

FUJITSU Storage ETERNUS DX

Configuration Guide -Server Connection-



(FCoE) for Windows®
Driver Settings for Fujitsu Converged Network Adapter Cards

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This manual briefly explains the operations that need to be performed by the user in order to connect an ETERNUS DX to a PRIMERGY, PRIMEQUEST 3000 series, PRIMEQUEST 2000 series, or PRIMEQUEST 1000 series running Windows® via an FCoE interface.

This manual is used when performing the setup procedure described in "Installing Drivers" of the "Configuration Guide -Server Connection- (FCoE) for Windows®".

This manual should be used in conjunction with any other applicable user manuals, such as those for the ETERNUS DX, server, OS, Converged Network Adapter cards, and drivers.

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 DX.

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The Contents and Structure of this Manual

This manual is composed of the following two chapters and an appendix.

- ["Chapter 1 Setup Procedure for PRIMERGY" \(page 5\)](#)

This chapter describes how to install a Converged Network Adapter card, set up the Converged Network Adapter card BIOS, install the Converged Network Adapter card driver, check the driver version, and set up the driver parameters for PRIMERGY.

- ["Chapter 2 Setup Procedure for PRIMEQUEST 3000/2000/1000 Series" \(page 11\)](#)

This chapter describes how to install a Converged Network Adapter card, set up the Converged Network Adapter card BIOS, install the Converged Network Adapter card driver, check the driver version, and set up the driver parameters for PRIMEQUEST 3000/2000/1000 series.

An appendix contains a WWN instance management table for servers, for use in "Setting Up the Converged Network Adapter Cards".

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Chapter 1

Setup Procedure for PRIMERGY

This chapter describes how to install and set up the Converged Network Adapter cards in PRIMERGY.

1.1 Workflow

Workflow

1

Installing the Converged Network Adapter Card

Install the Converged Network Adapter card and its driver, check the driver version, and set up the Converged Network Adapter card BIOS.

- For Fujitsu Emulex Converged Network Adapter cards
 - ["1.2.1 Setting Up the Converged Network Adapter Cards" \(page 6\)](#)
 - ["1.2.2 Installing the Driver " \(page 8\)](#)



2

Setting Up the Driver Parameters

Set the QueueDepth and other parameters.

- For Fujitsu Emulex Converged Network Adapter cards
 - ["1.2.4 Setting Up the Driver Parameters" \(page 9\)](#)



3

Installing the Driver for ETERNUS DX Storage Systems

Install the driver for ETERNUS DX storage systems.

- For Fujitsu Emulex Converged Network Adapter cards
 - ["1.2.5 Installing the Driver for ETERNUS DX Storage Systems" \(page 10\)](#)
 - Checking the driver-related notes
 - ["Configuration Guide -Server Connection- \(FCoE\) for Windows®"](#)



After all of the required procedures in this manual are complete, proceed to the procedure that is described in "Configuration Guide -Server Connection- (FCoE) for Windows®".

1.2 For Fujitsu Emulex Converged Network Adapter Cards

Install the Converged Network Adapter card to the server, and acquire the physical address and World Wide Name (WWN) for the Converged Network Adapter card.

- The physical address and WWN of a Converged Network Adapter card are required information in the following cases: when an error has occurred in the system, when using the ETERNUS DX storage systems (security function, host affinity function, etc.) to restrict server access, or when connecting the ETERNUS DX storage systems and the server using a Fibre Channel switch and a CEE/FCoE switch.
- Acquire the physical address and WWN when installing the Converged Network Adapter card, because they cannot be determined from BIOS and OS. Physical address and WWN must be assigned to "WWN instance management table for the server".

The workflow is shown below.

- (1) Install the Converged Network Adapter card
- (2) Turn on the server
- (3) Acquire the physical address and WWN for the Converged Network Adapter card
- (4) Add a record for the server in the WWN instance management table for the server

When installing two or more Converged Network Adapter cards in the server, first turn off the server, then repeat Steps (1) through (4) above for each Converged Network Adapter card to be installed.

