Fujitsu Storage ETERNUS AF, ETERNUS DX

Configuration Guide -Server Connection-



(Fibre Channel) for Windows®



This page is intentionally left blank.

This manual briefly explains the operations that need to be performed by the user in order to connect an ETERNUS AF/DX to a server running Windows[®] via a Fibre Channel interface.

This manual should be used in conjunction with any other applicable user manuals, such as those for the ETERNUS AF/DX, server, OS, Fibre Channel cards, and drivers.

Use the default values for parameters that are not described in this manual.

Refer to "Configuration Guide -Server Connection- Notations" for the notations used in this manual such as product trademarks and product names. For storage systems that are supported by the OS, refer to the Server Support Matrix of the ETERNUS AF/DX.

36th Edition January 2025

The Contents and Structure of this Manual

This manual is composed of the following 13 chapters.

"Chapter 1 Workflow" (page 7)

This chapter describes the workflow required to connect a server running Windows $^{\rm (B)}$ to an ETERNUS AF/DX.

• "Chapter 2 Checking the Server Environment" (page 9)

This chapter describes which servers can be connected to ETERNUS AF/DX storage systems.

"Chapter 3 Notes" (page 10)

This chapter describes issues that should be noted when connecting the ETERNUS AF/DX storage systems and server.

"Chapter 4 Setting Up the ETERNUS AF/DX" (page 20)

This chapter describes how to set up an ETERNUS AF/DX.

• "Chapter 5 Setting Up the Fibre Channel Switches" (page 21)

This chapter describes how to set up the Fibre Channel switches.

• "Chapter 6 Installing the OS" (page 23)

This chapter describes how to install an OS when it is not installed on a server.

- "Chapter 7 Installing the Driver" (page 24)
 This chapter describes how to install the Fibre Channel cards and drivers.
- "Chapter 8 Checking the Registry Information" (page 28)
- This chapter describes how to check the registry information.
- "Chapter 9 Checking the Connected Devices" (page 29)

This chapter describes how to check the connection status between the server and ETERNUS AF/DX.

- "Chapter 10 Creating the Disk Partitions" (page 31)
 This chapter describes how to create a file system.
- "Chapter 11 Setting Up the Cluster Configuration" (page 32)

This chapter describes issues that should be noted when building a cluster system.

- "Chapter 12 Storage Migration" (page 33) This chapter describes the procedures that are related to Storage Migration.
 "Chapter 13 Non-disruptive Storage Migration" (page 40)
- This chapter describes the procedures that are related to Non-disruptive Storage Migration.

Table of Contents

Chapter 1 Workflow	7
Chapter 2 Checking the Server Environment	9
2.1 Hardware	9
2.2 Operating System (OS)	9
2.3 Fibre Channel Cards	9
Chapter 3 Notes	10
 3.1 Connection Notes for PRIMERGY and PRIMEQUEST 4000/3000/2000/1000 Series 3.1.1 Connection Notes 3.1.2 When Installing Multiple Fibre Channel Cards 3.1.3 When Connecting PRIMEQUEST 1000 Series to an ETERNUS AF/DX 	≥s 10 10 10
3.2 Connection Notes for PRIMEQUEST 500 Series and Other Companies' Industry ard Servers	Stand- 11
3.3 Notes about Driver for ETERNUS AF/DX Storage Systems	11
3.4 MSCS and WSFC Notes	12
3.5 Veritas Cluster Server (VCS) Notes	12
3.6 Notes about Standard Multipath Driver (msdsm) for Windows Server [®]	12
3.7 Hyper-V Virtual Fibre Channel (vFC) Function Notes	12
3.8 Fibre Channel Switch Notes	13
3.9 Server Startup and Power Supply Control Notes	13
3.10 Notes on WWN Instance Management Table for the Server	13
3.11 System Design Sheet Notes	14
3.12 Operational Notes	14
3.13 Notes on Installing the Storage Cluster Function	14
3.14 Notes about Connections with a Windows Server [®]	14
3.15 Notes for Formatting a LUN of the ETERNUS AF/DX from a Windows Server [®]	18
Chapter 4 Setting Up the ETERNUS AF/DX	20

Chapter 5 Setting Up the Fibre Channel Switches	21
Chapter 6 Installing the OS	23
Chapter 7 Installing the Driver	24
7.1 Installing the Fibre Channel Card Driver	24
7.2 Multipath Environment Configuration	24
7.2.1 Configuring ETERNUS Multipath or GR Multipath	24
7.2.2 Configuring the Standard Multipath Driver (msdsm) Environment for Windows Server $^{ m extsf{B}}$	25
7.3 Single-Path Environment Configuration	27
Chapter 8 Checking the Registry Information	28
Chapter 9 Checking the Connected Devices	29
9.1 Turning On the Devices	29
9.2 Checking the LUNs	
9.3 Checking the ETERNUS AF/DX storage systems' Connection Status	30
Chapter 10 Creating the Disk Partitions	31
Chapter 11 Setting Up the Cluster Configuration	32
Chapter 12 Storage Migration	33
Chapter 13 Non-disruptive Storage Migration	40

Chapter 1 Workflow

This chapter describes how to connect the ETERNUS AF/DX storage systems to a server. The workflow is shown below.

Required Documents

- "Server Support Matrix"
- "Server Support Matrix for FC-SWITCH"
- "Configuration Guide -Server Connection- Storage System Settings" that corresponds to the ETERNUS AF/DX to be connected
- "Configuration Guide -Server Connection- (Fibre Channel) Fibre Channel Switch Settings"
- "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Fujitsu Fibre Channel Cards"
- "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Non-Fujitsu Fibre Channel Cards"
- "ETERNUS Web GUI User's Guide"

Workflow

Setting Up the ETERNUS AF/DX

Set the various parameters required to operate the ETERNUS AF/DX.

- "Chapter 4 Setting Up the ETERNUS AF/DX" (page 20)
- · Checking the setup and maintenance operations
 - "ETERNUS Web GUI User's Guide"
- Setting up the ETERNUS AF/DX
 - "Configuration Guide -Server Connection- Storage System Settings" that corresponds to the ETERNUS AF/DX to be connected



Setting Up the Fibre Channel Switches

- If a Fibre Channel switch is to be used, set it up now.
- "Chapter 5 Setting Up the Fibre Channel Switches" (page 21)
- Setting up the Fibre Channel switches
 - "Configuration Guide -Server Connection- (Fibre Channel) Fibre Channel Switch Settings"
- Checking the Fibre Channel switch connection requirements
 - "Server Support Matrix for FC-SWITCH"



3

Installing the Driver

Install the appropriate driver for the Fibre Channel card and Multipath Driver to be used.

- "Chapter 7 Installing the Driver" (page 24)
- Installing and setting up the card and driver
 - "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Fujitsu Fibre Channel Cards"
 - "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Non-Fujitsu Fibre Channel Cards"
- Checking the Fibre Channel card driver versions
 - "Server Support Matrix"



Checking the Connected Devices

Check the ETERNUS AF/DX LUNs and status of the connection to the server.

• "Chapter 9 Checking the Connected Devices" (page 29)



Create disk partitions and set up the cluster configuration as necessary.

- "Chapter 10 Creating the Disk Partitions" (page 31)
- "Chapter 11 Setting Up the Cluster Configuration" (page 32)

Chapter 2 Checking the Server Environment

Connection to servers is possible in the following environments. Check the "Server Support Matrix" for server environment conditions.

2.1 Hardware

Refer to the "Server Support Matrix".

2.2 Operating System (OS)

Refer to the "Server Support Matrix".

2.3 Fibre Channel Cards

Refer to the "Server Support Matrix".

Chapter 3 Notes

Note the following issues when connecting the ETERNUS AF/DX to a server.

3.1 Connection Notes for PRIMERGY and PRIMEQUEST 4000/3000/2000/1000 Series

3.1.1 Connection Notes

• To ensure reliable access to the storage systems, the following methods are recommended:

- Connection via multiple paths
- Use of drivers for ETERNUS AF/DX storage systems which support path redundancy control

Configure a multipath environment and select a driver for ETERNUS AF/DX storage systems that supports path redundancy control to increase redundancy and reliability of the connection between the ETERNUS AF/DX storage systems and the server.

- The following cluster configuration is supported for Windows[®]:
 - MSCS (Microsoft Cluster Service) configuration
 - WSFC (Windows Server Failover Cluster) configuration

For details on servers which support cluster configuration, consult your Fujitsu sales representative.

3.1.2 When Installing Multiple Fibre Channel Cards

Only the same type of Fibre Channel cards can be installed together. Different types of Fibre Channel cards cannot be mixed.

3.1.3 When Connecting PRIMEQUEST 1000 Series to an ETERNUS AF/DX

When connecting the PRIMEQUEST 1000 series to an ETERNUS AF/DX, the following configurations are recommended:

- For 1-port Fibre Channel cards used in system configurations that emphasize redundancy, use of 8Gbit/s 1-port Fibre Channel cards (MC-0JFC11/MC-0JFC1L) are recommended for use.
- For 2-port Fibre Channel cards (MC-0JFC21/MC-0JFC2L), configurations in which both ports of any given card connect to the same storage system are not recommended.

For other notes, contact a Fujitsu engineer.

