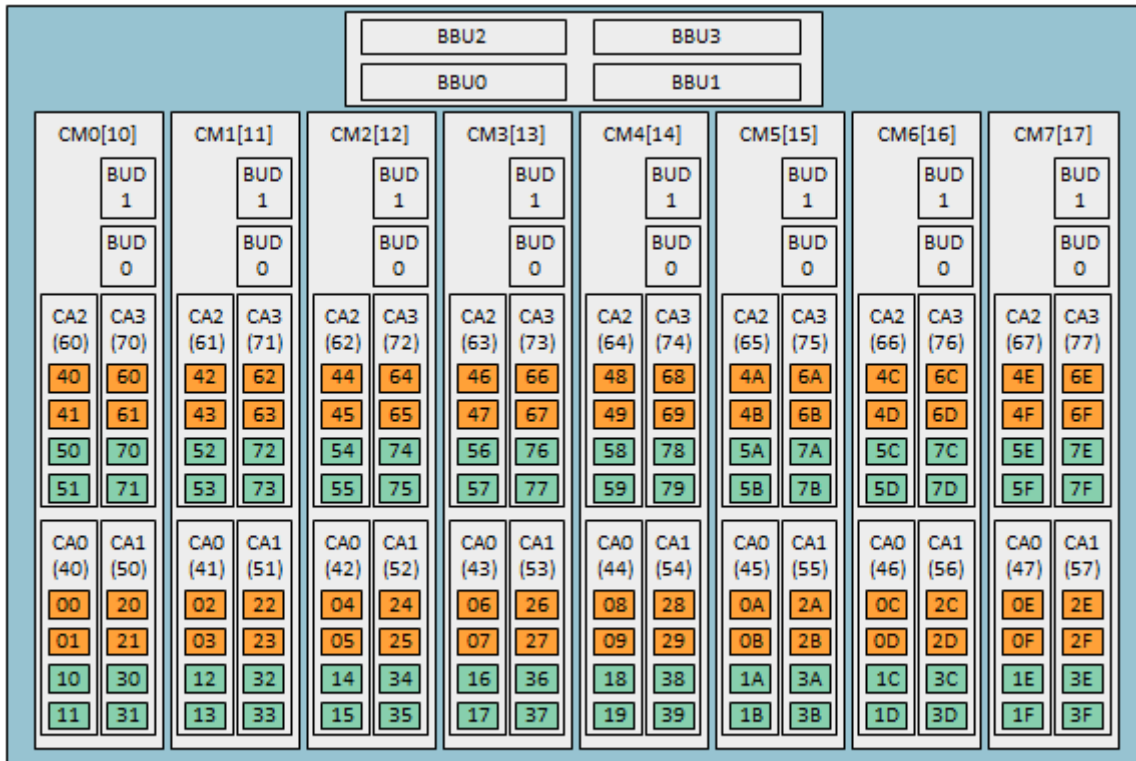
SAS interface

[ ]: Group No.   (): Exchange unit No.   □ : adapter Port No.   ▨ : When using 2port-CM

ETERNUS DX8100 S2

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

ETERNUS DX8700 S2

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

OS update to Solaris 10 8/11 or later and kernel patch 144500-19 or later

If ETERNUS Multipath driver 3.0.3 or earlier is installed, please apply patch 914267-14 before applying OS update of Solaris10 8/11 or later or kernel patch 144500-19 or later.

Preparation that uses ETERNUS DX S3, ETERNUS DX200F with patch 914267-17

The procedure is unnecessary in multipath driver 3.1.0 or later or applying 914267-18 environment.

Please add the following a definition to/var/opt/FJSVmplb/catalog.

Storage Systems	definition
ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F	^500000e0da[0-3]:DXL3:40
ETERNUS DX500 S3/DX600 S3	^500000e0da[8-f]:DXM3:255

It comes to be able to select ETERNUS DX S3 with grmpdautoconf.
Example

```
Search devices ....display device and access paths list after searching.
switch             WWN          device               slot/port
-------------------------------------------------------------------
    10    100000000e24418f      fjpfca0                    -
    10    100000000e2441a9      fjpfca1                    -
    10    500000e0da817c80       DXM3                      -
    10    500000e0da817c90       DXM3                      -
          Adapter           Switch          ETERNUS(GR)          Status
      instance     WWN                 WWN          product
    -----+----------------------+-----+-----------------------------+-----
[ ] 1  fjpfca0 100000000e24418f    10 500000e0da817c90   DXM3         -   New
[ ] 2  fjpfca1 100000000e2441a9    10 500000e0da817c80   DXM3         -   New
```

Preparation that uses ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX200F, ETERNUS AF250/AF250 S2 shipped after June, 2016 and ETERNUS DX60 S4, DX100 S4, DX200 S4 (the driver for Solaris 10 OS and Solaris 9 OS)

Please add the following a definition to/var/opt/FJSVmplb/catalog.

definition
^500000e0da[4-7]:DXL3:255
^500000e0db[0-3]:DXL3:255

ETERNUS DX S4 series is displayed that DXL3. It is possible to use it though the device name is not displayed in the annotation.

