OneCommand® Manager Command Line Interface Version 10.4

User Manual

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Note: References to OCe11100 series products also apply to OCe11100R series products.

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1. Introduction

The OneCommand® Manager Command Line Interface (CLI) is a comprehensive management utility for Emulex® adapters. The CLI provides support for commonly used commands without requiring the installation of the OneCommand Manager graphical user interface (GUI). The OneCommand Manager CLI console application name is HbaCmd. At the command line interface, a single operation is performed by entering "hbacmd", followed by a CLI client command and its possible parameters.

The OneCommand Manager application can be installed on multiple operating systems: Windows, Linux, Solaris, and VMware ESXi.

For VMware ESXi hosts, you can manage adapters using the OneCommand Manager CLI on Windows, but you must install and use the appropriate Emulex CIM Provider on those VMware hosts.

Note: For VMware ESXi hosts, when advanced adapter management capabilities are required (for example, iSCSI Management and port disable), use the OneCommand Manager for VMware vCenter Server. For more details, see the *OneCommand Manager for VMware vCenter User Manual*.

For supported versions of operating systems, platforms, and adapters, see the Emulex website.

Abbreviations

ARI	alternative routing-ID interpretation
ARP	Address Resolution Protocol
ASIC	application-specific integrated circuit
BIOS	basic input-output system
CHAP	Challenge Handshake Authentication Protocol
CIMOM	CIM Model Object Manager
CIN	chassis internal network
CLI	command line interface
CNA	Converged Network Adapter
DAC	direct-attach copper
D_ID	destination identifier
DCB	Data Center Bridging
DCBX	Data Center Bridging Capabilities Exchange
DH	Diffie-Hellman
DHCHAP	Diffie-Hellman Challenge Handshake Authentication Protocol
ETO	extended timeout
FAT	file allocation table
FC	Fibre Channel

FCF	Fibre Channel over Ethernet Forwarder
FCoE	Fibre Channel over Ethernet
FEC	forward error correction
FIP	FCoE Initialization Protocol
GUI	Graphical User Interface
HBA	host bus adapter
iBFT	iSCSI boot firmware table
ICMP	Internet Control Message Protocol
IP	internet protocol
ISID	initiator session identifier
iSCSI	Internet Small Computer System Interface
ISID	initiator session identifier
iSNS	Internet Storage Name Service
LLDP	Link Layer Discovery Protocol
LPVID	logical port VLAN ID
LUN	logical unit number
MAC	Media Access Control
MILI	Management Interface Library
MSI	message signaled interrupt
MTU	maximum transmission unit
NIC	network interface card
NPar	NIC partitioning
NPIV	N_Port_ID Virtualization
NVP	normal velocity of propagation
NVRAM	non-volatile random access memory
OS	operating system
PAM	pluggable authentication module
PCI	Peripheral Component Interconnect
PFC	priority flow control
POST	power-on self-test
PXE	Pre-boot execution Environment
QCN	Congestion Notification Protocol
QoS	quality of service
RoCE	RDMA over Converged Ethernet
RHEL	Red Hat Enterprise Linux.
Rx	receive
SAN	storage area network

SCSI	Small Computer System Interface
SFCB	Small Footprint CIM Broker
SFP	small form-factor pluggable
SLES	SUSE Linux Enterprise Server
SMB	Server Message Block
SR-IOV	single root I/O virtualization
TCP	Transmission Control Protocol
TDR	time-domain reflectometer
Tx	transmit
UEFI	Unified Extensible Firmware Interface
UFP	Unified Fabric Port
UMC	Universal Multi-Channel
VEPA	virtual Ethernet port aggregator
VLAN	virtual local area network
VLAN ID	VLAN identifier
VM	virtual machine
VPD	vital product data
vPort	virtual port
WWN	World Wide Name
WWNN	World Wide Node Name
WWPN	World Wide Port Name
XML	Extensible Markup Language

OneCommand Manager Secure Management

OneCommand Manager Secure Management gives system administrators the ability to further enhance the active management security of their networks. Using Secure Management, administrators can define each user's privileges for managing both local and remote adapters. When running in Secure Management mode, users must specify their user name and password to run the OneCommand Manager CLI. When users are authenticated, only they can perform the functions allowed by the OneCommand Manager user group to which they belong. If your systems are running in an LDAP or Active Directory domain, the OneCommand Manager CLI will authenticate the user with those defined in that domain. For Linux and Solaris systems this is done using PAM.

Note: OneCommand Manager Secure Management is supported on Linux, Solaris, and Windows, but is not supported on VMware hosts. For VMware hosts, the CIM credentials are used.

Administrators set up user accounts such that a user belongs to one of the OneCommand Manager user groups. The user groups define the management capabilities for the user. Table 1-1, Secure Management User Privileges, on page 13 defines the OneCommand Manager user groups and each group's management capabilities.

Table 1-1 Secure Management User Privileges

Group Name	OneCommand Manager Capability
ocmadmin	Allows full active management of local and remote adapters
ocmlocaladmin	Permits full active management of local adapters only
ocmuser	Permits read-only access of local and remote adapters
ocmlocaluser	Permits read-only access of local adapters

On Linux or Solaris systems, the unix “getent group” utility can be run on the target host system’s command shell to verify the correct configuration of the groups. The groups, and users within the groups, appear in the output of this command.

Note: Although a user may belong to the administrator group or be the root user, they will not have full privileges to run the OneCommand Manager unless they are also a member of the ocmadmin group. Otherwise, when secure management is enabled, a root user or administrator can only manage local adapters (similar to the ocmlocaladmin user).

Remote management operations between two machines is allowed or denied depending on the OneCommand Manager secure management status of the machines, and the domains to which the machines belong. The following tables, Table 1-2, Active Commands: machines on same domain, on page 14, Table 1-3, Active Commands: machines on different domain, on page 14, andTable 1-4, Passive Commands: machines

on any domain, on page 14 list the expected behavior for each machine domain condition (assuming appropriate user credentials are used).

Table 1-2 Active Commands: machines on same domain

	Remote Server (Secure)	Remote Server (Not Secure)
Client (Secure)	Allowed	Denied [a]
Client (Not Secure)	Denied	Allowed

a. Informs you of an unsecured server that you may want to secure.

Table 1-3 Active Commands: machines on different domain

	Remote Server (Secure)	Remote Server (Not Secure)
Client (Secure)	Denied[a]	Denied [b]
Client (Not Secure)	Denied	Allowed

a. Allowed if the username and password are the same on both domains.
b. Informs you of an unsecured server that you may want to secure.

Table 1-4 Passive Commands: machines on any domain

	Remote Server (Secure)	Remote Server (Not Secure)
Client (Secure)	Allowed	Allowed
Client (Not Secure)	Allowed	Allowed

OneCommand Manager Secure Management Configuration Requirements

For systems to run in the OneCommand Manager secure management environment, they need to be configured to provide the following two capabilities:

- Authentication - On Linux and Solaris, this is done through the PAM interface and must be configured as follows:
  - On Solaris, place the correct setting in the "auth" section of the `/etc/pam.d/other` file, or its earlier equivalent, `/etc/pam.conf`.

    Note: For Solaris systems, you must use 'useradd -G groupname' for authentication to work. You cannot use a lowercase 'g'.

  - On Linux, it is the `/etc/pam.d/passwd` file "auth" section, or the equivalent.
- User Group Membership – From the host machine, OneCommand Manager Secure Management must be able to access the OneCommand Manager group to which the user belongs. For Linux and Solaris systems, it uses the 'getgrnam' and 'getgrid' C-library API calls. The equivalent to the API calls can be obtained by typing "getent group" from the shell command line. If the four

OneCommand Manager group names are listed with their member users, the system is ready to use OneCommand Manager secure management.

Secure Management Installation

The enabling or disabling of the Secure Management feature is specified at OneCommand Manager installation time. This can be done either interactively or by using dedicated installation switches on Windows, Linux, and Solaris. On Linux and Solaris, if the OneCommand Manager groups described above are not configured on the machine at the time of the OneCommand Manager installation, the installation will fail when the secure management feature is selected.

Notes

- Only a user with Administrator/Root privileges is allowed to enable or disable the secure management feature on a local host machine.
- Management mode cannot be used if Secure Management is enabled (see the management mode section, step 5 on page 24 for more information).

Linux and Solaris

Interactive Installation

Enterprise OneCommand Manager installations performed in interactive mode ask if OneCommand Manager Secure Management mode should be enabled. If the answer is “yes”, the other management mode questions are skipped. If the answer is “no” to the OneCommand Manager Secure Management mode question, then the management mode installation questions follow.