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows® Copyright 2025 Fujitsu Limited

3.2 Connection Notes for PRIMEQUEST 500 Series and Other Companies' Industry Standard Servers

- [®] To build a cluster configuration for Windows[®], use Microsoft Cluster Service (MSCS), Windows Server Failover Cluster (WSFC), and MSCS- and WSFC-compatible applications. This cluster configuration must also use only one type of Fibre Channel card. Operation cannot be guaranteed if the cluster is configured using multiple types of Fibre Channel cards.
- When the PRIMEQUEST 500 series is connected to an ETERNUS AF/DX, LUN recognition by the Windows[®] Plug and Play function is not guaranteed.
- To ensure reliable access to the storage systems, the following methods are recommended:
 - Connection via multiple paths
 - Use of drivers for ETERNUS AF/DX storage systems which support path redundancy control
 - Configure a multipath environment and select a driver for ETERNUS AF/DX storage systems that supports path redundancy control to increase redundancy and reliability of the connection between the ETERNUS AF/DX storage systems and the server.
- When connecting the PRIMEQUEST 500 series to an ETERNUS AF/DX, the following configurations are recommended:
 - For 1-port Fibre Channel cards used in system configurations that emphasize redundancy, 8Gbit/s 1-port Fibre Channel cards (MC-08FC81) or 4Gbit/s 1-port Fibre Channel cards (MC-08FC31/MC-08FC51) are recommended for use.
 - For 2-port Fibre Channel cards (MC-08FC41/MC-08FC61/MC-08FC91), configurations in which both ports of any given card connect to the same storage system are not recommended.

For other notes, contact a Fujitsu engineer.

3.3 Notes about Driver for ETERNUS AF/DX Storage Systems

When connecting the server to the ETERNUS AF/DX with multipath configuration, using the path redundancy control (path fail-over) function with a driver for ETERNUS AF/DX storage systems, one of the following drivers is required by the server:

OS	Driver
Windows Server [®] 2025	ETERNUS Multipath Driver
Windows Server [®] 2022	
Windows Server [®] 2019	
Windows Server [®] 2016	
Windows Server [®] 2012 R2	
Windows Server [®] 2012	

For product information, refer to the following URL:

https://www.fujitsu.com/global/products/computing/storage/software/eternus-mpd/

When single-path connection is used between the ETERNUS AF/DX and server, a driver for ETERNUS AF/DX storage systems (ETERNUS Multipath Driver) is not required.

3.4 MSCS and WSFC Notes

- To use MSCS or WSFC configuration, install either the driver for ETERNUS AF/DX storage systems or the standard multipath driver (msdsm) for Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012 on each node (server) and then check the connections before the installation of MSCS or WSFC.
- Check the registry values by following the instructions in "Chapter 8 Checking the Registry Information" (page 28), after installing MSCS or WSFC.
- When setting up the MSCS, a reset group must be set for the ETERNUS AF/DX. A reset group does not need to be set for WSFC.

3.5 Veritas Cluster Server (VCS) Notes

Veritas Cluster Server should be installed according to the directions given in the documentation provided with Veritas Cluster Server.

3.6 Notes about Standard Multipath Driver (msdsm) for Windows Server[®]

Various settings, such as the load balance policy and retry count, can be adjusted by using the standard multipath drivers (msdsm) for Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012. However the following settings should not be changed from their default values.

Screen name	Parameters that may not be changed
MPIO tab of Multi-Path Disk Device properties	Load balance policy, [Details] button, [Edit] button
Details of DSM	Timer counter (path checking period, enable path checking, number of retires, retry interval, PDO dele- tion period)
Details of MPIO paths	Path status

3.7 Hyper-V Virtual Fibre Channel (vFC) Function Notes

• The following must be noted depending on the switch that is to be used when the vFC function is used in a cluster configuration via the guest OS.

- For Brocade Switch
 - Enable the NPIV function.
 - Enable the "Enforce FLOGI/FDISC login" function.
- For Cisco Switch
 - Enable the NPIV function.

- Use version 5.0 (4b) or later for NX-OS.
- For details on the Brocade switch functions, the Cisco switch functions, and their support status, refer to the manual provided with the relevant switch.
- When the vFC function is used, use the host affinity instead of using the LUN mapping.
- When the host WWNs are registered to the host affinity, all virtual WWNs of the vFC that are set for the virtual machine must be registered as host WWNs.
- Configure the switch zone settings using the WWN zoning and avoid a cascade connection between the switches.

3.8 Fibre Channel Switch Notes

- Check the "Server Support Matrix for Windows FCoE connection" and "Server Support Matrix for FC-SWITCH" for which CEE/FCoE switches and Fibre Channel switches are supported by each server OS and ETERNUS AF/DX model. Refer to "Server Support Matrix for FC-SWITCH" to check the available Fibre Channel switches in advance.
- When a Fibre Channel switch is to be used between the server and ETERNUS AF/DX, follow the preparation-in-advance and Fibre Channel switch setup procedures given in the "Configuration Guide -Server Connection- (Fibre Channel) Fibre Channel Switch Settings".

3.9 Server Startup and Power Supply Control Notes

Before turning the server on, check that the ETERNUS AF/DX storage systems and Fibre Channel switches are all "Ready". If the server is turned on and they are not "Ready", the server will not be able to recognize the ETERNUS AF/DX storage systems.

Also, when the ETERNUS AF/DX power supply is being controlled by a connected server, make sure that the ETERNUS AF/DX does not shut down before the connected servers. Similarly, the Fibre Channel switches must also be turned off after the connected servers have been shut down. If turned off, data writes from the running server cannot be saved to the ETERNUS AF/DX storage systems, and already saved data may also be affected.

3.10 Notes on WWN Instance Management Table for the Server

The WWN instance management table for the server is a worksheet that helps make the process of installing an ETERNUS AF/DX easy.

It is important that the system details be recorded after first installing the system and also each time the system is subsequently modified, expanded, or has maintenance work performed on it. Creating an instance management table makes installation and maintenance of the system easy. Use template instance management tables provided in "Appendix Various Management Tables (Template)" of the "Configuration Guide -Server Connection- (Fibre Channel) for Windows Driver Settings" for the Fibre Channel card being used.

3.11 System Design Sheet Notes

The system design sheet is a spreadsheet program work sheet that is used to simplify the process of installing the ETERNUS AF/DX. It is important that the system details be recorded after first installing the system and also each time the system is subsequently modified, expanded, or has maintenance work performed on it. Creating a system design sheet makes installation and maintenance of the system easy.

3.12 Operational Notes

Check the values of the registry information after updating the Fibre Channel card driver. For further details, refer to "Chapter 8 Checking the Registry Information" (page 28).

3.13 Notes on Installing the Storage Cluster Function

To install the Storage Cluster function, rebooting the server is necessary after the TFO group is set up.

3.14 Notes about Connections with a Windows Server[®]

When Windows Server[®] is connected to the ETERNUS AF series (excluding the ETERNUS AF S3 series), the ETERNUS DX S4/S3 series (excluding the ETERNUS DX8900 S4), or the ETERNUS DX200F, and Windows Server[®] is rebooted after a firmware is applied to the storage system, the status of the disks on Windows Server[®] may become offline.

The status of the disks on Windows Server[®] can be checked with the following procedure.

Click the [Start] button, select [Computer Management] under [Administrative Tools] and then select [Manage Discs] (or [Disk Management]) in the left pane.

Note that the occurrence condition and the workaround differ depending on the path configuration of Windows Server[®].

For single-path configurations, change the SAN Policy setting before a firmware is applied to prevent the disk from becoming offline after the firmware is applied.

For multi-path configurations, there is no workaround. The procedure in "• Measure to take after a problem occurs" (page 17) must be performed to recover from the offline status.

Single-path configuration

The offline status can be avoided only when updating the firmware by changing the SAN Policy setting to "Online All".

If operations are possible with the SAN Policy setting set to "Online All", Step 4 in "• Method for proactively preventing occurrences" (page 15) is not required.

Checking the SAN Policy setting

The following shows how to check the SAN Policy setting.

- 1 Execute the "diskpart" command in the command prompt. The prompt changes to DISKPART.
- 2 Enter "san" and press the [Enter] key.

DISKPART> san

- 3 One of the following SAN Policies appears.
 - "Offline Shared"
 - "Offline All"
 - "Online All"
- 4 Enter "exit" and press the [Enter] key to complete the "diskpart" command.
- Method for proactively preventing occurrences

Change the SAN Policy setting by performing the following procedure and then update the firmware.

- 1 Change the SAN Policy setting.
 - (1) Execute the "diskpart" command in the command prompt. The prompt changes to DISKPART.
 - (2) Enter "san policy=onlineall" and press the [Enter] key.

Example:

```
DISKPART> san policy=onlineall
```

- (3) To apply the SAN Policy setting, reboot Windows Server[®].
- 2 Execute the "diskpart" command again in the command prompt and confirm that "Online All" is specified for the SAN Policy setting.

Example:

```
DISKPART> san
SANPolicy : Online All
```

- 3 Update the firmware.
 - (1) Update the firmware of the ETERNUS AF/DX.
 - (2) To get OS to recognize the new instance ID, reboot Windows Server[®].

- 4 Revert the SAN Policy setting to the previous value.
 - (1) Execute the following command to revert the SAN Policy setting. Example:

```
DISKPART> san policy=Offline Shared
```

- (2) To apply the SAN Policy setting, reboot Windows Server[®].
- (3) Execute the "diskpart" command again in the command prompt and confirm that the previous value is specified for the SAN Policy setting.