1.2.1 Setting Up the Converged Network Adapter Cards

Procedure

- 1 Install the Converged Network Adapter card in the server.
For the installation method, installable PCI bus slot position, activation of the installed slot, and notes regarding the Converged Network Adapter card, refer to the Converged Network Adapter card documentation or the User's Guide of the server.
- 2 Turn on the server, and press the [Alt] + [E] keys or [Ctrl] + [E] keys while the following message is displayed.

```
!!! Emulex OneConnect FCoE BIOS !!!, Version 4.01a0
Copyright (c) 1997-2010 Emulex. All rights reserved.

Press <Alt E> or <Ctrl E> to enter Emulex BIOS configuration
utility. Press <s> to skip Emulex BIOS
```

Emulex OneConnect FCoE BIOS Utility starts.

- 3 Select the Converged Network Adapter card from which information is to be obtained with the [↑] and [↓] keys. Press the [Enter] key.

- 4 Check the [Mem Base] and [Port Name] values.

The value of [Mem Base] is the physical address and the value of [Port Name] is the Converged Network Adapter card WWN.

Emulex OneConnect FCoE BIOS Utility, XB4.01a0				
01: OCe10102-FM	Physical address	Bus#: 09	Dev#: 00	Func#: 02
Mem Base: F94C0000	Firmware Version: 2.702.200.17	BIOS: Disabled!		
Port Name: 10000000C99CDD9B	Node Name: 20000000C99CDD9B			
Vlan ID: 1002	DCBX mode: CEE mode	Converged Network Adapter card WWN		

- 5 Record the physical address and WWN in the "WWN instance management table for the server".

Refer to "[Appendix A WWN Instance Management Table for the Server \(Blank\)](#)" (page 18).

The following shows an example of this.

WWN instance management table for the server

Host name				
IP Address				
Physical slot name	Converged Network Adapter card WWN	Instance name	Physical address	Cable tag
slot0	10 00 00 00 C9 9C DD 9B		F94C0000	

Details of contents

The details of contents for the WWN instance management table for the server are as follows:

Host name:

Record the host name.

IP Address:

Record the IP address of the server.

Physical slot name:

Record the slot position of installed Converged Network Adapter card.

For the installation location, refer to the User's Guide for each server.

Converged Network Adapter card WWN:

Record the [Port Name] value. This value can be confirmed in [Step 4](#).

Instance name:

Not necessary to record.

Physical address:

Record the value of [Mem Base].

Cable tag:

Record a tag name which indicates the connection path (relationship between the connected device and the port).

- 6 Press the [Esc] key to quit the Emulex OneConnect FCoE BIOS Utility.

When installing two or more Converged Network Adapter cards to the server, first turn off the server, then repeat [Step 1](#) through [Step 5](#) shown here for each Converged Network Adapter card to be installed.

 Caution

If multiple Converged Network Adapter cards are already installed in the server at the time of purchase, the one-to-one relationship between the WWNs and the Converged Network Adapter cards cannot be recognized. The WWNs that are obtained in this section may need to be repeatedly registered and set up on the ETERNUS DX until a server recognizes the ETERNUS DX logical disks.

For details about ETERNUS DX settings, refer to "Configuration Guide -Server Connection- Storage System Settings" that corresponds to the ETERNUS DX to be connected.

End of procedure

1.2.2 Installing the Driver

Refer to the documentation provided with each Converged Network Adapter card for details on how to obtain and install a Converged Network Adapter card driver for it.

1.2.3 Checking the Driver Version

Use the Device Manager to check the version of the Converged Network Adapter card driver.

Procedure

- 1 In the Device Manager go to [Storage controllers], and open the [Properties] of the Converged Network Adapter card.
- 2 Select the [Driver] tab, and open [Driver Details].
- 3 Select the driver file (elxcna.sys), and check its [File version].

 Caution

If a different driver version is displayed from that shown in "Server Support Matrix", reinstall the driver.