Unattended Installation with Install Script Switch Option Support

Enterprise OneCommand Manager installations performed in unattended mode provide a switch option to enable OneCommand Manager Secure Management. If the OneCommand Manager Secure Management switch is not used with the installation, Secure Management is disabled.

Windows

During OneCommand Manager installations performed in interactive mode, you are presented with a management mode window where you can select Secure Management as the management mode.

Setting Secure Management Mode for Linux and Solaris

To set the secure management mode for Linux and Solaris:

1. Log on as "root".
2. Do one of the following:
   - To set Secure Management Mode for Linux, type
     ```
     # /usr/sbin/ocmanager/set_operating_mode
     ```
   - To set Secure Management Mode for Solaris, type
     ```
     # /opt/ELXocm/ocmanager/set_operating_mode
     ```

Example

The following example text is displayed:

```
Do you want to enable Secure Management feature for OneCommand? (s/u)
The secure management feature requires OneCommand groups be configured
on the LDAP network or the local host machine to provide for OneCommand
operation.
Enter 's' to select secure management. (LDAP/NIS OCM group
configuration required)
Enter 'u' to run without secure management (default.
Enter the letter 's' or 'u': s
```

Using OneCommand Manager with Secure Management Enabled

To run the OneCommand Manager CLI when Secure Management is enabled, you must include your user name and password each time you type a command.

The syntax for entering your user name and password is the following:

```
hbacmd <m=sec> <u=userid> <p=password> <command>
```

For example

```
>hbacmd m=sec u=jsmith p=password download 00-12-34-56-78-9A
oc11-4.6.96.2.ufi
```

User names and passwords are used to authenticate the commands. After the credentials are authenticated, the OneCommand Manager CLI will determine which one of the four user groups you belong to and will allow command usage as appropriate.

2. Installing and Uninstalling the CLI

This chapter details prerequisites and procedures for installing and uninstalling the OneCommand Manager CLI in the following operating systems: Linux, Solaris, and Windows. It also describes the Secure Management capability and the procedure for starting and stopping daemon processes.

Linux

The following instructions are for installing and uninstalling the OneCommand Manager CLI on Linux operating systems. You can install Linux with or without an existing OneCommand CLI kit. Additionally, you can install the OneCommand Manager CLI for Citrix-based operating systems.

Citrix

Citrix is based on CentOS Linux, however, for the OneCommand Manager CLI, Citrix is more comparable to VMware – a hypervisor-style server for managing virtual machines. The Citrix XenServer 6.2 operating system contains the OneCommand Manager CLI application; no additional installation is required. Citrix XenServer 5.6 SP2 and Citrix XenServer 6.0 and 6.1 operating systems require the OneCommand Manager CLI installation.

Note: Updated versions of OneCommand Manager CLI for Citrix XenServer are available as part of the Device Update Driver kit for Citrix XenServer 5.6 SP2 and Citrix XenServer 6.0. For the latest kit, see the Emulex website.

Installing in Linux Without an Existing OneCommand CLI Kit

Note: For Secure Management, prior to installation, OneCommand groups must be configured on the LDAP network or the local host machine for Secure Management operation. See “OneCommand Manager Secure Management Configuration Requirements” on page 14 for configuration instructions.

Linux OneCommand Manager Requirements

For new systems, install the specific Linux driver rpm files before installing the OneCommand Manager CLI.

Libnl Library

On RHEL 5.5 and later and RHEL 6 and later, the OneCommand Core rpm file requires the “Libnl” library. This library is not installed by default, but can be obtained from the operating system distribution media.

- For i386 RHEL 5.5, RHEL 5.6, and RHEL 6, use the 32bit libnl library.
- For x86_64 RHEL 5.5, RHEL 5.6, and RHEL 6, use the 64bit libnl library.
- For PPC RHEL 5.5, RHEL 5.6, and RHEL 6, use the 64bit libnl library.

libhbaapi Library

The inbox libhbaapi library is required on RHEL 5, RHEL 6, and SLES 11.

- For i386 RHEL 5 and RHEL 6, use the 32bit libhbaapi rpm file.
- For x86_64 RHEL 5 and RHEL 6, use the 64bit libhbaapi rpm file.
- For PPC RHEL 5, use the 32bit libhbaapi rpm file.
- For PPC RHEL 6, use the 64bit libhbaapi rpm file.

To install the OneCommand Manager CLI in Linux without an existing OneCommand CLI:

1. Copy the applications kit tar file to a directory on the installation machine.
2. Change to the directory where you copied the tar file.
3. Untar the file:

   ```
   tar zxvf elxocmcore-<supported_os>-<app_ver>-<rel>.tgz
   ```
4. Change to the core kit directory created in step 3.

   ```
   cd elxocmcore-<supported_os>-<app_ver>-<rel>
   ```
5. Run the install.sh script.

   ```
   ./install.sh
   ```

   The core kit consists of three or four rpm files for each supported architecture and each supported version of Linux. For example:

   - elxocmlibhbaapi-*.rpm (on 64-bit platforms that support 32-bit applications, there are two of these files)
   - elxocmcore-*.rpm
   - elxocmcorelibs-*.rpm
6. When prompted, choose whether or not to enable Secure Management for OneCommand:

   ```
   Do you want to enable Secure Management feature for OneCommand?
   (s/u)
   Enter 's' to select secure management. (LDAP/NIS OCM group
   configuration required)
   Enter 'u' to run without secure management (default).
   Enter the letter 's' or 'u'.
   ```

   If you enter ‘u’ here, an additional prompt is given for the management mode:

   ```
   You selected: Secure Management Disabled
   Select desired mode of operation for OneCommand Manager:
   Enter the number 1, 2, 3, or 4: 1
   You selected: 'Local Only Mode'
   1 Strictly Local Management:    Only manage the adapters on this host. Management of adapters on this host from other hosts is not allowed.
   2 Local Management Plus:        Only manage the adapters on this host. Management of adapters on this host from other hosts is allowed.
   ```

```
3 Full Management:    Manage the adapters on this host and other hosts
                      that allow it. Management of the adapters on this
                      host from another host is allowed.
4 Management Host:    Manage the adapters on this host and other hosts
                      that allow it. Management of the adapters on this
                      host from another host is not allowed.
```

Unattended Installation

The install.sh script can be run in non-interactive (unattended or quiet) mode. Enter the following command to view the syntax:

```
./install.sh --help
```

To perform an unattended, silent installation, enter the following command:

```
#./install.sh -q2
```

Note: The Management Mode default for unattended installation is Local Management Plus.

Installing in Linux With an Existing OneCommand CLI Kit

Note: The OneCommand Manager core kit cannot be installed if a previous version of the HBAnyware utility is installed.

There are two options when installing the OneCommand Manager CLI on a Linux system with an existing OneCommand CLI kit:

- Updating an existing installation – preserve existing settings
- Performing a clean install – overwrite existing settings

Updating (Preserving Existing Settings)

To update the OneCommand Manager CLI and preserve settings, you must install the current core kit as detailed in "Installing in Linux Without an Existing OneCommand CLI Kit" on page 17. The ".rpm" file handles the configuration file update. The install script executes an rpm file update (rpm -U *.rpm) to update the installed version of the core kit to the current version.

Note: There is no update path from an HBAnyware 4.x or 3.x core kit to a OneCommand Manager 5.1 or later core kit. You must un-install previous versions of the HBAnyware utility before installing a OneCommand Manager core kit. For information on uninstalling older versions of HBAnyware, see "Uninstalling Older HBAnyware Kits in Linux" on page 20.

Performing a Clean Install (Removing Existing Settings)

1. Uninstall the existing OneCommand Manager CLI using the uninstall script included in the tar file or in /usr/sbin/ocmanager/scripts directory. The configuration files are backed up by rpm with an ".rpmsave" extension.

Note: If an HBAnyware CLI or enterprise kit is installed, follow the procedure for "Uninstalling Older HBAnyware Kits in Linux" on page 20.

2. Install the specific rpm file for your driver for Linux version. For information on installing the rpm file, see "Installing in Linux Without an Existing OneCommand CLI Kit" on page 17.

Uninstalling in Linux

To uninstall the OneCommand Manager CLI in Linux:

1. Log on as "root".
2. Do one of the following:
   - Run the uninstall_ocmanager.sh script located in /usr/sbin/hbanyware/scripts.
   - Run the uninstall.sh script located in the installation tar file.

Uninstalling Older HBAnyware Kits in Linux

Uninstalling an Older HBAnyware Core Kit

1. Run the following command to remove the core kit.

```
rpm -e elxlinuxcorekit
```

Uninstalling an Older HBAnyware Enterprise Kit

1. Do one of the following:
   - Run the uninstall script located in /usr/sbin/hbanyware/scripts to remove the enterprise kit.
   - Run the uninstall script located in the tar file to remove the enterprise kit.