Example:

```
DISKPART> san
SANPolicy : Offline Shared
```

Measure to take after a problem occurs

Manually change the offline disks to online with the following procedure.

- 1 Click the [Start] button, select [Computer Management] under [Administrative Tools] and then select [Manage Discs] (or [Disk Management]) in the left pane.
- 2 Select each offline disk, then right-click the selected disk to change the status to online.

If a firmware update of the ETERNUS AF/DX is performed in a Hyper-V environment where a pass-through disk is configured for the guest OS, the disk is recognized as a new disk and the pass-through disk is removed from the physical hard disk. Therefore, the pass-through disk must be manually reconfigured to be restored.

The procedure for restoring (or reconfiguring) the disk is as follows:

- 1 Start "Hyper-V Manager".
- 2 Select the offline guest OS and click [Settings] in the right pane. The settings pop-up for the guest OS appears.
- 3 In the settings pop-up under [SCSI Controller], select the hard drive that has the message "Physical drive not found".
- 4 Select the appropriate disk for the [Physical hard disk] area in the right side of the window.
- 5 Click the [OK] button.
- SAN Policy supported OSs
 - Windows Server[®] 2025
 - Windows Server[®] 2022
 - Windows Server[®] 2019
 - Windows Server[®] 2016
 - Windows Server[®] 2012 R2
 - Windows Server[®] 2012

SAN Policy default value

OS	SAN Policy default value
Windows Server [®] 2025 (all editions)	Offline Shared
Windows Server [®] 2022 (all editions)	
Windows Server [®] 2019 (all editions)	
Windows Server [®] 2016 (all editions)	
Windows Server [®] 2012 R2 (all editions)	
Windows Server [®] 2012 (all editions)	

Multipath configuration

The server starts up with the same disk status (online or offline) as when the multipathing was set up regardless of the SAN Policy setting.

- When the multipathing of an online disk is set up during the configuration of the environment The multipath disk starts up in the online status after the firmware is updated.
- When the multipathing of an offline disk is set up during the configuration of the environment The multipath disk starts up in the offline status after the firmware is updated.
- Method for proactively preventing occurrences

For multi-path configurations, there are no proactive measures (such as a setting change) to prevent the disk from becoming offline after the environment is configured. In addition, the disk status when multipathing was set up cannot be checked after the environment is configured.

Perform the procedure in "• Measure to take after a problem occurs" (page 17) if the disk becomes offline while the firmware is updated.

- Measure to take after a problem occurs
 - When the OS can be started up

Manually change the offline disks to online by following the procedure below.

- 1 Click the [Start] button, select [Computer Management] under [Administrative Tools] and then select [Manage Discs] (or [Disk Management]) in the left pane.
- 2 Select each offline disk, then right-click the selected disk to change the status to online.
- When the OS cannot be started up

If the Active Directory database is located in a disk other than the OS area, the OS may not be able to start up because the disk is offline and the OS cannot access the Active Directory database.

In this case, the disk can be recovered by starting the OS in the Directory Services Restore Mode and changing the disk status to online.

The procedure for restoring (or reconfiguring) the disk is as follows:

- 1 Start the server.
- 2 Press the [F8] key on the server start-up screen.

- 3 The Advanced Boot Options screen appears.
- 4 Select Directory Services Restore Mode.
- 5 Log in as Administrator after the OS starts.
- 6 Select [Computer Management] under [Administrative Tools] and then select [Manage Discs] (or [Disk Management]) in the left pane.
- 7 Select each offline disk, then right-click the selected disk to change the status to online.
- 8 Restart the OS.

If a firmware update of the ETERNUS AF/DX is performed in a Hyper-V environment where a pass-through disk is configured for the guest OS, the disk is recognized as a new disk and the pass-through disk is removed from the physical hard disk. Therefore, the pass-through disk must be manually reconfigured to be restored.

The procedure for restoring (or reconfiguring) the disk is as follows:

- 1 Start "Hyper-V Manager".
- 2 Select the offline guest OS and click [Settings] in the right pane. The settings pop-up for the guest OS appears.
- 3 In the settings pop-up under [SCSI Controller], select the hard drive that has the message "Physical drive not found".
- 4 Select the appropriate disk for the [Physical hard disk] area in the right side of the window.
- 5 Click the [OK] button.

3.15 Notes for Formatting a LUN of the ETERNUS AF/DX from a Windows Server[®]

If a LUN of the ETERNUS AF/DX is formatted from a Windows $\mathsf{Server}^{\texttt{B}}$, the following problems may occur.

- The formatting operation takes longer to complete.
- If the formatting operation is canceled, the canceled operation becomes unresponsive.

These are the problems caused by performance degradation due to the command being issued to release the storage capacity for the entire formatting area.

Performance degradation can be prevented by executing the following command to change the parameter value to stop the command from releasing the storage capacity of all the volumes.

```
# fsutil behavior set disabledeletenotify 1
```

After all formatting operations have been completed, execute the following command to re-enable the command that releases the storage capacity of all the volumes.

```
# fsutil behavior set disabledeletenotify 0
```

Chapter 4 Setting Up the ETERNUS AF/DX

Set up the ETERNUS AF/DX storage systems using ETERNUS Web GUI.

ETERNUS AF/DX setup can be performed independently of server setup. For details on how to perform these settings, refer to the following manuals.

- "Configuration Guide -Server Connection- Storage System Settings" that corresponds to the ETERNUS AF/DX to be connected
- "ETERNUS Web GUI User's Guide"

Chapter 5 Setting Up the Fibre Channel Switches

Perform the settings required to connect the ETERNUS AF/DX storage systems and server via the Fibre Channel switch, according to "Configuration Guide -Server Connection- (Fibre Channel) Fibre Channel Switch Settings".

Caution

If the access path is set with ETERNUS SF Storage Cruiser, the Host Response settings are set to the default values.

If the Host Response settings are changed from the default values, set the Host Response again.

The following examples show configurations in which a server is connected to a Fibre Channel switch with zoning.

The following example shows a configuration in which multiple servers are connected to multiple CAs.



The following example shows a configuration in which a single server is connected to multiple CAs.



Chapter 6 Installing the OS

Install the OS and Service Pack (SP) to the server if the OS has not yet been installed.

Caution

Check that the power for the ETERNUS AF/DX storage systems are turned off before installing the OS. If the power for the ETERNUS AF/DX storage systems are turned on when installing the OS, the server recognizes the ETERNUS AF/DX storage systems and problems may occur.

Chapter 7 Installing the Driver

Install the Fibre Channel card driver and the driver for ETERNUS AF/DX storage systems or the standard multipath driver (msdsm) for Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012 and then perform a configuration.

7.1 Installing the Fibre Channel Card Driver

Refer to each "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®]" for detailed setting procedures.

- "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Fujitsu Fibre Channel Cards"
- "Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Driver Settings for Non-Fujitsu Fibre Channel Cards"

7.2 Multipath Environment Configuration

Multipath environment configuration differs depending on the multipath driver that is used.

- When the driver for ETERNUS AF/DX storage systems is used
- Refer to "7.2.1 Configuring ETERNUS Multipath or GR Multipath" (page 24).
- When the standard multipath driver (msdsm) for Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012 is used

Refer to "7.2.2 Configuring the Standard Multipath Driver (msdsm) Environment for Windows Server[®]" (page 25).

7.2.1 Configuring ETERNUS Multipath or GR Multipath

Install the driver for ETERNUS AF/DX storage systems as required.

- Refer to "3.3 Notes about Driver for ETERNUS AF/DX Storage Systems" (page 11) for notes about drivers in cases such as when connecting the server to the ETERNUS AF/DX in multipath configuration and using the path redundancy control (path fail-over) function, and for when single-path connection is used between the ETERNUS AF/DX and server.
- For the procedure about how to install (or uninstall), set up, and use the drivers for ETERNUS AF/DX storage systems, refer to the software manuals.

7.2.2 Configuring the Standard Multipath Driver (msdsm) Environment for Windows Server[®]

This section describes how to configure the environment to use the standard multipath driver (msdsm) for Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012.

7.2.2.1 Installing Multipath I/O

Procedure

1 Click [Add Features] in the [Server Manager] screen.

Select the "Multipath I/O" checkbox in the "Features" screen of the Add Features Wizard, and install the Multipath I/O function.

Confirmation	Select one or more features to install on this server. Eeatures:	Description:
Progress Results		 Metropate (D), along with the Microsoft DeviceSpecific Module (UDSM) or a third-party DSM, provides support for using multiple data paths to a storage device on Windows.

2 Reboot the server.

End of procedure

7.2.2.2 Detailed Setup for MPIO

Perform settings to apply the installed Multipath I/O to the ETERNUS AF/DX.

Procedure

Click [Control Panel] — [MPIO].
 The MPIO properties window appears.

2 In the MPIO properties window, select the [MIPO-ed Devices] tab, and click the [Add] button.

PIO Properties		
MPIO-ed Devices Dis	cover Multi-Paths DSM Insta	all]
To add support for a Product Ids as a stri Devices can be spec To remove support f	new device, click Add and ent ng of 8 characters followed by fied using semi-colon as the de or currently MPIO'd devices, se	er the Vendor and 16 characters. Multiple elimiter. elect the devices and
Devices:	4	
Device Hardware 1	16	
17	Add	Remove

3 Enter the ID of the ETERNUS AF/DX that is to be connected in the [Device Hardware ID] field.

Add MPIO Support	×
Enter the Vendor and Product Ids (as a string of 8 characters followed b 16 characters) of the devices you want to add MPIO support for.	у
Device Hardware ID:	
FUJITSU ETERNUS_DX400	
	_

The device hardware ID that must be entered for the ETERNUS AF/DX can be checked with the following table.