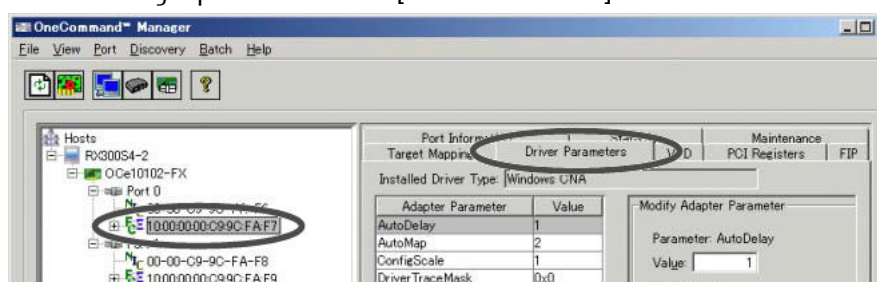
End of procedure

1.2.4 Setting Up the Driver Parameters

Various Converged Network Adapter card parameters now need to be set.
Set the driver parameters after installing OneCommand Manager.

Procedure

- 1 Install OneCommand Manager.
For installation, refer to the Converged Network Adapter card documentation.
- 2 Start OneCommand Manager.
- 3 Select the target port and click the [Driver Parameters] tab.



When the same parameter values are to be set for all the ports (common setting), select the target server instead of the target port and click the [Driver Parameters] tab.

- 4 Check the parameter values in the [Adapter Parameter] list.
Compare with the parameter values in the following table, and correct the current value if necessary. Select the parameter whose value is to be corrected from the [Adapter Parameter] list and modify the value in the [Modify Adapter Parameter] area.

Parameter	Setting value
QueueDepth	Arbitrary (*1) (Up to 1024 for each FCoE port of the ETERNUS DX)

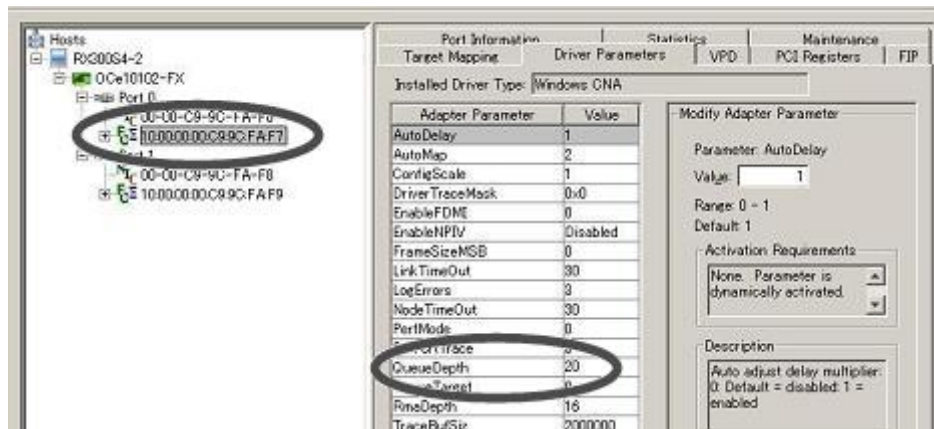
- *1:** Recommended value = $1024 \div (\text{number of FCoE ports that are connected to a single CA port}) \div \text{number of LUNs}$
(Round the result down)
- Use the value of "8" if the actual result is lower. Use the maximum value if the actual result exceeds the maximum value of the OS or the driver.
 - To achieve maximum system performance, this value can be changed according to the server load and the peak operating times.
 - The number of simultaneous command executions per CA port for the ETERNUS DX is limited to 1024. This value is used by multiple servers that share the CA port. A maximum of 1024 commands can be executed per CA port.

Caution

Do not modify any parameters other than those described here.

Parameter Description(s):

- "QueueDepth" parameter
Set the command queue depth.