   If the HBAnyware Security Configurator is installed, you must uninstall it before uninstalling the HBAnyware configuration utility. You must use the uninstall script that shipped with the version of OneCommand Security Configurator you want to remove and proceed to step 2. If the Security Configurator is not installed, proceed to step 3.
2. If the HBAnyware Security Configurator is installed, follow these steps:
   a. Log on as "root".
   b. Change to the directory containing the tar file.
   c. Extract the tar file using the tar -xvf command.
   d. Change to the newly created directory.
   e. Run the uninstall script with the ssc parameter specified. Type

```
./uninstall ssc
```

3. Uninstall the HBAnyware utility and the Application Helper module:
   a. Log on as "root".
   b. Change to the directory containing the tar file.
   c. Extract the tar file using the tar -xvf command.

d. Change to the newly created directory.
e. Uninstall any previously installed versions. Type

```
./uninstall
```

Solaris

The following instructions are for installing and uninstalling the OneCommand Manager CLI on Solaris operating systems.

Installing in Solaris

Note: For Secure Management, prior to installation, OneCommand groups must be configured on the LDAP network or the local host machine for Secure Management operation. See "OneCommand Manager Secure Management Configuration Requirements" on page 14 for configuration instructions.

To install the OneCommand Manager CLI in Solaris:

1. Copy the OneCommand Manager core kit to a temporary directory on the system.
2. Untar the core kit by typing

   ```
   tar xvf elxocmcore-solaris-<kit version>.tar
   ```

3. Change to the newly created elxocmcore-solaris-<kit version> directory:

   ```
   cd ./elxocmcore-solaris-<kit version>/
   ```

4. Run the install script and follow the instructions.

   ```
   ./install
   ```

   Note: The install script can also be run in non-interactive (unattended, quiet) mode. Enter the following command to view the syntax:

   ```
   ./install --help
   ```

   If any of the following are already present on the system, the install script attempts to remove them first:

   - HBAnyware utility
   - OneCommand Manager core kit
   - OneCommand Manager application enterprise kit
   - Solaris driver utilities

5. When prompted, choose whether or not to enable Secure Management for OneCommand:

   ```
   Do you want to enable Secure Management feature for OneCommand?
   (s/u)
   Enter 's' to select secure management. (LDAP/NIS OCM group
   configuration required)
   Enter 'u' to run without secure management (default).
   Enter the letter 's' or 'u'.
   ```

   If you enter 'u' here, an additional prompt is given for the management mode:

```
You selected: Secure Management Disabled
Select desired mode of operation for OneCommand Manager:
Enter the number 1, 2, 3, or 4: 1
You selected: 'Local Only Mode'
```

1 Strictly Local Management:	Only manage the adapters on this host. Management of adapters on this host from other hosts is not allowed.
2 Local Management Plus:	Only manage the adapters on this host. Management of adapters on this host from other hosts is allowed.
3 Full Management:	Manage the adapters on this host and other hosts that allow it. Management of the adapters on this host from another host is allowed.
4 Management Host:	Manage the adapters on this host and other hosts that allow it. Management of the adapters on this host from another host is not allowed.

Uninstalling in Solaris

To uninstall the OneCommand Manager CLI in Solaris:

1. Log on as "root".
2. Do one of the following:
   - Run /opt/ELXocm/scripts/uninstall.
   - Run the uninstall script located in the installation tar file.
   - Enter the command pkgrm ELXocmcore.

   Note: The uninstall script can also be run in non-interactive (quiet) mode. Enter the following command to view the syntax:

   ```
   ./uninstall --help
   ```

VMware ESXi

The OneCommand Manager CLI cannot be run on an VMware ESXi operating system. However, a VMware ESXi host can be accessed remotely from the Windows OneCommand Manager CLI if the Emulex CIM provider is installed on the ESXi host. For instructions on installing Emulex CIM Provider on VMware ESXi operating systems, see the *Emulex CIM Provider User Manual*.

Windows

The following instructions are for installing and uninstalling the OneCommand Manager CLI on Windows operating systems. When installing the OneCommand Manager CLI on Windows operating systems, you can use an attended installation oran unattended installation.

Installing in Windows

There are two ways to install the OneCommand Manager CLI in Windows:

- Attended installation – you are present during the installation. You will be prompted for more information for the installation to continue.
- Unattended installation – you do not need to be present during the installation. Installation will complete on its own. Installation progress may be displayed as an option.

Attended Installation

To install the OneCommand Manager CLI, run the installation.exe file for a core Windows driver kit that does not include the OneCommand Manager GUI, and follow the installer directions.

Use the following syntax for the installation executable file:

```
elxocmcore-windows-<arch>-<kit version>.exe
```

- <arch> is either "x64" or "x86".
- <kit version> represents the complete kit version.

For example, at the command prompt, type

```
elxocmcore-windows-x64-5.0.2.14-1.exe
```

Unattended Installation

To install the OneCommand Manager CLI in Windows unattended:

1. From the Emulex website, download the x64 or x86 OneCommand Manager Core Kit installation file to your system.
2. Use the following syntax for the installation executable file:
   ```
   elxocmcore-windows-<arch>-<kit version>.exe <option>
   ```
3. Activate the kit with switch /q or /q2.
   - The /q switch displays progress reports.
   - The /q2 switch does not display progress reports.
4. You can enable Secure Management Mode by adding the sec=1 argument or disable it by sec=0. If the sec argument is not entered, Secure Management is disabled by default. See "OneCommand Manager Secure Management" on page 13 for more information.

   To enable Secure Management, at the command prompt type

   ```
   elxocm-windows-x64-5.01.00.10-4.exe sec=1 /q2
   ```

   To disable Secure Management, at the command prompt type

   ```
   elxocm-windows-x64-5.01.00.10-4.exe sec=0 /q2
   ```

   Note: The management mode defaults for unattended installation are:

   - mmode=3 (Full Management Mode)
   - achange=1

5. You can select a Management Mode by adding the mmode argument and the ability to change that Management Mode by adding the change argument with selected values as in the example below.

   Note: If you enabled Secure Management in Step 4, you cannot enter an mmode value. Doing so will result in a 'conflicting parameters' error.

   For example, at the command prompt type

   ```
   elxocm-windows-x64-5.01.00.10-4.exe mmode=3 achange=1 /q2
   ```

   The following are the possible mmode values:

   1 – Local Only Management Mode

   2 – Local Plus Management Mode

   3 – Full Management Mode

   4 – Local Plus Management Mode and Read Only

   5 – Full Management Mode and Read Only

   6 – Management host

   The following are the possible achange values:

   0 – Do not allow Management Mode to change

   1 – Allow Management Mode to change

   You can also set the following optional parameters:

   - MHost – This optional switch allows a non-management-host user to select a Management Host with which to register. If this switch is not specified, the default value of 0 will be used and the capability will be disabled. If the switch is specified, the value can be a host name or an IP address which will be validated by the installer. An error message appears if /mmode is set as Local Only or Management Host.
   - excl – This optional switch allows the non-management-host user to select whether the OneCommand Manager application will process requests exclusively from the Management Host specified by the MHost switch. This option is only accepted if accompanied by a valid MHost value; otherwise an error message appears. If this switch is not specified, the default value of 0 will be used. If the switch is specified, the valid values are:

     0 – Remotely managed by other hosts.

     1 – Remotely managed by Management Host ONLY.
   - Mtcp – This optional switch allows you to enable or disable remote management and to specify the TCP/IP port number over which management will occur. If this switch is not specified, the default TCP/IP port number 23333 will be used.

     If the management host option is selected, you must either select the default port number or enter a valid TCP/IP port number on the command line. A value of 0 will not be accepted.

If one of the non-management host options is selected, you can enter the TCP/IP port number on the command line.

Uninstalling in Windows

There are two ways to uninstall the OneCommand Manager CLI in Windows:

- Through the control panel
- Through the command line

Uninstalling through the Control Panel

To uninstall the OneCommand Manager CLI in Windows through the control panel:

1. In Windows 2008 and Windows 2008 R2, select **Start > Control Panel > Programs > Uninstall a Program.**
2. If present, select **Emulex OCManager CLI** [version], and click **Remove** or **Uninstall**. Click **Yes**.

   The **Emulex OCManager CLI** components are removed from the system.