ETERNUS AF/DX to be used	Device Hardware ID
ETERNUS AF150 S3/AF250 S3, ETERNUS AF250 S2, ETERNUS AF250, ETERNUS DX60 S5/DX100 S5/DX200 S5, ETERNUS DX60 S4/DX100 S4/DX200 S4, ETERNUS DX60 S3/DX100 S3/DX200 S3, ETERNUS DX60 S2/DX80 S2/DX90 S2, ETERNUS DX200F	FUJITSU ETERNUS_DXL
ETERNUS AF650 S3, ETERNUS AF650 S2, ETERNUS AF650, ETERNUS DX600 S6, ETERNUS DX500 S5/DX600 S5, ETERNUS DX500 S4/DX600 S4, ETERNUS DX500 S3/DX600 S3	FUJITSU ETERNUS_DXM
ETERNUS DX900 S6, ETERNUS DX900 S5, ETERNUS DX8900 S6, ETERNUS DX8900 S4, ETERNUS DX8100 S3/DX8700 S3/DX8900 S3	FUJITSU ETERNUS_DXH
ETERNUS DX400 S2 series	FUJITSU ETERNUS_DX400
ETERNUS DX8000 S2 series	FUJITSU ETERNUS_DX8000

Caution

A space is required between the "FUJITSU" and the "ETERNUS_...".

4 Connect the ETERNUS AF/DX using multipath configuration with the server turned off, and then turn the server on.

End of procedure

7.3 Single-Path Environment Configuration

In a single-path environment, it is not required to install the ETERNUS Multipath Driver or driver for ETERNUS AF/DX storage systems such as ETERNUS device driver.

Chapter 8 Checking the Registry Information

Check the value of the "TimeOutValue" registry key. If the "TimeOutValue" registry key does not exist, then create it.

The registry file should be backed up before creating or changing any registry values.

Procedure

- 1 Click the [Start] button, and then click [Run].
- 2 In the [Run] dialog box, type "regedit", and then click the [OK] button. Registry Editor starts.
- 3 Follow the path described below:

\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Disk

4 Check the value of the "TimeOutValue" registry key.

Check that the value of the "TimeOutValue" registry key is "0x3C". If the name or value is not "0x3C", change it to "0x3C".

Caution

- If the "TimeOutValue" key does not exist, add a registry key with the following values:
- The "Name" field is case-sensitive.

Name	TimeOutValue
Туре	REG_DWORD
Radix	Hexadecimal
Data	3C

5 If any registry values were added or modified, reboot the server. The modified settings will be enabled after the reboot.

End of procedure

Chapter 9 Checking the Connected Devices

9.1 Turning On the Devices

To turn on the connected devices, use the following procedure:

Procedure

- 1 Turn on the Fibre Channel switch power (if used).
- 2 Check that the Ready LED (or equivalent) is lit on the Fibre Channel switch.
- 3 Turn on the ETERNUS AF/DX.
- 4 Check that the Ready LED is lit on the ETERNUS AF/DX.
- 5 Turn on the server.

End of procedure

9.2 Checking the LUNs

Check the LUNs using the following procedure:

Procedure

- 1 Open [Device Manager] to show [Disk drives].
- 2 If the ETERNUS AF/DX storage systems' LUNs are recognized by the server, the ETERNUS AF/DX storage systems' device (LUNs) are displayed under [Disk drives].

🔵 Note

For multipath configuration with Windows Server[®] 2025, Windows Server[®] 2022, Windows Server[®] 2019, Windows Server[®] 2016, Windows Server[®] 2012 R2, or Windows Server[®] 2012, each ETERNUS AF/DX LUN shows as a single "Multi-Path Disk Device".

End of procedure

9.3 Checking the ETERNUS AF/DX storage systems' Connection Status

The following items can be set and displayed in the Multipath Manager main window when GR Multipath Driver or ETERNUS Multipath Driver is used.

- ETERNUS AF/DX storage systems' connection status
- Connected LUNs
- Path status
- Path restoration or release

The following is an example use of ETERNUS Multipath Driver. This describes ETERNUS AF/DX storage systems' connection status and the checking of paths.

Procedure

- 1 Start up ETERNUS AF/DX storage systems (assuming that LUNs are already set up), and check that it is "Ready" before starting up the server.
- 2 When the server is Ready, start up Multipath Manager.
- 3 The main window will appear.

The status of the ETERNUS AF/DX storage systems connected to the server (connection status, path status) can be checked.

End of procedure

For details on "Multipath Manager" operations, refer to the manual provided with the GR Multipath Driver or ETERNUS Multipath Driver.

Chapter 10 Creating the Disk Partitions

Create disk partitions as necessary, using the following procedure.

Procedure

- Open [Disk Management] via [Computer Management].
 If unsigned disks exist, a query about whether or not to sign disks for the connected devices is made.
- 2 Sign disks and create partitions as necessary.

🔵 Note

- This setup can also be used to upgrade to dynamic disks.
- 2TB or larger disks must be converted to GPT disks.

End of procedure

Chapter 11 Setting Up the Cluster Configuration

If configuring a cluster (WSFC/MSCS), install the cluster related applications, as necessary. After cluster configuration is finished, recheck the registry information according to the instructions in "Chapter 8 Checking the Registry Information" (page 28). Correct the information, if necessary.

Chapter 12 Storage Migration

This chapter explains how to configure the server for performing Storage Migration. When Storage Migration is performed, configure the settings so that the dynamic disks can be used from the server (Windows Server[®]).

Setting Procedure Outline

This procedure is required after performing Storage Migration, and all operations are performed on the server (Windows Server[®]). This is not dependent on a Multipath Driver.

The following describes the procedure for using the dynamic disks after performing Storage Migration. This procedure is not required when performing Storage Migration for a basic disk.

- 1 Bring the disk online.
- 2 Import the disk.
- 3 Activate the disk.

Example Setting Procedure

The following procedure shows an example configuration for using dynamic disks.

Procedure

1 Bring the disk online.

After performing Storage Migration, the disk will be offline. Right-click the disk and select [Online].

💭 Computer Management						
File Action View Help						
🗢 🔿 🖄 📅 🛛 🖬 😰	6° 19					
A Computer Management (Local)	Volume	Layout	Туре	File System	Status	Capacil
🖃 🎁 System Tools	100	Simple	Dynamic		Failed	8.00 GI
🕀 🕑 Task Scheduler	8	Spanned	Dynamic		Failed	16.00 (
🛨 🛃 Event Viewer	8	Mirror	Dynamic		Failed	4.00 GI
🗄 📷 Shared Folders	-3	Striped	Dynamic		Failed	8.00 GI
Local Users and Groups	(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	465.15
Device Mapager	New Volume (T:)	Simple	Dynamic	NTFS	Healthy	8.00 GI
E Storage	New Volume (U:)	Spanned	Dynamic	NTFS	Healthy	16.00 (
Disk Management	New Volume (V:)	Striped	Dynamic	NTFS	Healthy	8.00 GI
F Services and Applications	New Volume (W:)	Mirror	Dynamic	NTFS	Healthy	4.00 GI
	New Volume (Y:)	Simple	Dynamic	NTFS	Healthy	20.00 (
	New Volume (Z:)	Simple	Dynamic	NTFS	Healthy	20.00 (
	System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 ME
	•					Þ
	Dick 5				1	
	Basic					
	20.00 GB	20.00 GB				
	Urrine U					
	GDisk 6					
	Dynamic					
	Offline Online					
	Help	inc				
		ies				
	Dynamic Help					
	Offline 1					
	Help					
	1000					
	Disk 8					_
12 ·	Unallocated	Primary	partition	Simple vo	olume 📕 Spanned volume 📕 Striped volume 📕 M	lirrored

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows® Copyright 2025 Fujitsu Limited

2 Import the disk.

(1) After bringing the disk online, its status will be Foreign. Right-click the disk and select [Import Foreign Disks].

🔛 Computer Management						
<u>File Action View Help</u>						
🗢 🔿 🙍 📅 🔯 🖬	ef 😼					
A Computer Management (Local)	Volume	Layout	Туре	File System	Status	Capacil
 System Tools Task Scheduler Event Viewer Shared Folders Local Users and Groups Performance Device Manager Storage Disk Management Services and Applications 	G G G G G G G G G G G G G G G G G G G	Simple Spanned Striped Mirror Simple Simple Simple	Dynamic Dynamic Dynamic Dynamic Basic Dynamic Basic Basic	NTFS NTFS NTFS NTFS	Failed Failed Failed Healthy (Boot, Page File, Crash Dump, Primary Partition) Healthy Healthy Healthy Healthy (System, Active, Primary Partition)	8.00 G 16.00 (8.00 G 4.00 G 465.15 20.00 (20.00 (100 ME
	Disk 8 Dynamic Foreign					*
	Disk 9 Dynamic Foreign					
	Dynamic 20.00 GB Online	New Volui 20.00 GB N Healthy	me (Y:) ITFS			
	Disk 11	Primary p	artition	Simple vo	olume 📕 Spanned volume 📕 M	 lirrored

(2) In the [Import Foreign Disks] window, select the checkbox of the disk you want to import and then click the [OK] button.