- 5 After the values have been modified, click the [Apply] button.
Parameters that are displayed in red in the [Adapter Parameter] column show that their values have been modified but not yet applied. Click the [Apply] button to apply the changed values.
- 6 If there are multiple ports, repeat [Step 2](#) through [Step 5](#) to change the settings for all ports.
- 7 After all the ports have been set, select [Exit] from the [File] menu to quit OneCommand Manager.

End of procedure

1.2.5 Installing the Driver for ETERNUS DX Storage Systems

Install the driver for ETERNUS DX storage systems as required.

- Refer to the "Driver Notes" section in "Configuration Guide -Server Connection- (FCoE) for Windows®" for notes on each driver in cases such as when connecting the server to the ETERNUS 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 DX and server.
- For the procedure about how to install (or uninstall), set up, and use the drivers for ETERNUS DX storage systems, refer to the software manuals.

Chapter 2

Setup Procedure for PRIMEQUEST 3000/2000/1000 Series

This chapter describes how to install and set up the Converged Network Adapter cards in a PRIMEQUEST 3000/2000/1000 series.

2.1 Workflow

Workflow

1

Installing the Converged Network Adapter Card

Install the Converged Network Adapter card and its driver, check the driver version, and set up the Converged Network Adapter card BIOS.

- For Fujitsu Emulex Converged Network Adapter cards
 - ["2.2.1 Setting Up the Converged Network Adapter Cards" \(page 13\)](#)
 - ["2.2.2 Installing the Driver" \(page 14\)](#)



2

Setting Up the Driver Parameters

Set the QueueDepth and other parameters.

- For Fujitsu Emulex Converged Network Adapter cards
 - ["2.2.4 Setting Up the Driver Parameters" \(page 15\)](#)



3

Installing the Driver for ETERNUS DX Storage Systems

Install the driver for ETERNUS DX storage systems.

- For Fujitsu Emulex Converged Network Adapter cards
 - "2.2.5 Installing the Driver for ETERNUS DX Storage Systems" (page 17)
 - Checking the driver-related notes
 - "Configuration Guide -Server Connection- (FCoE) for Windows®"



After all of the required procedures in this manual are complete, proceed to the procedure that is described in "Configuration Guide -Server Connection- (FCoE) for Windows®".

2.2 For Fujitsu Emulex Converged Network Adapter Cards

Install the Converged Network Adapter card to the server, and acquire the physical address and World Wide Name (WWN) for the Converged Network Adapter card.

- The physical address and WWN of a Converged Network Adapter card are required information in the following cases: when an error has occurred in the system, when using the ETERNUS DX storage systems (security function, host affinity function, etc.) to restrict server access, or when connecting the ETERNUS DX storage systems and the server using a Fibre Channel switch and a CEE/FCoE switch.
- Acquire the physical address and WWN when installing the Converged Network Adapter card, because they cannot be determined from BIOS and OS. Physical address and WWN must be assigned to "WWN instance management table for the server".

The workflow is shown below.

- (1) Install the Converged Network Adapter card
- (2) Turn on the server
- (3) Acquire the physical address and WWN for the Converged Network Adapter card
- (4) Add a record for the server in the WWN instance management table for the server

When installing two or more Converged Network Adapter cards in the server, first turn off the server, then repeat Steps (1) through (4) above for each Converged Network Adapter card to be installed.

2.2.1 Setting Up the Converged Network Adapter Cards

Procedure

- 1 Install the Converged Network Adapter card in the server.
For the installation method, installable PCI bus slot position, activation of the installed slot, and notes regarding the Converged Network Adapter card, refer to the Converged Network Adapter card documentation or the User's Guide of the server.
- 2 Turn on the server, and press the [Alt] + [E] keys or [Ctrl] + [E] keys while the following message is displayed.

```
!!! Emulex OneConnect FCoE BIOS !!!, Version 4.01a0
Copyright (c) 1997-2010 Emulex. All rights reserved.

Press <Alt E> or <Ctrl E> to enter Emulex BIOS configuration
utility. Press <s> to skip Emulex BIOS
```

Emulex OneConnect FCoE BIOS Utility starts.