Uninstalling through the Command Line

To uninstall the OneCommand Manager CLI in Windows through the command line:

1. Change to the appropriate uninstall directory:

   ```
   cd <Install Location>\Emulex\Util\Uninstall
   ```
2. Type

   ```
   uninstall_OCManager_Core.bat
   ```

Starting and Stopping Daemon Processes for Linux and Solaris Installations

On Linux and Solaris machines, you can stop and start the OneCommand Manager daemon processes using the “stop_ocmanager” and “start_ocmanager” scripts respectively. These are found in the following OneCommand Manager installation directories:

- Linux – /usr/sbin/ocmanager
- Solaris – /opt/ELXocm

There are two basic daemon processes, included with OneCommand Manager CLI, that are affected by these scripts. They are:

- elxhbamgrd – Remote management daemon which services requests from OneCommand Manager clients running on remote host machines.
- mili2d – MILI daemon that routes major portions of the local OneCommand Manager client network adapter management requests.

The daemon processes start at system boot time.

3. Updating to the OneCommand Manager Application Enterprise Kit

Note: The full-featured OneCommand Manager application enterprise kit is not supported on Citrix XenServer 5.6 SP2, Citrix XenServer 6.0, or VMware ESXi server.

This chapter details procedures for updating the OneCommand Manager CLI to the OneCommand Manager application enterprise kit in Linux, Solaris, and Windows operating systems. An update can be performed only if the version of the OneCommand Manager application enterprise kit is the same or later than the OneCommand Manager CLI version.

Note: You cannot update a OneCommand Manager CLI with a previous version of the OneCommand Manager application enterprise kit.

Linux

To update from the OneCommand Manager CLI to the full-featured OneCommand Manager application enterprise kit in Linux, run the install.sh script of the OneCommand Manager application enterprise kit.

The install script executes an rpm file update (rpm -U *.rpm) to update the installed core kit to an enterprise kit.

Solaris

To update from the OneCommand Manager CLI to the full-featured OneCommand Manager application enterprise kit in Solaris:

1. Download the OneCommand Manager application enterprise kit to a temporary directory on your system.
2. Untar the OneCommand Manager application enterprise kit tar file:

   ```
   tar xvf elxocm-solaris-<kit version>.tar
   ```

3. Change to the newly created elxocm-<kit version> directory:

   ```
   cd ./elxocm-solaris-<kit version>/
   ```

4. Run the install script and follow the instructions:

   ```
   ./install
   ```

   Note: The install script can also be run in non-interactive (quiet) mode. Enter the following command to view the syntax:

   ```
   ./install --help
   ```

Windows

To update from the OneCommand Manager CLI to the full-featured OneCommand Manager application enterprise kit in Windows:

1. From the desktop, run the "elxocm-windows--<kit version>.exe" file that contains the full application kit.

   Running this executable file removes the OneCommand Manager CLI and installs a full-featured version of the OneCommand Manager application that includes the CLI and the GUI.

4. CLI Client Command Usage

The CLI Client component of the OneCommand Manager application provides access to the capabilities of the Remote Management library or the CIM interface from a console command prompt to get the management information.

Overview

The CLI Client is intended for use in command shells or scripted operations from within shell scripts or batch files. The CLI Client is a console application named HbaCmd. A single operation is performed by entering "hbacmd", followed by a CLI client command and its possible parameters, at the command line. For example:

```
hbacmd [cli options]<command> [parameters]
```

The "cli options" are specified for running the CLI commands to remote hosts or with Secure Management.

When the specified operation is completed, the command prompt is displayed. For a majority of commands, the first parameter following the command is the WWPN or MAC address of the port that the command is to act upon.

CLI in Read-Only Mode May Cause an Error Message

Note: The CLI does not allow the execution of certain commands when it is configured for read-only mode. The following error message is returned if such a command is attempted:

```
Error: Read-only management mode is currently set on this host.
The requested command is not permitted in this mode.
```

HbaCmd Syntax Usage

The following syntax rules and usage apply to the HbaCmd application:

- Parameters denoted within angle brackets < > are required.
- Parameters denoted within square brackets [ ] are optional.
- For Linux and Solaris, (which are case-sensitive), program names must be in lowercase letters, therefore, the command line must begin with "hbacmd" (rather than "HbaCmd"). Windows is not case-sensitive, so the program name is not required to be in all lowercase letters.
- To run the command on a remote host, an IP address or host name must be specified using the "h" option with the following syntax:

  ```
  hbacmd [h=IP_Address[:port] | Hostname[:port]] <command> [parameters]
  ```

  - If the "h" option is omitted, the command is run on the local host.
  - If the "h" option is specified, the command is sent to the specified remote host (assuming it is specified correctly, the remote host is up, and the remote host is running the OneCommand Manager remote management agent.

- The ":port" option is optional. If omitted, the OneCommand Manager remote management protocol uses the default TCP port. If specified, it uses the user-specified TCP port.
- Examples:

  Using the IP address:

  ```
  hbacmd h=138.239.91.121 ListHBAs
  ```

  Using the host name:

  ```
  hbacmd h=cp-hp5670 ListHBAs
  ```
- The "h" option is available for all commands except for the AddHost (page 116), RemoveHost (page 121), and the Version (page 125) commands.

- For FC/FCoE functions, the WWPN of the adapter must be specified. Where the WWPN is specified, each pair of numbers within the WWPN is separated by colons (:) or spaces ( ). When using space separators, the entire WWPN must be enclosed in quotes (" "). For example, the following command displays the port attributes for the adapter with the specified WWPN:

  ```
  hbacmd PortAttributes 10:00:00:00:c9:20:20:20
  ```
- For iSCSI and NIC functions, the MAC address must be specified. Where a MAC address is specified, each pair of numbers within the MAC address is separated by a dash (-). For example, the following command sets the target properties for the NIC port with the specified MAC address with an extended timeout value of "1":

  ```
  hbacmd SetTargetProperties 00-11-22-33-44-55 iscsiTarget 1
  ```
- For NIC functions, only the permanent MAC address is supported for the port address parameter on an HbaCmd command line.

  Normally, for a NIC function, the functions's permanent MAC address and current MAC address parameters are equal. However, it is possible to set a user-specified (current) MAC Address that is different from the permanent MAC address. Also, for some implementations, it is possible to have multiple NIC functions with the same current MAC addresses, but with unique permanent MAC addresses. Therefore, to ensure that the OneCommand Manager can access the correct function, only the permanent MAC address is supported. Note that both the permanent MAC address and the current MAC address are displayed by using the ListHBAs command. See "ListHBAs" on page 121.

Secure Management CLI Interface

The secure management CLI interface is supported by Linux, Solaris, and Windows.

Note: Users with "root" or "Administrator" privileges on the local machine will retain full OneCommand Manager CLI configuration capability without the use of credentials (local machine only).

Device Management Using the Secure Management Interface

To run the HbaCmd CLI client application when the Secure Management feature is enabled, each invocation must include a user name and password. The user name and password options are added to the existing HbaCmd command in a similar fashion as is currently done for CIM commands, except the <m=CIM> option is replaced by the <m=sec> option (to distinguish it from a CIM command). For example:

Without Secure Management (or if running as "root" or "Administrator"):

```
hbacmd  <cmd>
```

With Secure Management (as non-Root or non-Administrator User):

```
hbacmd  <m=sec> <u=userid> <p=password> <cmd>
```

Syntax Rules for the Secure Management Interface

For the secure management interface, all of the syntax rules in "HbaCmd Syntax Usage" on page 28 apply.

Usage Example

In Windows, to download firmware on an adapter managed on a remote host at IP address 192.168.1.122 using the secure management interface, run the following command:

```
hbacmd h=192.168.1.122 m=sec u=jsmith p=password download
00-12-34-56-78-9A oc11-4.6.96.2.ufi
```

CIM Client Interface

Note: In Linux and Solaris, you cannot use HbaCmd as a CIM client.

Device Management Using the CIM Interface

VMware on the hypervisor-based ESXi platforms use the CIM as the only standard management mechanism for device management.

For VMware ESXi hosts, you can manage adapters using the OneCommand Manager CLI on Windows, but you must install and use the appropriate Emulex CIM Provider on the VMware ESXi host. For installation, see the *CIM Provider Manual*.

Note: For VMware ESXi hosts, when advanced adapter management capabilities are required, such as iSCSI management, use the OneCommand Manager for VMware vCenter Server. For more details, see the *OneCommand Manager for VMware vCenter User Manual*.

Syntax Rules for the CIM Interface

For the CIM interface, all the syntax rules in section "HbaCmd Syntax Usage" on page 28 apply, except that the "h" option is required. Additionally, the "m=cim" parameter is required in the command line for getting the data from the ESXi host. For example:

```
hbacmd h=192.168.1.110 m=cim u=root p=password n=root/emulex
listhbas
```

Syntax Options and Setting CIM Credentials

For issuing CIM-based commands, two main syntax options are available.