💭 Computer Management						
File Action View Help						
🗢 🔿 🙋 📅 🔯	e 😼					
🛃 Computer Management (Local)	Volume	Layout	Туре	File System	Status	Capacil
🖃 🞁 System Tools	100	Simple	Dynamic		Failed	8.00 GI
🕀 🚇 Task Scheduler		Spanned	Dynamic		Failed	16.00 (
🕀 🔡 Event Viewer		Striped	Dynamic		Failed	8.00 GI
🛨 👔 Shared Folders	198	Mirror	Dynamic		Failed	4.00 GI
Eocal Users and Groups	(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	465.15
Device Manager	New Volume (Y:)	Simple	Dynamic	NTFS	Healthy	20.00 🤇
	New Volume (Z:)	Simple	Dynamic	NTFS	Healthy	20.00 (
🔄 🔜 Disk Management	System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 ME
🗉 ᡖ Services and Applications	Import	t Foreign	Dieke			
4032				ana an		
	Befo	re using the	ise disks, a	idd them to you	ur system configuration.	
	Disk	aroups:				
				(0.51.)		
		oreign disk	group (2 o	r 2 disksj		
	•				Di <u>s</u> ks	•
	🚽 Disk 8					-
	Dynamic					
	Foreign				Cancel	
	Disk 9					
	Dynamic					
	Foreign					
	Conside 10				1	
	Dynamic	New Yolu	me (¥·)			
	20.00 GB	20.00 GB N	ITFS			
	Online	Healthy				
	Disk 11					-
	Unallocated	Primary p	artition	Simple vo	olume 📕 Spanned volume 📕 Striped volume 📕 M	tirrored
1	J		2			

(3) Confirm that the Volume type to be imported is correct, and then click the [OK] button.



- 3 Activate the disk.
 - (1) Right-click the disk and select [Reactivate Disk].

If the status is "Online" at "Import Foreign Disks", this procedure is not required.

File Action View Help								
🗢 🔿 🚈 📅 🔽 🖬 🔁 🖆	f 😼							
Computer Management (Local)	Volume		Layout	Туре	File System	Status		Capacil
🖻 🎁 System Tools 🛛 🚺	🗀 (C:)		Simple	Basic	NTFS	Healthy (Boot, P	age File, Crash Dump, Primary Parti	tion) 465.15
🕀 🕑 Task Scheduler 🛛	New V	olume	Striped	Dynamic	NTFS	Healthy		8.00 GI
Event Viewer	🗩 New Vi	olume	Spanned	Dynamic	NTFS	Healthy		16.00 (
Bared Folders	New Vi	olume	Simple	Dynamic	NTFS	Healthy		8.00 GI
Cocal Osers and Groups Performance	🗀 New Vi	olume	Mirror	Dynamic	NTFS	Healthy		4.00 GI
Device Manager	New Vi	olume (Y:)	Simple	Dynamic	NTFS	Healthy		20.00 (
🖃 🚝 Storage	New Vi	olume (Z:)	Simple	Dynamic	NTFS	Healthy		20.00 (
🔤 Disk Management	System	n Reserved	Simple	Basic	NIFS	Healthy (System	i, Active, Primary Partition)	100 ME
🖅 🎰 Services and Applications								
	1 M H H H H							and the second second
E E	<u> </u>							Þ
		8						•
	Dynamic	8	New Volu	me Ne	w Volume	New Yolume	New Yolume	•
	Dynamic 20.00 GE	8	New Yolu 4.00 GB N1	me Ne IFS 4.0	w Volume 0 GB NTFS	New Volume 4.00 GB NTFS	New Yolume 8.00 GB NTF5	•
	Dynamic 20.00 GE Online	8 New Spann	New Yolu 4.00 GB N1 hed Volume	me Ne IFS 4.0	w Yolume 0 GB NTF5 althy	New Volume 4.00 GB NTFS Healthy	New Yolume 8.00 GB NTF5 Healthy	<u> </u>
	Dynamic 20.00 GE Online	8 New Spann New Stripe	New Yolu 4.00 GB NT red Volume d Volume	me Ne IFS 4.0 Hea	w Yolume 0 GB NTFS althy	New Volume 4.00 GB NTFS Healthy	New Yolume 8.00 GB NTF5 Healthy	<u> </u>
	Dynamic 20.00 GE Online	8 New Spann New Stripe New Mirror	New Yolu 4.00 GB NI hed Volume d Volume	me Ne IFS 4.0	w Yolume O GB NTFS althy	New Volume 4.00 GB NTFS Healthy	New Volume 8.00 GB NTF5 Healthy	-
	Dynamic 20.00 GE Online	8 New Spann New Stripe New Mirror New RAID-	New Volu 4.00 GB N1 hed Volume d Volume d Volume 5 Volume	me Ne IF5 4.0	w Yolume 0 GB NTF5 althy New Yolur	New Volume 4.00 GB NTFS Healthy ne New	New Volume 8.00 GB NTF5 Healthy Volume	4
	Dynamic 20.00 GE Online	8 New Spanr New Stripe New Mirror New RAID- Import For	New Yolu 4.00 GB N1 Hed Volume. Hed Volume. Hed Volume. S Volume. eign Disks.	me Ne IF5 4.0	w Volume 0 GB NTFS althy New Volur 4.00 GB NT Healthy	New Volume 4.00 GB NTFS Healthy me F5 12.0 Health	New Volume 8.00 GB NTF5 Healthy Volume 0 GB NTF5 the	•
	Dynamic 20.00 GE Online Dynan 20.00 Online	8 New Spann New Stripe New Mirror New RAID- Import For	New Yolun 4.00 GB N1 Hed Volume d Volume ed Volume eign Disks. Racis Disks.	me A.C	w Yolume 0 GB NTFS althy New Yolur 4.00 GB NT Healthy	New Volume 4.00 GB NTFS Healthy Tealthy F5 New 12.0 Healt	New Volume 8.00 GB NTF5 Healthy Volume 0 GB NTF5 thy	*
	Conline	8 New Spann New Stripe New Mirror New RAID- Import For Convert to	New Yolui 4.00 GB NI hed Volume d Volume -5 Volume eign Disks Basic Disk	me A.C	w Volume 0 GB NTF5 althy New Volur 4.00 GB NT Healthy	New Yolume 4.00 GB NTFS Healthy FS 12.0 Healt	New Yolume 8.00 GB NTF5 Healthy Volume 0 GB NTF5 thy	•
	Dynamic 20.00 GE Online Dynan 20.00 Online	8 New Spann New Stripe New Mirror New RAID- Import For Convert to Convert to	New Yolui 4.00 GB NI hed Volume d Volume so Volume ign Disks GPT Disk	me Ne IFS 4.0 ''	W Volume O GB NTFS althy New Volur 4.00 GB NT Healthy	New Volume 4.00 GB NTF5 Healthy F5 I2.00 F5 I2.00 Healt	New Volume 8.00 GB NTF5 Healthy Volume 0 GB NTF5 thy	×
	Dynamic 20.00 GE Online Dynan 20.00 Online Dynan 20.00 Dynan 20.00	8 New Spann New Stripe New Mirror New RAID- Import For Convert to Convert to Reactivate	New Yoluu 4.00 GB N1 red Volume ed Volume 5 Volume eign Disks Basic Disk GPT Disk : Disk	me Ne FF5 4.0 	W Volume 0 GB NTFS althy New Volur 4.00 GB NT Healthy	New Volume 4.00 GB NTF5 Healthy F5 I2.0 Healthy	Volume 0 GB NTF5 Healthy Volume 0 GB NTF5 thy	×
	Contine	8 New Spann New Stripe New Mirror New RAID- Import For Convert to Convert to Reactivate Remove Dr	New Yoluu 4.00 GB N1 red Volume ed Volume 5 Volume eign Disks Basic Disk GPT Disk : Disk Sk	me Ne FF5 4.0 	w Yolume o GB NTFS althy New Yolur 4.00 GB NT Healthy	New Yolume 4.00 GB NTF5 Healthy F5 I2.0 Healt	New Volume 8.00 GB NTF5 Healthy 0 GB NTF5 thy	×
	Conline Dynamic 20.00 GE Online Dynan 20.00 Online Dynan 20.00 Online Dynan 20.00 Online	8 New Spann New Striper New RAID- Import For Convert to Convert to Reactivate Remove D Offline	New Yolu 4.00 GB NI red Volume ed Volume 5 Volume eign Disks. Basic Disk GPT Disk sk	me Ne FF5 4.0 	w Volume o GB NTFS althy New Volur 4.00 GB NT Healthy	New Volume 4.00 GB NTF5 Healthy F5 I2.0 Healthy	Volume 0 GB NTF5 Healthy Volume 0 GB NTF5 thy	×
	Conline Dynamic 20.00 GE Online Dynan 20.00 Online Dyna 20.00 Online Dyna 20.00 Online	8 New Spann New Stripe New Mirror New RAID- Import For Convert to Convert to Convert to Reactivate Remove Di Offline Properties	New Yoluu 4.00 GB N1 red Volume. 4 Volume. 5 Volume. 9 Basic Disks. 9 GPT Disk 9 Disk. 5k	me Ne (FFS) He (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	w Volume 0 GB NTF5 althy New Volur 4.00 GB NT Healthy Simple vo	New Volume 4.00 GB NTF5 Healthy F5 I200 Healthy Healthy Dume Spann	New Volume 8.00 GB NTF5 Healthy Volume 0 GB NTF5 thy Striped volume	× Mirrored

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows® Copyright 2025 Fujitsu Limited

(2) Confirm that the disk status has returned to "Online".