- 3 Select the Converged Network Adapter card from which information is to be obtained with the [↑] and [↓] keys. Press the [Enter] key.
- 4 Check the [Mem Base] and [Port Name] values.

The value of [Mem Base] is the physical address and the value of [Port Name] is the Converged Network Adapter card WWN.

```
Emulex OneConnect FCoE BIOS Utility, XB4.01a0

01: OCel0102-FM  Physical address  Bus#: 09 Dev#: 00 Func#: 02
Mem Base: F94C0000  Firmware Version: 2.702.200.17  BIOS: Disabled!
Port Name: 10000000C99CDD9B  Node Name: 20000000C99CDD9B
Vlan ID: 1002  DCBX mode: CEE mode  Converged Network Adapter card WWN
```

- 5 Record the physical address and WWN in the "WWN instance management table for the server".
Refer to ["Appendix A WWN Instance Management Table for the Server \(Blank\)"](#) (page 18).
The following shows an example of this.

WWN instance management table for the server

Host name				
IP Address				
Physical slot name	Converged Network Adapter card WWN	Instance name	Physical address	Cable tag
slot0	10 00 00 00 C9 9C DD 9B		F94C0000	

Details of contents

The details of contents for the WWN instance management table for the server are as follows:

Host name:

Record the host name.

IP Address:

Record the IP address of the server.

Physical slot name:

Record the slot position of installed Converged Network Adapter card.

For the installation location, refer to the User's Guide for each server.

Converged Network Adapter card WWN:

Record the value of [Port Name].

Instance name:

Not necessary to record.

Physical address:

Record the value of [Mem Base].

Cable tag:

Record a tag name which indicates the connection path (relationship between the connected device and the port).

- 6 Press the [Esc] key to quit the Emulex OneConnect FCoE BIOS Utility.

When installing two or more Converged Network Adapter cards to the server, first turn off the server, then repeat [Step 1](#) through [Step 5](#) shown here for each Converged Network Adapter card to be installed.

 Caution

If multiple Converged Network Adapter cards are already installed in the server at the time of purchase, the one-to-one relationship between the WWNs and the Converged Network Adapter cards cannot be recognized. The WWNs that are obtained in this section may need to be repeatedly registered and set up on the ETERNUS DX until a server recognizes the ETERNUS DX logical disks.

For details about ETERNUS DX settings, refer to "Configuration Guide -Server Connection- Storage System Settings" that corresponds to the ETERNUS DX to be connected.

End of procedure

2.2.2 Installing the Driver

Refer to the documentation provided with each Converged Network Adapter card for details on how to obtain and install a Converged Network Adapter card driver for it.

2.2.3 Checking the Driver Version

Use the Device Manager to check the version of the Converged Network Adapter card driver.

Procedure

- 1 In the Device Manager go to [Storage controllers], and open the [Properties] of the Converged Network Adapter card.
- 2 Select the [Driver] tab, and open [Driver Details].
- 3 Select the driver file (elxcna.sys), and check its [File version].

Caution

If a different driver version is displayed from that shown in "Server Support Matrix", reinstall the driver.

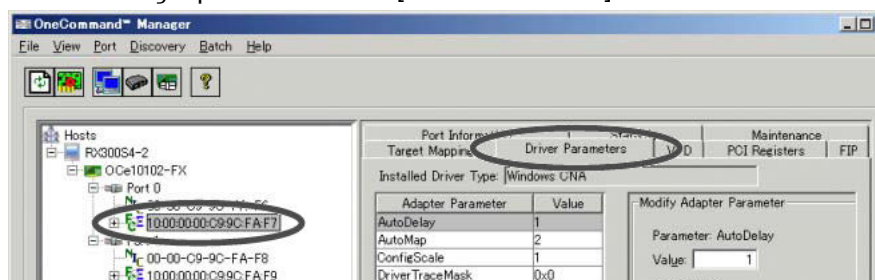
End of procedure

2.2.4 Setting Up the Driver Parameters

Set the driver parameters after installing OneCommand Manager.