Option A

```
hbacmd <h=IP_Address[:port]> m=cim [u=userid] [p=password]
[n=root/emulex] <command> <WWPN>
```

Option B

```
hbacmd <h=IP_Address[:port]> <m=cim> <command>
```

Before using the option B syntax, you must set the CIM credentials by doing one of the following:

- Set the default CIM credentials using the SetCimCred command (see page 123). This command sets only the CIM credentials. After you have set them, subsequent HbaCmd commands do not require you specify the CIM credentials on the command line.

  Command syntax:

  ```
  hbacmd SetCimCred <username> <password> <namespace>
  <portnum>
  ```

- Add the host IP address with CIM credentials using the AddHost command.

  Command syntax:

  ```
  hbacmd <m=cim> [u=userid] [p=password] [n=namespace]
  AddHost <IP_Address>
  ```

Default CIM Credentials

If you specify the command with the CIM method "m=cim" without specifying the CIM credentials (userid, password, or namespace), the default value for the missing CIM credential is obtained in the following order:

1. The information entered using the addhost command is looked up.
2. If no values exist, the information entered using the setcimcred command is used.
3. If no values exist, the following defaults are used:

   ```
   username=root
   password=root
   namespace=root/emulex
   portnum=5988
   ```

Example of Using the CIM Interface to Display Adapters

In Windows, to display a list of adapters managed for a specified host using the CIM interface, run the following command:

```
C:\Program Files\Emulex\Util\OCManager>hbacmd h=10.192.113.128
m=cim u=root p=root n=root/emulex listhbas
```

For a list of HbaCmd commands supported through the CIM interface, see "CLI Client Commands Supported in CIM Interface" on page 32.

CLI Client Commands Supported in CIM Interface

For a list of HbaCmd commands supported through the CIM interface see Table 5-2, CLI Client Command Reference, on page 37.

5. CLI Client Command Descriptions

CLI Client commands are organized by command groups. Two tables are presented for your convenience; a table organized by command group and another by alphabetically listing CLI client commands.

Table 5-1, CLI Client Command Reference Functional Groups, on page 33 shows each command group with a short description and the commands in each group. After you determine the command group of interest, click on the command link and go directly to the command you selected.

Table 5-1 CLI Client Command Reference Functional Groups

Command Group	Description	Commands
Adapter License Management Commands	This group manages the adapter licensing. You can use these commands to install license keys to enable functionality and list current licensed functionality.	InstallAdapterLicense ShowAdapterLicenseFeatures ShowAdapterLicenseID
Attributes Commands	This group manages the display of adapter, port, and server attributes, and port statistics for each adapter specified. You can also set the port speed on OneConnect® OCe11100-series, OCe14000-series and LPe16202 adapters only.	HbaAttributes Example Example ServerAttributes SetPhyPortSpeed SetPortEnabled
Authentication Commands	These commands are used to configure a DHCHAP connection between an FC port and a switch port.	AuthConfigList DeleteAuthConfig GetAuthConfig GetAuthStatus InitiateAuth SetAuthConfig SetPassword
Boot Commands	This group manages the commands that enable or disable the network boot for NIC ports or the boot code for FC adapter ports. You can also show and change FC boot parameters.	EnableBootCode GetBootParams SetBootParam
Channel Management Commands	These commands enable and disable channel management and set channel properties for CNAs. The OCe14000-series adapters support NPar, a form of channel management.	CMGetParams CMMode CMSetBW CMSetLPVID
DCB Commands	These commands show and set the DCB and LLDP parameters for iSCSI, FCoE, and NIC adapter ports. DCB commands are for DCB management of OneConnect adapters only.	GetDCBParams GetPGInfo SetCnaPGBW SetDCBParam SetDCBPriority

Table 5-1 CLI Client Command Reference Functional Groups (Continued)

Command Group	Description	Commands
Diagnostic Commands	This group provides commands that enable you to detect cabling problems, to examine transceiver data, and flash memory load lists. Additionally, you can run specific diagnostic tests such as the Loopback test and POST test to name a few of the capabilities.	DPortTest EchoTest GetBeacon GetXcvrData LoadList LoopBackTest LoopMap PciData PostTest SetBeacon SetCableNVP TDRTest Wakeup
Driver Parameter Commands	Using driver parameter commands allow you can show, set, and save the driver parameter values. You can also change the parameters back to factory default values. Driver Parameter commands are supported for FC and FCoE ports only.	DriverConfig GetDriverParams GetDriverParamsGlobal SaveConfig SetDriverParam SetDriverParamDefaults
Dump Commands	Using the diagnostic dump feature, you to create a “dump” file for a selected adapter. Dump files contain information such as firmware version, driver version, and operating system information. This information is useful when troubleshooting an adapter, but is unavailable in read-only mode.	DeleteDumpFiles Dump GetDumpDirectory GetDumpFile GetDumpFileNames GetRetentionCount SetDumpDirectory SetRetentionCount
FCoE Commands	This group of commands manages the FIP parameters and displays the FCF for an adapter in the FCoE mode.	GetFCFInfo GetFIPParams SetFIPParam

Table 5-1 CLI Client Command Reference Functional Groups (Continued)

Command Group	Description	Commands
iSCSI Commands	The commands in this section support the iSCSI interface. iSCSI commands are supported only on OneConnect iSCSI ports.	AddARPTableEntry AddiSNSServer AddRouteTableEntry AddTarget AddTargetPortal ClediSNSServer DelARPTableEntry DeleteiSNSServer DelRouteTableEntry DiscoveriSNSServer ExportiSCSI GetInitiatorProperties GetiSCSILuns GetiSCSIPortStats GetNetworkConfiguration GetSessionInfo ImportiSCSI iSCSIPing ListSessions RemoveTarget RemoveTargetPortal SetBootTargetSession SetInitiatorProperties SetiSCSIBoot SetNetworkConfiguration SetTargetLoginProperties SetTargetProperties SetTargetLoginProperties ShowARPTable ShowiSNSServer ShowRouteTable ShowTarget ShowTargetPortal TargetLogin TargetLogout UpdateiSNSServer
LUN Masking Commands	The commands in this group manage LUN masking activities. LUN Masking is supported for FC/FCoE ports only.	GetLunList GetLunUnMaskByHBA GetLunUnMaskByTarget RescanLuns SetLunMask

Table 5-1 CLI Client Command Reference Functional Groups (Continued)

Command Group	Description	Commands
LUN ExpressLane Commands	This group of commands enables, disables and displays the ExpressLane status on a particular LUN.	GetExpressLaneLunList SetExpressLaneLunState
Miscellaneous Commands	Commands that do not fit in other groups.	AddHost CnaClearEventLog CnaGetEventLog Download ExportSANInfo FecEnable GetCimCred GetQoSInfo GetVPD ListHBAs ListVFunctions Reset SetCimCred SRIOVEnable SRIOVEnable TargetMapping VEPAEnable Version
Persistent Binding Commands	This group of commands facilitates persistent binding operations. These commands are supported for FC/FCoE ports only.	AllNodeInfo BindingCapabilities BindingSupport PersistentBinding RemoveAllPersistentBinding RemovePersistentBinding SetBindingSupport SetPersistentBinding
Personality Change Commands	This group of commands allows you to change the personality or protocol running on OneConnect adapters.	ChangePersonality ShowPersonalities
Profile Management Commands	This group of commands manages profile configuration for OCe14000-series adapters. You can display active and reboot port configurations for an adapter, list available profile IDs and configure the function protocol for all ports on OCe14000-series adapters.	GetAdapterPortConfig ListProfiles SetAdapterPortConfig

Table 5-1 CLI Client Command Reference Functional Groups (Continued)

Command Group	Description	Commands
UMC Commands	UMC commands allow viewing of the UMC configuration, enabling and disabling of the UMC at the adapter level, and the modification of some of the channel properties. The UMC commands cannot be used to manage other channel management types; see "Channel Management Commands" on page 57 for more information. UMC commands are available on OneConnect adapters only.	UmcEnable UmcGetParams UmcSetBW UmcSetLPVID
vPort Commands	vPort commands manage virtual ports and functions on FC/FCoE adapters only. In Linux, VPorts do not persist across system reboots.	CreateVPort DeleteVPort ListVPorts VPortTargets
WWN Management Commands	WWN management validates WWNs carefully to avoid WWPN duplication; WWNN duplication is acceptable however. You may see error and warning messages if a name duplication is detected. Emulex recommends that the activation requirement be fulfilled after each WWN is changed or restored. When running with "pending changes", some diagnostic and maintenance features are not allowed.	ChangeWWN GetWWNCap ReadWWN RestoreWWN

Table 5-2, CLI Client Command Reference, on page 37, lists each command alphabetically and shows the operating system and CIM Interface support for each command. A linked page number for each command is provided for your convenience. A check mark (✓) designates a supported command for a particular operating system and CIM interface. N/A indicates "not applicable".