Each partition is recognized automatically.

me comparer rianagement							
Eile Action Yiew Help							
🗢 🤿 🔰 📅 🚺 🖬 🚺	X 📽 🚅 🔯						
🔝 Computer Management (Local)	Volume	Layout	Туре	File System	Status		Capacil
🖂 🎁 System Tools	🕞 (C:)	Simple	Basic	NTFS	Healthy (Boot, P	age File, Crash Dump, Primary Partition) 465.15
🕀 🕑 Task Scheduler	📼 New Volume	Striped	Dynamic	NTFS	Healthy		8.00 GI
🕀 👪 Event Viewer	Rew Volume	Spanned	Dynamic	NTES	Healthy		16.00 (
Shared Folders	🖙 New Volume	Simple	Dynamic	NTFS	Healthy		8.00 GI
Local Users and Groups	New Volume	Mirror	Dynamic	NTFS	Healthy		4.00 GI
Device Mapager	New Volume (Y:)	Simple	Dynamic	NTFS	Healthy		20.00 (
E 🚝 Storage	New Volume (Z:)	Simple	Dynamic	NTFS	Healthy		20.00 (
Disk Management	System Reserved	Simple	Basic	NTFS	Healthy (System	, Active, Primary Partition)	100 ME
🖽 🃷 Services and Applications							
	Image: A state of the sta	New Yolur 4.00 GB NT Healthy	ne Ne F5 4.0 He	w Yolume 10 GB NTFS althy	New Volume 4.00 GB NTF5 Healthy	New Yolume 8.00 GB NTF5 Healthy	
	Disk 9						
	20.00 GB Online	New Volur 4.00 GB NT Healthy	ne FS	4.00 GB NT Healthy	ne New FS 12.00 Healt	Yolume D GB NTFS hy	
					12		

End of procedure

After this procedure is completed, the dynamic disks can be used in the migration destination ETERNUS AF/DX the same way as before the migration.

Chapter 13 Non-disruptive Storage Migration

This chapter describes the procedures for connecting and disconnecting paths and provides notes for when the Non-disruptive Storage Migration function is used in the example WSFC environment that uses a multipath driver (msdsm) and runs Windows Server[®] 2012 R2.

Note that in the WSFC environment, during the time from a path connection until after the path disconnection is completed, the cluster must be stopped. Therefore, data migrations without stopping the operation is not available.

Connecting Paths

The following procedure shows how to add a path to the migration destination storage system from the server (Windows Server[®] 2012 R2) after the migration destination storage system is connected. Note that Step 1 is not needed in environments other than WSFC.

Procedure

1 Stop the cluster.

Note

Perform this procedure before configuring the host affinity setting in the migration destination storage system.

(1) In the [Failover Cluster Manager] screen, right-click the cluster name and select [More Actions] - [Shut Down Cluster...] to stop the cluster.

稽		Failover Cluster Ma	anager		_ _ X
File Action View Help					
(+ +) 🖄 📰 🖬 🖬					
Railover Cluster Manager	Cluster WIN2012-CL.msl	ogo.fujitsu.com		^	Actions
WINZUZ-CLmilogotuitsuco Roles Nodes Storage Disks Pools Networks El Cluster Events	Configure Role Validate Cluster View Validation Report Add Node Close Connection Reset Recent Events	er WIN2012-CL Justered roles and 2 nodes. Jucom Networks: 166 Subnets: 2 in the last 10 hours rum)	Ynvate, Public IPv4 and 0 IPv6		WIN2012-CLmslogo.fujitsu.com Image: State Cluster Validate Cluster Image: Validation Report P Add Node Image: Clust Connection
I I	More Actions	Configure Cluster Quorum Settings			Reset Recent Events
	View Refresh	Copy Cluster Roles Shut Down Cluster	r copy roles from a cluster running Windows Server		More Actions View Refresh
	Properties	Destroy Cluster			Properties
	Help	Move Core Cluster Resources			Help
	Custer-Aware Updating	Cluster-Aware Updating			
	Roles Networks	 Nodes Storage Quater Events 	l.		
	Cluster Core Re	esources			
	Name Storage	Status	Information		
	Cluster Disk Quon Server Name	um 🛞 Online	Chkdsk scan needed on volume \\?\Volume(63e		
		CL () Online		-	
These actions are used less frequently t	han other cluster actions.				,

The operation is stopped.

		Failover Cluster Manager	
File Action View Help			
Þ 🔿 📶 🖬 🖬			
Failover Cluster Manager	Cluster WIN2012-CL.mslogo.fujitsu.com	n	Actions
P <u>©</u> winkeviz-s∟miogenijosucom	Summary of Cluster WIN2012 Nme: WIN2012-CL mslopofujitsu.com Custer Status: Down Custer Status: Configure Investigate issues preventing the cluster from stating Vestigate issues preventing t	-CL.mslogo.fujitsu.com Nodes: 0 out of 2 nodes are running	WIN2012-CL:mslogo.fujitsu.com Validate Configuration View Validate Configuration View Validate Configuration Start Cluster Start Cluster Fore Cluster Start Close Connection View Refresh
	Connectio cluster Stat Custer Cose Connection Nodes		Meip
	Node RX30056-5	Cuter Satus Stopped Stopped	
	Navigate Quter Events		

(2) Confirm that the Cluster Status is changed to "Down".

(3) Because the reservation information remains in the migration source storage system, manually release the reservation state from ETERNUS Web GUI.

From [Configuration] - [Host Interface Management] - [Release Reservation], select the target volume and then click the [Execute] button.

ETERNUS DX410							Jaer : root 🔟	เลเป กปุกรบ
ETERNUS DK410 Serial Number	421 0904002							HELP
Status GettingStarted Configuration Settings Download Remote Su	pport User Accounts							
Configuration > Host Interface Management > Release Reservation								
Configuration	Logical Volumo Liet							
>Resource Domain Management >RAID Management >This Provisionient Management	Logical Volume	CA Port / Affinity Gr	oup LUN Re	gistrants R	eservation Type	Persistent	t APTPL	
>Host Interface Management	0:0000 L74_Win_Open=01	0x002(L74_Win)	0x000	2	WE-RO	Yes	No	
Set CA Parameters	☑ 0x000E L74 Win Open=02	0x002(L74 Win)	0x001	2	WE-RO	Yes	No	
Set ISOSI Host	2 0x000 F L74 Win Open-03	0x002(L74 Win)	0×002	2	WE-RO	Yes	No	
Set Affinity Group Algorith Mathematica Group	V 0x0010 L74 Win Open-04	0x002(L74 Win)	0×003	2	WE-RO	Yes	No	
Set LUN Mapping	2 0x0011 L74 Win SDV-01	0x002(1.74 Win)	0×004	2	WE-BO	Yes	No	
Set CA Reset Group	2 0x0012 74 Win SDV-02	0x002(1.74 Win)	0:005	2	WE-BO	Yes	No	
Change RA Mode	2 0-0013 1 74 We SDV-03	0-002(1.74 Wee)	0,006	-	WE-RO	Ver	No	
Release Reservation	C 0.0014 L 74 Web SDV=04	0.002(1.74 Wm)	0.007	0	WE-RO	Yes	No	
>Storage Migration	E 0.0015 1.74 Wes TDV-01	0.000(174,9%)	0.000	•	WE-RO	Vee	Ne	
·	EX 0x0016 L74 Win TRV-02	0x002(L74_Win)	0.009	-	WE-RO	Yee	No	
	M 00010 E14040114-02	0x002(L74_HIID	03008	2	WE-RO	Tes	NO	
		O Select All Volum 13 Vol Jump	e Sekect i umes - Page ito Page	ay unit of Vo 1/2 Next	lume			
		Becu	te Mei	าน				
								€ 104% ×

41

€ 104% ×

(4) The "Please confirm that you wish to perform this operation." message is displayed; click the [OK] button.

ETERNUS DX410		User : root	<u>Loaoff FU</u> ິ່ງກຽນ
Normal ETERNUS DX410	Serial Number : 421 0904002		HELP
Status GettingStarted Configuration Settings Downlo	ad Remote Support User Accounts		
Configuration > Host Interface Management > Release	Reservation		
Configuration	Please confirm that you wish to perform this operation		
>Resource Domain Management			
>Thin Provisioning Management			
>Host Interface Management	CR. Cancer		
Set UA Harameters Set Hist WorldWideName(s)			
Set ISCSI Host			
Set Affinity Group	Logical Volume List to release		
Set LUN Maming	Logical Volume		
Set CA Reset Group	No. Name CA Port / Affinity Group LUN Registrants Reservation Type Persiste	ant APTPL	
Set Host Response	0x000D L74_Win_Open=01 0x002(L74_Win) 0x000 2 WE-RO Yes	No	
Release Reservation	0x000E L74_Win_Open=02 0x002(L74_Win) 0x001 2 WE-RO Yes	No	
	0x000F L74_Win_Open=03 0x002(L74_Win) 0x002 2 WE-RO Yes	No	
>Storage Migration	0x0010 L74_Win_Open=04 0x002(L74_Win) 0x003 2 WE-RO Yes	No	
	0x0011 L74_Win_SDV-01 0x002(L74_Win) 0x004 2 WE-RO Yes	No	
	0x0012 L74_Win_SDV=02 0x002(L74_Win) 0x005 2 WE-RO Yes	No	
	0x0013 L74_Win_SDV-03 0x002(L74_Win) 0x006 2 WE-RO Yes	No	
	0x0014 L74_Win_SDV-04 0x002(L74_Win) 0x007 2 WE-RO Yes	No	
	0x0015 L74_Win_TPV-01 0x002(L74_Win) 0x008 2 WE-RO Yes	No	
	0x0016 L74_Win_TPV-02 0x002(L74_Win) 0x009 2 WE-RO Yes	No	
	13 Volumes - Page 1 /2		
	Jump to Page Next		
			🔍 104% 👻

(5) The "Operation completed successfully." message is displayed; click the [OK] button.