Procedure

- 1 Install OneCommand Manager.
For installation, refer to the Converged Network Adapter card documentation.
- 2 Start OneCommand Manager.
- 3 Select the target port and click the [Driver Parameters] tab.



When the same parameter values are to be set for all the ports (common setting), select the target server instead of the target port and click the [Driver Parameters] tab.

4 Check the parameter values in the [Adapter Parameter] list.

Compare with the parameter values in the following table, and correct the current value if necessary. Select the parameter whose value is to be corrected from the [Adapter Parameter] list and modify the value in the [Modify Adapter Parameter] area.

Parameter	Setting value
QueueDepth	Arbitrary (*1) (Up to 1024 for each FCoE port of the ETERNUS DX)

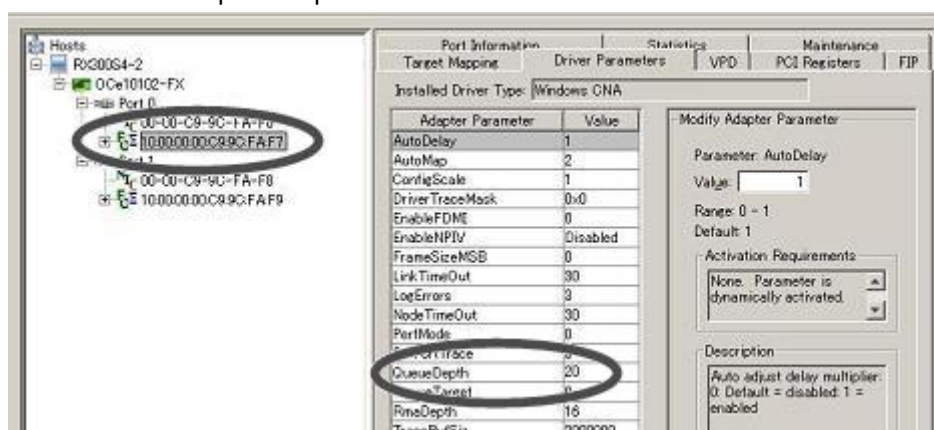
- *1:** Recommended value = $1024 \div (\text{number of FCoE ports that are connected to a single CA port}) \div \text{number of LUNs}$
(Round the result down)
- Use the value of "8" if the actual result is lower. Use the maximum value if the actual result exceeds the maximum value of the OS or the driver.
 - To achieve maximum system performance, this value can be changed according to the server load and the peak operating times.
 - The number of simultaneous command executions per CA port for the ETERNUS DX is limited to 1024. This value is used by multiple servers that share the CA port. A maximum of 1024 commands can be executed per CA port.

Caution

Do not modify any parameters other than those described here.

Parameter Description(s):

- "QueueDepth" parameter
Set the command queue depth.



5 After the values have been modified, click the [Apply] button.

Parameters that are displayed in red in the [Adapter Parameter] column show that their values have been modified but not yet applied. Click the [Apply] button to apply the changed values.

6 If there are multiple ports, repeat Step 2 through Step 5 to change the settings for all ports.

7 After all the ports have been set, select [Exit] from the [File] menu to quit OneCommand Manager.

End of procedure

2.2.5 Installing the Driver for ETERNUS DX Storage Systems

Install the driver for ETERNUS DX storage systems as required.

- Refer to the "Driver Notes" section in "Configuration Guide -Server Connection- (FCoE) for Windows®" for notes on each driver in cases such as when connecting the server to the ETERNUS 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 DX and server.
- For the procedure about how to install (or uninstall), set up, and use the drivers for ETERNUS DX storage systems, refer to the software manuals.

Appendix A

WWN Instance Management Table for the Server (Blank)



This table is used for setting up the Converged Network Adapter cards. Utilize this table if necessary.

Host name				
IP Address				
Physical slot name	Converged Network Adapter card WWN	Instance name	Physical address	Cable tag

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Driver Settings for Fujitsu Converged Network Adapter Cards

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