Table 5-2 CLI Client Command Reference

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
AddARPTableEntry	✓		✓	✓*	✓		89
AddHost	✓	✓	✓	✓*		✓	116
AddiSNSServer	✓	✓	✓	✓	✓		90
AddRouteTableEntry	✓	✓	✓	✓	✓		90

Table 5-2 CLI Client Command Reference (Continued)

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
AddTarget	✓	✓	✓	✓	✓		91
AddTargetPortal	✓	✓	✓	✓	✓		92
AllNodeInfo	✓	✓	✓	✓*	✓	✓	126
AuthConfigList	✓		✓	✓			51
BindingCapabilities			✓	✓			127
BindingSupport			✓	✓			127
ChangePersonality	✓	✓	✓	✓*	✓	✓	130
ChangeWWN	✓	✓	✓	✓*	✓	✓	166
CleariSNSServer	✓	✓	✓	✓	✓		93
CMGetParams	✓	✓	✓	✓*	✓	✓	58
CMMode	✓	✓	✓	✓*	✓	✓	60
CMSetBW	✓	✓	✓	✓*	✓	✓	61
CnaClearEventLog	✓	✓		✓	✓		117
CnaGetEventLog	✓	✓		✓	✓		118
CreateVPort	✓		✓	✓			164
DPortTest	✓	✓		✓*	✓	✓	69
DelARPTableEntry	✓	✓	✓	✓	✓		94
DeleteAuthConfig	✓	✓	✓	✓			52
DelRouteTableEntry	✓	✓	✓	✓	✓		94
DeleteDumpFiles	✓	✓	✓	✓*	✓	✓	83
DeleteiSNSServer	✓	✓	✓	✓	✓		94
DeleteVPort	✓		✓	✓			165
DiscoveriSNSServer	✓	✓	✓	✓	✓		95
Download	✓	✓	✓	✓*	✓	✓	118
DriverConfig	✓	✓		✓	✓		79
Dump	✓	✓	✓	✓*	✓	✓	83
EchoTest	✓	✓	✓	✓*	✓	✓	72
EnableBootCode	✓	✓	✓	✓*	✓	✓	55
ExportSANInfo	✓	✓	✓	✓			119
ExportiSCSI		✓		✓			95

Table 5-2 CLI Client Command Reference (Continued)

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
FecEnable	✓	✓	✓	✓*	✓	✓	119
GetBeacon	✓	✓	✓	✓*	✓	✓	72
GetAdapterPortConfig	✓	✓	✓	✓*	✓	✓	132
GetAuthConfig	✓		✓	✓			52
GetAuthStatus	✓		✓	✓			52
GetBootParams	✓	✓	✓	✓	✓		56
GetCimCred				✓			120
GetDCBParams	✓	✓	✓	✓*	✓	✓	64
GetDriverParams	✓	✓	✓	✓*	✓	✓	79
GetDriverParamsGlobal	✓	✓	✓	✓*	✓	✓	80
GetDumpDirectory	✓	✓	✓	✓*	✓	✓	83
GetDumpFile	✓	✓	✓	✓*	✓	✓	84
GetDumpFileNames	✓	✓	✓	✓*	✓	✓	85
GetExpressLaneLUNList	✓	✓		✓*	✓	✓	115
GetFCFInfo	✓	✓	✓	✓*	✓	✓	87
GetFIPParams	✓	✓	✓	✓*	✓	✓	87
GetInitiatorProperties	✓	✓	✓	✓	✓		96
GetiSCSILuns	✓	✓	✓	✓	✓		96
GetiSCSIPortStats	✓	✓	✓	✓	✓		96
GetLunList	✓		✓	✓*	✓	✓	112
GetLunUnMaskByHBA			✓	✓			113
GetLunUnMaskByTarget			✓	✓			113
GetNetwork Configuration	✓	✓	✓	✓	✓		97
GetPGInfo	✓	✓	✓	✓*	✓	✓	64
GetQosInfo	✓	✓	✓	✓*	✓	✓	120
GetRetentionCount	✓	✓	✓	✓*	✓	✓	85
GetSessionInfo	✓	✓	✓	✓	✓		98
GetVPD	✓	✓	✓	✓*	✓	✓	120
GetWWNCap	✓	✓	✓	✓*	✓	✓	167

Table 5-2 CLI Client Command Reference (Continued)

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
GetXcvrData	✓	✓	✓	✓*	✓	✓	73
HbaAttributes	✓	✓	✓	✓*	✓	✓	45
Help	✓	✓	✓	✓	✓	N/A	43
ImportiSCSI		✓		✓			98
InitiateAuth	✓		✓	✓			53
InstallAdapterLicense	✓	✓	✓	✓*	✓	✓	44
iSCSIPing	✓	✓	✓	✓	✓		99
ListHBAs	✓	✓	✓	✓*	✓	✓	121
ListProfiles	✓	✓	✓	✓*	✓	✓	136
ListSessions	✓	✓	✓	✓	✓		99
ListVFunctions	✓	✓	✓	✓*	✓	✓	165
ListVPorts	✓	✓	✓	✓			165
LoadList	✓	✓	✓	✓*		✓	73
LoopBackTest	✓	✓	✓	✓*	✓	✓	74
LoopMap	✓	✓	✓	✓	✓		75
PciData	✓	✓	✓	✓*		✓	75
PersistentBinding		✓	✓	✓	✓		127
PortAttributes	✓	✓	✓	✓*		✓	46
PortStatistics	✓	✓	✓	✓*	✓	✓	47
PostTest	✓	✓	✓	✓*	✓	✓	76
ReadWWN	✓	✓	✓	✓*	✓	✓	167
RemoveAllPersistent Binding			✓	✓	✓		128
RemovePersistent Binding			✓	✓			128
RemoveHost	✓	✓	✓	✓*		✓	121
RemoveTarget	✓	✓	✓	✓			100
RemoveTargetPortal	✓	✓	✓	✓	✓		100
RescanLuns	✓		✓	✓	✓		113
Reset	✓	✓	✓	✓*		✓	123

Table 5-2 CLI Client Command Reference (Continued)

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
RestoreWWN	✓	✓	✓	✓*	✓	✓	167
SaveConfig	✓	✓	✓	✓	✓		80
ServerAttributes	✓	✓	✓	✓*	✓	✓	48
SetAdapterPortConfig	✓	✓	✓	✓*	✓	✓	137
SetAuthConfig	✓		✓	✓	✓		53
SetBeacon	✓	✓	✓	✓*		✓	76
SetBindingSupport			✓	✓	✓		129
SetBootParam	✓	✓	✓	✓			56
SetBootTargetSession	✓	✓	✓	✓	✓		101
SetCableNVP	✓	✓	✓	✓	✓		77
SetCnaPGBW	✓	✓	✓	✓*	✓	✓	65
SetCimCred				✓	✓		123
SetDCBParam	✓	✓	✓	✓*		✓	65
SetDCBPriority	✓	✓	✓	✓*	✓	✓	68
SetDriverParam	✓	✓	✓	✓*	✓	✓	81
SetDriverParamDefaults	✓	✓	✓	✓	✓		82
SetDumpDirectory		✓			✓	✓	85
SetExpressLaneLUNState	✓	✓		✓*	✓	✓	116
SetFIPParam	✓	✓	✓	✓*	✓	✓	88
SetInitiatorProperties	✓	✓	✓	✓	✓		101
SetiSCSIBoot	✓	✓	✓	✓	✓		103
SetLunMask			✓	✓	✓		114
SetNetwork Configuration	✓	✓	✓	✓			103
SetPassword	✓		✓	✓	✓		54
SetPersistentBinding			✓	✓			129
SetPfcThrottle	✓	✓	✓	✓*		✓	124
SetPhyPortSpeed	✓	✓	✓	✓*	✓	✓	49
SetPortEnabled	✓	✓	✓	✓*	✓	✓	51
SetRetentionCount	✓	✓	✓	✓*	✓	✓	86

Table 5-2 CLI Client Command Reference (Continued)