ETERNUS DX410		User: root Loooff	FUJใบร
Normal ETERNUS DX410 S	rial Number : 421 0904002		HEP
Status Getting Started Configuration Settings Download	Remote Support User Accounts		
Configuration > Host Interface Management > Release Res	ervation		
Configuration	Operation completed successfully		
Nessurce Domain Management IRAID Management STAID ThorFrace Management Set CA Permeters Set Host WorldWoleName(s)			
Set ISOSI Host Set Affinity Group			
Allocate Host-Affinity Group	Poloood Logical Valuma List		
Set LUNMapping Set CA Reset Group	Logical Volume CA Port / Affinity Group LUN Registrants Reservation Type Persiste	ant APTPL	
Change RA Mode	0x000D L74 Win Open=01 0x002(L74 Win) 0x000 2 WE-RO Yes	No	
Release Reservation	0x000E L74,Win,Open=02 0x002(L74,Win) 0x001 2 WE-RO Yes	No	
Storage Migration	0x000F L74_Win_Open=03 0x002(L74_Win) 0x002 2 WE-RO Yes	No	
	0x0010 L74_Win_Open=04 0x002(L74_Win) 0x008 2 WE-RO Yes	No	
	0x0011 L74_Win_SDV-01 0x002(L74_Win) 0x004 2 WE-RO Yes	No	
	0x0012 L74_Win_SDV-02 0x002(L74_Win) 0x005 2 WE-RO Yes	No	
	0x0013 L74_Win_SDV-C3 0x002(L74_Win) 0x006 2 WE-RO Yes	No	
	0x0014 L74_Win_SDV-04 0x002(L74_Win) 0x007 2 WE-RO Yes	No	
	0x0015 L74_Win_TPV-01 0x002(L74_Win) 0x008 2 WE-RO Yes	No	
	0x0016 L74_Win_TPV-02 0x002(L74_Win) 0x009 2 WE-RO Yes	No	
	13 Volumes - Page 1/2 Jumpto Page Next		
ittp://10.21.86.184/cgi-bin/cgi_rlsRsv.cgi?eventcode=32⟨=0∾	ess=46533148cd=726F6F748acinf=12078284808131071804		€ 104% →

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Copyright 2025 Fujitsu Limited

(6) Confirm that the reservation state has been released.

If the following message appears, there are no reserved volumes. Click the [OK] button.

ETERNUS DX410		User: root Lozoff	คปใกรม
Normal ETERNUS DK410 Set	ial Number : 421 0904002		HELP
Status GettingStarted Configuration Settings Download	Remote Support User Accounts		
Configuration > Host Interface Management > Release Res	rvation		
Configuration	There is not Logical Volume, which can release		
Configuration Princence Daniel Management Princence Daniel Management Princence Daniel Management Prince Daniel Management Set A Areas Set A Areas Set A Areas Set Mark Mark Mark Set A Areas Charge Advect Coop Set Hon Resorate Charge RA Mode Pelase Resoration Patronge Migration	There is not Logical Volume, which can release.		
			104% *

Check the multipath state using the command prompt or PowerShell.In the following example, each LUN has two paths.

```
C:\Users\administrator.MSLOGO> mpclaim -s -d 0
MPIO Disk0: 02 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00D00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
   Path ID
                State
                                  SCSI Address Weight
   _____
   000000077060001 Active/Optimized 006|000|001|000 0
   * TPG_State : Active/Optimized , TPG_Id: 17, : 73
   000000077050002 Active/Optimized 005|000|002|000
                                                   0
   * TPG_State : Active/Optimized , TPG_Id: 16, : 72
PS C:\Users\administrator.MSLOGO> mpclaim -s -d 1
MPIO Disk1: 02 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00E00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
   Path ID
                 State
                                  SCSI Address
                                                 Weight
    _____
   0000000077060001 Active/Optimized 006|000|001|001 0
   * TPG_State : Active/Optimized , TPG_Id: 17, : 73
   000000077050002 Active/Optimized 005|000|002|001
                                                   0
   * TPG_State : Active/Optimized , TPG_Id: 16, : 72
```

3 Connect the multipath.

Add the host affinity setting to the migration destination storage system.

4 In the [Disk Management] screen, select [Action] - [Rescan Disks] to rescan the disks.

3			Ε	Disk Manageme	ent			×
File Actio	on Vie	ew Help						
(= e	Refresh	1						
Volur	Rescan	Disks	Type	File System	Status	Capacity	Free Spa	
	Create	VHD	Basic	NTFS	Healthy (B	464.91 GB	423.54 GB	
OF	Attach	VHD	Basic	NTFS	Healthy (P	3.90 GB	1002 MB	=
C OP			Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	
⊂ OF	All Tas	us 🕨	Basic	NTFS	Healthy (P	3.90 GB	2.00 GB	
C OF	Help		Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	
C SD V I VI	/	Simple	Basic	NTFS	Healthy (P	3.90 GB	2.00 GB	
GDV-2 (J:)	Simple	Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	~
SDV-3.(K	:)	Simple	Basic	III NTES	Healthy (P	3.90 GB	2.00 GB	
Disk 0								Ĥ
Basic		System Reserv	ved	(C:) ///////				
465.25 GB		350 MB NTFS		464.91 GB NTFS	///////////////////////////////////////	///////////////////////////////////////		=
Online		Healthy (Systen	n, Active, P	Healthy (Boot, P	age File, Crash L	Jump, Primary Pa	irtition)	-
-		1.		<u> </u>			///////////////////////////////////////	
Disk 1								
Basic		OPEN-1 (D:)						
3.91 GB		3.90 GB NTFS						
Reserved		Healthy (Prima	ry Partition)					
Basic		OPEN-2 (E-)						
3.91 GB		3.90 GB NTFS						
Reserved		Healthy (Prima	ry Partition)					
Disk 3								
3.91 GB		2 00 GR NTES						
Reserved		Healthy (Prima	v Partition)					
			,,					
								~
Unalloca	ted 📕	Primary partition	l.					

5 Confirm that the path has been connected using the command prompt or PowerShell. In the following example, two paths are added to each LUN which then becomes a fourpath configuration.

C:\Users\administrator.MSLOGO> mpclaim -s -d 0 MPIO Disk0: 04 Paths, Round Robin, Symmetric Access Controlling DSM: Microsoft DSM SN: 600B5D006A0006ABA00D00 Supported Load Balance Policies: FOO RR RRWS LQD WP LB Path ID State SCSI Address Weight -----000000077060002 Active/Optimized 006|000|002|000 0 * TPG State : Active/Optimized , TPG Id: 32913, : 16529 000000077050001 Active/Optimized 005/000/001/000 0 * TPG State : Active/Optimized , TPG Id: 32897, : 16513 000000077060001 Active/Optimized 006|000|001|000 0 * TPG State : Active/Optimized , TPG Id: 17, : 73 000000077050002 Active/Optimized 005|000|002|000 0 * TPG_State : Active/Optimized , TPG_Id: 16, : 72 PS C:\Users\administrator.MSLOGO> mpclaim -s -d 1 MPIO Disk1: 04 Paths, Round Robin, Symmetric Access Controlling DSM: Microsoft DSM SN: 600B5D006A0006ABA00E00 Supported Load Balance Policies: FOO RR RRWS LQD WP LB SCSI Address Weight Path ID State _____ 000000077060002 Active/Optimized 006|000|002|001 0 * TPG_State : Active/Optimized , TPG_Id: 32913, : 16529 0000000077050001 Active/Optimized 005|000|001|001 0 * TPG_State : Active/Optimized , TPG_Id: 32897, : 16513 000000077060001 Active/Optimized 006|000|001|001 0 * TPG_State : Active/Optimized , TPG_Id: 17, : 73 0000000077050002 Active/Optimized 005|000|002|001 0 * TPG_State : Active/Optimized , TPG_Id: 16, : 72

End of procedure

Disconnecting the Path

The following procedure shows how to delete a path of the migration destination storage system from the server (Windows Server[®] 2012 R2) after the migration source storage system is disconnected. Note that Step 5 is not needed in environments other than WSFC.