Note of Oracle VM

- About the problem that the I/O domain cannot be reboot.
  The I/O domain cannot be started when the guest domain is binding.

  [Environment]
   I/O domain's OS version is:
   - Solaris11.1 + SRU14051 (SRU11.1.19.6.0) or later
   - Solaris11.2 ~ Solaris11.2 SRU14111
   - Solaris10 + 150840-04 or later

  [Recommended Action]
   In the IO domain, add the following definitions to /etc/system.
      forceload: drv/px

   * "forceload: drv/vp" written in the Software Information fro 3.1.1 is a mistake. Please specify "forceload: drv/px".

- About the problem that path cannot be restored by the guest domain after reboot of the I/O domain.
   When the I/O domain is reactivated, the USCSI command is not issuable from the guest domain.
  Path of the guest domain becomes offline, and can't restore to online, because the multipath driver is using the USCSI command.

  [Environment]

   I/O domain's OS version is:

   - Solaris11.1 + SRU14051 (SRU11.1.19.6.0) or later
   - Solaris11.2 ~ Solaris11.2 SRU14111
   - Solaris10 + 150840-04 or later

  [Recommended Action]

   Deal with either as follows when the phenomenon is generated.
   Corrective action 1:
    1. Delete path of the rebooted I/O domain from the guest domain.
      Ex.)   # /usr/opt/FJSViomp/bin/iompadm del /dev/FJSVmplb/fiomp/admXX /dev/rdsk/cXdXs2
      - The grmpdautoconf command cannot be used.
      - Execute it with the I/O domain is active.
    2. The allocated vdisk is released.
      Ex.)   # ldm rm-vdisk vdisk2-0 gdom2
    3. The released vdisk is allocated again.
      Ex.)   # ldm add-vdisk vdisk2-0 vol2-2@iodom1-vds0 gdom2
    4. Add path by the grmpdautoconf command.
      Ex.)   # grmpdautoconf

   Corrective action 2:
   1. Shutdown the guest domain.
   2. Do unbind the guest domain.
      Ex.)   # ldm unbind-domain gdom2
   3. Do bind the guest domain.
      Ex.)   # ldm bind-domain gdom2
   4. Start the guest domain.
      Ex.)   # ldm start-domain gdom2

- In the Oracle VM environment, when the I/O domain is rebooted, the virtual disk allocated in the guest domain might not be correctly allocated.
   [Environment]

I/O domain's OS version is:
- Solaris11.1 + SRU14051 (SRU11.1.19.6.0) or later
- Solaris11.2 ~ Solaris11.2 SRU14111
- Solaris10 + 150840-04 or later

[Recommended Action]
1. Please start I/O domain
2. The state of the guest domain is made bound or inactive.
3. Please execute the following to each virtual disk.
   # ldm rm-vdisk <vdisk> <guest domain>
   # ldm add-vdisk <vdisk> <vol>@<vds> <guest domain name>
4. Please start guest domain.

- Don't send the break request to OS at I/O domain while I/O is issued. Select sync or reset or halt when you do "break" by mistake.

- About the hang-up of the I/O domain
  When the I/O domain does hang-up, the guest domain becomes no I/O response. Please do panic the I/O domain in that case.

- About the ldmp2v command
  The ldmp2v command cannot use the ETERNUS multipath driver.

Note of Oracle VM SR-IOV environments

The support condition is as follows.

OS version	Solaris 11.3 SRU18031(SRU11.3.30.4.0) or later
MPD Version Levels/Patch	3.1.3 or later or T011535SP-06 or later
HBA	Emulex FC cards

About ssd path name (the driver for Solaris 11 OS and Solaris 10 OS)

Since T011535SP-04
The ssd path name (/dev/[r]dsk/cXt0dXsX) can be used. The following commands are used and set.

Ssd path name:
 cX : Unused c number
 t0 : 0 fixation
 dX : Instance number of mplb
 sX : Slice number

Command:
  mplbconfig –S on
  The ssd path name is made effective.

  mplbconfig –S off
  The ssd path name is invalidated.

  mplbconfig –S up

When EFI and the SMI label are changed, the ssd path is updated.

/opt/FJSVmplb/bin/mpdinfo (*1)
The instance number of mplb and the correspondence of the ssd path name are displayed.
(*1)"/opt" is a directory specified when installing.