Command	Linux		Solaris	Windows	VMware ESXi on Windows Hosts	CIM Interface Support[a]	Page
	RHEL, SLES and Oracle	Citrix					
SetTargetLogin Properties	✓	✓	✓	✓	✓		105
SetTargetProperties	✓	✓	✓	✓	✓		106
SetTPLoginProperties	✓	✓	✓	✓*	✓		106
ShowAdapterLicense-Features	✓	✓	✓	✓*	✓	✓	44
ShowARPTable	✓	✓	✓	✓	✓		108
ShowiSNSServer	✓	✓	✓	✓	✓		108
ShowLicenseAdapterID	✓	✓	✓	✓*	✓	✓	45
ShowPersonalities	✓	✓	✓	✓*	✓	✓	132
ShowRouteTable	✓	✓	✓	✓	✓		108
ShowTarget	✓	✓	✓	✓	✓		109
ShowTargetPortal	✓	✓	✓	✓	✓		109
SRIOVEnable	✓	✓	✓	✓*	✓	✓	124
TargetLogin	✓	✓	✓	✓	✓		109
TargetLogout	✓	✓	✓	✓	✓		111
TargetMapping	✓	✓	✓	✓*	✓	✓	125
TDRTest	✓	✓	✓	✓	✓		77
UmcEnable	✓	✓	✓	✓*	✓	✓	160
UmcGetParams	✓	✓	✓	✓*	✓	✓	161
UmcSetBw	✓	✓	✓	✓*	✓	✓	162
UmcSetLPVID	✓	✓	✓	✓*	✓	✓	163
UpdateiSNSServer	✓	✓	✓	✓	✓		111
VEPAEnable	✓	✓	✓	✓*	✓	✓	125
Version	✓	✓	✓	✓*	✓	✓	125
VPortTargets	✓	✓	✓	✓	✓		165
Wakeup	✓	✓	✓	✓			78

a. iSCSI management is not supported using the CIM interface.
* Commands with an asterisk have CIM Interface Support.

Help

The Help command displays command information for the HbaCmd application. Without using its optional parameters, the Help command lists all the commands in their respective groups. Using the optional parameter, GroupName, it lists the commands in a group. Using the optional parameter, CmdName, it shows the details for a specific command.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
Help [GroupName] [CmdName]
```

Parameters

`GroupName`	This optional parameter lists the commands in a particular group.
`CmdName`	This optional parameter shows the details for a particular CLI command.

Example 1

This help command example lists all the commands in their respective groups:

```
hbacmd help
```

Example 2

This help command example shows the details for the SetDCBParam command:

```
hbacmd help setdcbparam
```

Adapter License Management Commands

The Adapter License Management Group manages adapter licensing. You can use these commands to install license keys to enable functionality, and list current licensed functionality.

Notes

- These commands are only supported on ESXi systems if the CIM provider is used on a remote system.
- Adapter License Management commands are supported on OneConnect adapters only. They are not available on LPe16202, OCe11101-EM/EX, OCe11102-EM/EX, or OCe14000-series adapters. The following error message will be returned:

  ```
  There are no license features for this adapter
  ```

For these commands, the WWPN or MAC address argument specifies the adapter the command is acting upon. The HbaCmd application uses the WWPN or MAC address

to identify the adapter, but this does not mean that the command works successfully on the specified port.

InstallAdapterLicense

This command installs the license keys from a license file to enable specific features on the adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
InstallAdapterLicense <WWPN|MAC> <LicenseFile>
```

Parameters

`WWPN`	The WWPN of an FCoE port.
`MAC`	The MAC address of a NIC or iSCSI port.
`License File`	The path to the license key file containing the license keys obtained from the Emulex License website.

Examples

For non-VMware ESXi hosts:

```
hbacmd InstallAdapterLicense 00-12-34-56-78-9A K:\lf1324.lic
```

For VMware ESXi hosts:

```
hbacmd h=<IP_Address> m=cim u=root p=<password> n=<namespace>
InstallAdapterLicense 00-12-34-56-78-9A K:\lf1324.lic
```

ShowAdapterLicenseFeatures

This command displays the list of licensed and licensable features, and features that are already licensed. The output is a list of features with an indication of whether or not the feature has been licensed.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowAdapterLicenseFeatures <WWPN|MAC>
```

Parameters

`WWPN`	The WWPN of an FCoE port.
`MAC`	The MAC address of a NIC or iSCSI port.

Examples

For non-VMware ESXi hosts:

```
hbacmd ShowAdapterLicenseFeatures  00-12-34-56-78-9A
```

For VMware ESXi hosts:

```
hbacmd h=<IP_Address> m=cim u=root p=<password> n=<namespace>
ShowAdapterLicenseFeatures  00-12-34-56-78-9A
```

ShowAdapterLicenseID

This command returns the adapter ID used for enabling licensed features. The adapter ID and the entitlement code are used to obtain license keys which enable various features on the adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowLicenseAdapterID <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FCoE port.

`MAC` The MAC address of a NIC or iSCSI port.

Examples

For non-VMware ESXi hosts:

```
hbacmd ShowLicenseAdapterID 00-12-34-56-78-9A
```

For VMware ESXi hosts:

```
hbacmd h=<IP_Address> m=cim u=root p=<password> n=<namespace>
ShowLicenseAdapterID 00-12-34-56-78-9A
```

Attributes Commands

The Attributes Command group manages the display of adapter, port, and server attributes, and port statistics for each adapter specified. You can also set the port speed on OneConnect OCe11100-series, OCe14000-series and LPe16202 adapters only.

HbaAttributes

This command shows a list of all adapter attributes for all ports on the adapter. The type of information listed may vary according to the adapter model.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
HbaAttributes <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`MAC` The MAC address of an FC or FCoE function.

Example

```
hbacmd h=10.192.78.68 hbaattributes 00-90 -fa-30-44-84
HBA Attributes for 00-90-fa-30-44-84
Host Name:                      R820
Manufacturer:                   Emulex Corporation
Serial Number:                  US0YGW920000036B003BX00
Model:                          OCe14102-UX-D
Model Desc:                     Emulex OneConnect OCe14102-UX-D 2-port PCIe 10GbE CNA
HW Version:                     E4 B0
FW Version:                     10.2.315.18
Vendor Spec:                    ID : 10DF
Number of Ports:                2
Driver Name:                    ocnd63.sys
Device ID:                      0720
Operational FW:                 10.2.315.18
Network Boot:                   None
Available Network Boot Methods: PXE
Boot Version:                   10.2.315.18
Driver Version:                 10.2.298.37
Board Temperature:              Normal
Function Type:                  NIC
Sub Device ID:                  E820
Port Number:                    1
PCI Bus Number:                 68
PCI Func Number:                0
Sub Vendor ID:                  10DF
Firmware Status:                Working
IPL Filename:                   CS2FDEL3
NCSI Version:                   N/A
Start-up Boot Code Version:     2.0.281.768
FCoE Universal Version:         7.20n0
FCoE x86 BIOS Version:          4.03n0
FCoE EFI Version:               5.10n3
FCoE FCODE Version:             4.03n0
UEFI NIC Version:               10.2.315.18
UEFI FCODE Version:             10.2.315.18
UEFI iSCSI Version:             10.2.315.18
PCI Express Link Speed:         8 GHz
PCI Express Bus Width:          x8
Flash Firmware Version:         10.2.315.18
```

PortAttributes

This command shows a list of attributes for the adapter-specified function. The type of information listed may vary according to the adapter model and may include IPv4 and IPv6 addresses.

Note: If VEPA is supported on your adapter, the VEPA state is displayed as enabled or disabled.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
PortAttributes <WWPN|MAC>
```

Parameters

WWPN	The WWPN of an FC or FCoE function.
MAC	The MAC address of a NIC or iSCSI function.

Example

```
hbacmd h=10.192.78.68 portattributes 00-9 0-fa-30-44-84
Port Attributes for 00-90-fa-30-44-84
Port MAC:                  00-90-fa-30-44-84
Permanent MAC:             00-90-fa-30-44-84
Port State:                Operational
Interface Type:            10GB SFP Plus
Auto-Neg Supported Speeds: Not Supported
Force Supported Speeds:    1Gb,10Gb
Configured Port Speed:     All Supported Speeds
Port Speed Mode:           Default
DAC Cable Length:          0 meters
Maximum MTU:               9000
Current MTU:               1500
Function Type:             NIC
Function Port State:       Up
Function Port Speed:       10 GBit/sec
Interface Name:            \Device\NTPNP_PCI0114
Minimum Bandwidth:         10 GBit/sec
Maximum Bandwidth:         10 GBit/sec
IPv4 Address:              196.1.8.1
Subnet Mask:               255.255.0.0
IPv4 Gateway Address:      0.0.0.0
IPv6 Address:              Not Available
IPv6 Gateway Address:      Not Available
IP Address Origin:         Static
SRIOV State:               Enabled
VEPA State:                Disabled
```

PortStatistics

This command shows all function statistics for the specified function. The type of information listed may vary according to the adapter model.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
PortStatistics <WWPN|MAC> [clear]
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`MAC` MAC address of NIC function

`clear` Clear counters for 10GBASE-T function

ServerAttributes

This command shows a list of server attributes for the server where the specified function is running. The type of information listed may vary according to the adapter model.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ServerAttributes <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`MAC` The MAC address of a NIC or iSCSI function.