Procedure

Check the multipath state using the command prompt or PowerShell.
 In the following example, each LUN has four paths.

```
C:\Users\administrator.MSLOGO> mpclaim -s -d 0
MPIO Disk0: 04 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00D00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
   Path ID
                                  SCSI Address Weight
                 State
    -----
   000000077060002 Active/Optimized 006|000|002|000 0
   * TPG_State : Active/Optimized , TPG_Id: 32913, : 16529
   000000077050001 Active/Optimized 005|000|001|000 0
   * TPG State : Active/Optimized , TPG Id: 32897, : 16513
   000000077060001 Active/Optimized 006|000|001|000
                                                    0
   * TPG State : Active/Optimized , TPG Id: 17, : 73
   000000077050002 Active/Optimized 005|000|002|000
                                                    0
   * TPG_State : Active/Optimized , TPG_Id: 16, : 72
PS C:\Users\administrator.MSLOGO> mpclaim -s -d 1
MPIO Disk1: 04 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00E00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
   Path ID
                 State
                                  SCSI Address
                                                  Weight
   _____
   0000000077060002 Active/Optimized 006|000|002|001 0
   * TPG_State : Active/Optimized , TPG_Id: 32913, : 16529
   000000077050001 Active/Optimized 005|000|001|001 0
   * TPG State : Active/Optimized , TPG Id: 32897, : 16513
   000000077060001 Active/Optimized 006|000|001|001
                                                    Ω
   * TPG State : Active/Optimized , TPG Id: 17, : 73
   0000000077050002 Active/Optimized 005/000/002/001
                                                    0
   * TPG State : Active/Optimized , TPG Id: 16, : 72
```

2 Disconnect the multipath.

Disconnect the paths between the migration source storage system and the server.

3 In the [Disk Management] screen, select [Action] - [Rescan Disks] to rescan the disks.

5			I	Disk Manageme	ent			x
File Ac	tion	View Help						
<h e<="" th=""><th>Ref</th><th>resh</th><th></th><th></th><th></th><th></th><th></th><th></th></h>	Ref	resh						
Volur	Res	ican Disks	Type	File System	Status	Capacity	Free Sna	
	Cre	ate VHD	Basic	NTES	Healthy (B	464.91 GB	423.54 GB	-
C OF	Att	ach VHD	Basic	NTFS	Healthy (P	3.90 GB	1002 MB	=
C OP			Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	
C OF	All	Tasks •	Basic	NTFS	Healthy (P	3.90 GB	2.00 GB	
C OF	He	lp	Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	
		Simple	Basic	NTFS	Healthy (P	3.90 GB	2.00 GB	
C SDV-2 ((J:)	Simple	Basic	NTFS	Healthy (P	3.90 GB	3.00 GB	~
< SDV-3.0	(K:)	Simple	Basic	III NIFS	Healthy (P	3.90 GB	2.00 GB	>
		1						
Disk (D							
Basic ASS 25 CB		System Reserve	ved	(C:)				
Online	2	350 MB NTFS Healthy (System	m Active D	464.91 GB NTFS	age File Crash I	Dump Primany Pa	rtition)	=
			n, Active, r					
		-						4
Disk 1	1							
Basic		OPEN-1 (D:)						
S.91 GB Reserved		3.90 GB NTFS	ny Dartition)					
		riedicity (Fiirid	iy Fartition)					
		1						
Disk 2	2							
Basic		OPEN-2 (F:)						
3.91 GB		3.90 GB NTFS	D. March					
Reserved		Healthy (Prima	ry Partition)					
		1						
Disk 3	3							
Basic		OPEN-3 (G:)						
3.91 GB		3.90 GB NTFS						
Keserved		Healthy (Prima	ry Partition)					
								~
Unalloo	cated	Primary partition	1					
L							1	

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows® Copyright 2025 Fujitsu Limited

4 Confirm that the path has been disconnected using the command prompt or PowerShell. In the following example, two paths are deleted from each LUN which then becomes a two-path configuration.

```
C:\Users\administrator.MSLOGO> mpclaim -s -d 0
MPIO Disk0: 02 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00D00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
                                 SCSI Address Weight
   Path ID
                State
   _____
   000000077060002 Active/Optimized 006|000|002|000 0
   * TPG State : Active/Optimized , TPG Id: 32913, : 16529
   000000077050001 Active/Optimized 005/000/001/000
                                                  0
   * TPG State : Active/Optimized , TPG Id: 32897, : 16513
PS C:\Users\administrator.MSLOGO> mpclaim -s -d 1
MPIO Disk1: 02 Paths, Round Robin, Symmetric Access
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00E00
   Supported Load Balance Policies: FOO RR RRWS LQD WP LB
   Path ID
                State
                                 SCSI Address
                                                Weight
   _____
   000000077060002 Active/Optimized 006|000|002|001 0
   * TPG State : Active/Optimized , TPG Id: 32913, : 16529
   000000077050001 Active/Optimized 005|000|001|001 0
   * TPG State : Active/Optimized , TPG Id: 32897, : 16513
```

- 5 Start the cluster.
 - (1) In the [Failover Cluster Manager] screen, right-click the cluster name and select [Start Cluster] to start the cluster.

- <u>1</u>	Failover Cluster Manager	
File Action View Help		
🗢 🏟 🖄 📰 📓 📰		
Failover Cluster Manager	Cluster WIN2012-CL.mslogo.fujitsu.com	Actions
b 🕲 WH2012-CLmdogo.fujiteu.com	View Vilates Configuration View Validation Report Connect to cluster Start Cluster Close Connection View view of the form stating. Refresh Help Consect to soluter Disconsect to soluter View view of the form stating. Refresh Help Disconsect to soluter Disconsect to soluter	WIN2012-CL:mslogo.fujitsu.com Validate Configuration View Validation Report Consect to cluster Start Cluster Store Cluster Start Close Connection View Refresh Help
	Nodes Outer Service Satus Node Outer Service Satus Br0300565 Stopped Br0300566 Stopped	
	Navigate Duter Events	
Attempt to start the cluster service on all nod	des	

The operation can be restarted.

(2) Confirm that the cluster has started.

職	Failover Cluster Manager		
File Action View Help			
🗢 🏟 🙎 📰 📓 📰			
Hailover Cluster Manager	Cluster WIN2012-CL.mslogo.fujitsu.com		Actions
▶ (嬰 WIN2012-CL-malogofyjitsu.com)	Summary of Cluster WIN2012-CL		WIN2012-CL.mslogo.fujitsu.com
	Wirk2012-CL has 12 Couldered roles and 2 nodes. Networks: Physics.		Validate Cluster
		- N6	View Validation Report
		Add Node	
		Close Connection	
	A Configure		Reset Recent Events
	Configue lips availability for a specific duatered role, add one or more servers (nodes), or copy roles from a duater running Windows Server 2012 R2. Windows Server 2012 R2.		More Actions
			View
	Conface Role Ealour dust retroics on the Web Mode Duster Add House Conciliant Role	n the Web	Refresh
			Properties
			Help
	Cupy cuper noes		1
	Navigate		
	Roles Nodes Storage		
	Networks Ouster Events		
	Cluster Core Resources		
	Name Status Info	mation	
	Storage		
	Cluster Disk Quorum Online Server Name		
	🛞 📆 Name: WIN2012-CL 🛞 Online		
			· · · · · · · · · · · · · · · · · · ·

End of procedure

Notes

- In the WSFC environment, data migrations without stopping the operation is not available. Note that the operation is temporarily stopped during the path connection until after the path disconnection is complete.
- If the ALUA setting differs between the migration source and migration destination storage systems, all the paths in the storage system where the ALUA setting is "ACTIVE / ACTIVE" and the priority paths in the storage system where the ALUA setting is "ACTIVE-ACTIVE / PREFER-RED_PATH" are set as the priority path group while the path is connected. After the path is disconnected, the path group specified in the ALUA setting of the migration destination storage system is used.

The following shows the path state before the migration, while the path is connected, and after the path is disconnected.

- Before the migration

Because the migration source is "ACTIVE / ACTIVE", both paths become the priority path group.

- While the path is connected

Two "ACTIVE / ACTIVE" paths in the migration source storage system and a single priority "ACTIVE-ACTIVE / PREFERRED_PATH" path in the migration destination storage system become the priority path group.

```
MPIO Disk0: 04 Paths, Round Robin with Subset, Implicit Only
   Controlling DSM: Microsoft DSM
   SN: 600B5D006A0006ABA00D00
   Supported Load Balance Policies: FOO RRWS LQD WP LB
                                   SCSI Address Weight
   Path ID
                 State
   _____
                                                        _____
   000000077060002 Active/Unoptimized 006|000|002|000 0
     TPG State : Active/Unoptimized, TPG Id: 32913, : 16529
   000000077050001 Active/Optimized 005|000|001|000
                                                    0
   * TPG_State : Active/Optimized , TPG_Id: 32897, : 16513
   000000077060001 Active/Optimized 006|000|001|000
                                                    0
   * TPG State : Active/Optimized , TPG Id: 17, : 73
   000000077050002 Active/Optimized 005|000|002|000
                                                    0
   * TPG State : Active/Optimized , TPG Id: 16, : 72
```

- After the path is disconnected

Because the migration destination is "ACTIVE-ACTIVE / PREFERRED_PATH", only one priority path becomes the priority path group.

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection- (Fibre Channel) for Windows[®] Copyright 2025 Fujitsu Limited

Fujitsu Storage ETERNUS AF, ETERNUS DX Configuration Guide -Server Connection-(Fibre Channel) for Windows[®]

P3AM-3792-36ENZ0

Date of issuance: January 2025 Issuance responsibility: Fujitsu Limited

- The content of this manual is subject to change without notice.
- This manual was prepared with the utmost attention to detail.
- However, Fujitsu shall assume no responsibility for any operational problems as the result of errors, omissions, or the use of information in this manual.
- Fujitsu assumes no liability for damages to third party copyrights or other rights arising from the use of any information in this manual.
- The content of this manual may not be reproduced or distributed in part or in its entirety without prior permission from Fujitsu.