Note:
- In the PRIMECLUSTER environment, put the ssd path name in the exclusion list of PRIMECLUSTER.
- The ssd path name is unsupported in the environment in which PRIMECLUSTER GDS/PRIMECLUSTER GD is installed.
- The ssd path name cannot be used for the system volume of SAN Boot.

About Solaris 11.4

Solaris 11.4 is supported with ETERNUS multipath driver 3.1.3/patch T011535SP-05.
The procedure and the limitation when Solaris 11.4 is used are described

INSTALLATION

● Procedure of new installation
 1. The driver is changed to ssd.
   /etc/devices/inception_points is edited.

      scsa-no-binding-set-fcp

      scsa-no-binding-set-vhci

      swapgeneric-ssd-loads-sd
               ↓
      # scsa-no-binding-set-fcp

      # scsa-no-binding-set-vhci

      # swapgeneric-ssd-loads-sd

 2. MPxIO is invalidated.
   The following command is executed, and the server is reboot.
   ```
   # /usr/sbin/stmsboot -D fp -d
   WARNING: This operation will require a reboot.
   Do you want to continue ? [y/n] (default: y) y
   The changes will come into effect after rebooting the system.
   Reboot the system now ? [y/n] (default: y) y
   ```

 3. If SRU20081(SRU 11.4.24.75.2) or later is not applied, set the label and the partition before installing the multipath driver.

 4. Please install by the mpdpkgadd command. Please refer to the "Software Information" for details.
   Do not reboot after the installation.

 5. Please confirm service by the svcs command after completing the mpdpkgadd command, and start if necessary.
   # svcs –a | grep fjsvmplb
   Service is started when displayed as follows.

      online   xx:xx:xx   svc:/system/fjsvmplb:default

   Please start service by the svcadm command when it is displayed as follows.

```
        disabled        xx:xx:xx     svc:/system/fjsvmplb:default

        # svcadm enable svc:/system/fjsvmplb:default
```

6. Please execute the remaining work of the installation procedure of the "Software Information".

- Procedure of installation in environment updated from Solaris11.3 to 11.4
    1. If SRU20081(SRU 11.4.24.75.2) or later is not applied, set the label and the partition before installing the multipath driver.

    2. Please install by the mpdpkgadd command. Please refer to the "Software Information" for details.
       Do not reboot after the installation.

    3. Please confirm service by the svcs command after completing the mpdpkgadd command, and start if necessary.

    4. Refer to Procedure of new installation 5.

    5. Please execute the remaining work of the installation procedure of the "Software Information".

RESTRICTIONS

- The format command cannot be used if SRU20081(SRU 11.4.24.75.2) or later is not applied.
  Please set the label and the partition before make multipath.
  When the format command is needed after the multipath, it is necessary to destroy the multipath.

- It is not possible to use it though the ssd path of multipath are displayed in the list of format.

- Ssd paths are displayed in the list of format. However, they cannot be used.

- The IOR composition supported by ETERNUS multipath driver 3.1.3 needs
  SRU19011(SRU11.4.5.3.0) or later. Refer to FNS-28221 when the IO root domain is shutdown,
  reboot or panic.

- The server might not be able to be boot when the service start is not confirmed after the installation and it reactivates.
  Please login from the console in that case, and execute 5 of the "Procedure of a new installation".

Errata of User's Guide and Software Information

Version	Document	Part	Correction
3.1.1	User's Guide	Table of page 121	(Not Correct) An I/O error message is sent to the guest domain. The path status changes to "fail". (Correct) An I/O error message is sent to the guest domain. The path status changes to "warning".
3.1.1	Software Information	Page 6	(Not Correct) forceload: drv/vp (Correct) forceload: drv/px
3.1.0	Software Information	10.1 Installation	Please reboot the server after the installation.
3.1.1	Software Information	10.1 New Installation 10.3 Silent Installation	Please reboot the server after the installation.
3.1.2	Software Information	10.1 New Installation 10.3 Silent Installation	Please reboot the server after the installation.
3.1.0-3.1.2	User's Guide	B.7 Performing "add device" for mplb Special Files in Non-Global Zones	Please refer to "Method of "add device" to Non-global zone of Solaris11 (the driver for Solaris 11 OS and Solaris 10 OS)" in this book when the Non-global zone is Solaris11.
3.1.0-3.1.2	User's Guide	4.2 Adding a Path or Storage System •When used as a shared disk for PRIMECLUSTER:	(Not Correct) The cluster will implement the automatic resource registration. Refer to the cluster manual for more details. (Correct) For Adding a Path, the grmpdautoconf command is executed. For Adding Storage System, the cluster will implement the automatic resource registration. Refer to the cluster manual for more details.
3.1.2	User's Guide	B.5 Cluster System 4th Caution	(Not Correct) and then execute the "grmpdautoconf" command again to redo the multipath settings. (Correct) and then perform the automatic configuration of the cluster system.

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