SetPhyPortSpeed

This command sets the port speed on OneConnect OCe11100-series, OCe14000-series, and LPe16202 adapters only.

OneConnect OCe11100-Series and OCe14000-Series Adapters

The OneConnect OCe11100-series and the OCe14000-series adapters have configurable physical port speeds. Depending on the port module or transceiver installed in the physical port, the speed settings can be forced to a specific value, for instance 1 Gb, or to a range of values for auto-negotiation with the switch, for example 10 Gb/1 Gb/100 Mb. There are three values that can be configured - port speed mode, speed value(s), and the DAC cable length.

The configurable port speeds are based upon the port module type and the mode defined by port speed Mode parameter. For the "Default" port speed Mode, the speed setting is not required.

Note: 10GBASE-CX4, 10GBASE XFP and SGMII port module types do not support port speed settings.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetPhyPortSpeed <WWPN|MAC> <Mode> [Speed [Length]]
```

Parameters

`WWPN` The WWPN of an FCoE function.

`MAC` The MAC address of a NIC or iSCSI function.

`Mode` The Mode number:

0 = Default
1 = Auto-negotiate; requires the Speed parameter
2 = Force; requires the Speed and Length parameters

Note: When the adapter's port speed setting and the switch's port speed setting conflict, the link will not be brought up.

`Speed` The speed string of the PHY port. Some valid string values include “100 Mb”, “1 Gb”, and “10 Gb”. The PortAttributes command lists all the valid speeds in Auto-negotiate and Force modes.

Auto-negotiated Speeds

A comma-separated list of available auto-negotiated speeds is displayed by the PortAttributes command for OneConnect OCe11100-series and OCe14000-series adapters. For combinations of speeds, each speed is separated by a slash, for example, 10 Gb/1 Gb/100 Mb. If the port does not support auto-negotiated speeds this property will be displayed as “Not Supported”.

Forced Speeds

A comma-separated list of available forced speeds is displayed by the PortAttributes command for OneConnect OCe11100-series and OCe14000-series adapters. There are no combinations of speeds for forced speeds. If the port does not support forced speeds this property will be displayed as “Not Supported”.

Note: When the Mode parameter is 1 or 2, the Speed parameter is required. When the Mode parameter is 0, the Speed parameter is ignored.

`Length` The length of the DAC cable in meters. Valid values are 0–10. A length value of 0 indicates an optical cable. A Length value is required when using a 10 Gb SFP and QSFP transceiver interface type.

When the Mode parameter is 0, Speed and Length parameters are ignored, and when the Mode parameter is 1, the Length parameter is ignored

Note: For an embedded mezzanine adapter linked to an embedded switch on the internal port, the Length value is ignored.

Examples

The following example configures the PHY port to a forced speed of 1 Gbps with a cable length of ten meters:

```
hbacmd setphyportspeed 00-00-c9-ad-ad-ac 2 1Gb 10
```

The following example tries to configure the PHY port to a forced speed of 100 Mbps:

```
hbacmd setphyportspeed 00-00-c9-a9-41-88 2 100Mb
```

If the command is successful the following is displayed:

```
Successfully changed speed settings on port.
```

This command results in an error because you must include a value for the Length parameter when the Mode parameter is 2:

```
ERROR: <431>: Cable length required for force mode and interface type
```

SetPortEnabled

This command enables or disables a port.

Notes

- Ensure that all I/Os on the port are stopped before disabling the port.
- Only OneConnect adapters do not require a reset when the adapter port is enabled or disabled. For FC adapters, when the SetPortEnabled command disables an FC port, the adapter must be reset to activate the new setting.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetPortEnabled <WWPN|MAC> <PortEnable>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function on the port.
`MAC`	The MAC address of a NIC or iSCSI function on the port.
`PortEnabled`	The port-enabled state: 0 = Disabled 1 = Enabled

Authentication Commands

These commands are used to configure a DHCHAP connection between an FC function and a switch port.

Note: Authentication commands are supported on FC adapter ports only. These commands are not available on OneConnect or LPe16000 family adapters.

AuthConfigList

This command returns the list of WWPNs that have an authentication connection configuration with the specified adapter.

Supported By

Linux, Solaris, and Windows

Syntax

```
AuthConfigList <WWPN>
```

Parameters

`WWPN`	The WWPN of an FC function.

DeleteAuthConfig

This command deletes the authentication configuration on the adapter.

Supported By

Linux, Solaris, and Windows

Syntax

```
DeleteAuthConfig <WWPN1> <WWPN2> <PasswordType> <Password>
```

Parameters

`WWPN1`	The WWPN of an FC function.
`WWPN2`	Use "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or use the WWPN for a target.
`PasswordType`	1 = ASCII 2 = Hex (binary) 3 = Password not yet defined
`Password`	The current password value.

GetAuthConfig

This command retrieves the authentication configuration for the adapter.

Supported By

Linux, Solaris, and Windows

Syntax

```
GetAuthConfig <WWPN1> <WWPN2>
```

Parameters

`WWPN1`	The WWPN of an FC function.
`WWPN2`	Use "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or use the WWPN for a target.

GetAuthStatus

This command returns the current status for the authentication connection specified by WWPN 1 and WWPN2 (adapter and the switch). It includes the current authentication state (connected or failed). Currently authenticated connections specify the hash algorithm and DH group used in the DHCHAP associated with this connection. Failed status includes the failure reason.

Supported By

Linux, Solaris, and Windows

Syntax

```
GetAuthStatus <WWPN1> <WWPN2>
```

Parameters

WWPN1	The WWPN of an FC function.
WWPN2	Use "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or use the WWPN for a target.

InitiateAuth

This command initiates the authentication configuration on the adapter.

Supported By

Linux, Solaris, and Windows

Syntax

```
InitiateAuth <WWPN1> <WWPN2>
```

Parameters

WWPN1	The WWPN of an FC function.
WWPN2	Use "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or use the WWPN for a target.

SetAuthConfig

This command sets the authentication configuration for the adapter.

Supported By

Linux, Solaris, and Windows

Syntax

```
SetAuthConfig <WWPN1> <WWPN2> <PasswordType> <Password> <Param> <Value>
```

Note: Where multiple parameters and values are used, separate them using commas.

Parameters

WWPN1	The WWPN of an FC function.
WWPN2	Use "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or use the WWPN for a target.
PasswordType	1 = ASCII 2 = Hex (binary) 3 = Password not yet defined
Password	The current password value.

`Param` The parameter names:

- Mode
- Timeout
- Bi-directional
- Hash-priority
- DH-priority
- Re-authentication
- Re-authentication-interval

`Value` The value is based on the type of <Param>:

- Mode: disabled, enabled, or passive
- Timeout: time in seconds
- Bi-directional = disabled or enabled
- Hash-priority: md5 or sha1 (md5 = first md5, then sha1; sha1 = first sha1, then md5)
- DH-priority: 1, 2, 3, 4, 5; any combination up to 5 digits
- Re-authentication: disabled or enabled
- Re-authentication-interval: 0, 10– 3600

SetPassword

This command sets the password on the adapter for an authenticated connection to the switch.

Supported By

Linux, Solaris, and Windows

Syntax

```
SetPassword <WWPN1> <WWPN2> <Flag> <Cpt> <Cpw> <Npt> <Npw>
```

Parameters

`WWPN1` The WWPN of an FC function.

`WWPN2` Must be "ff:ff:ff:ff:ff:ff:ff:ff" for a switch or the actual WWPN for a target.

`Flag` 1 = Local (password used by the adapter when the adapter authenticates to the switch)

2 = Remote (password used by the adapter when the switch authenticates to the adapter)

`Cpt` Current password type.
1 = ASCII
2 = Hex (binary)
3 = Password not yet defined

`Cpw` Current password value.

`Npt`	New password type. 1 = ASCII 2 = Hex (binary)
`Npw`	New password value.

Boot Commands

The Boot Commands group manages the commands that enable or disable the network boot for NIC ports or the boot code for FC adapter ports. You can also show and change FC boot parameters.

EnableBootCode

This command is used to perform either of the following:

- Enable or disable network boot for NIC functions. If network boot is being enabled, it is necessary to select the specific network boot type. The supported network boot types are PXE and iBFT. Note that iBFT is not supported on all NIC adapter types.
- Enable or disable the boot code for an FC/FCoE function. If the boot code is disabled on the FC function, the adapter does not boot from the SAN, regardless of the value for the EnableBootFromSan boot parameter. If the boot code is enabled on the FC function, the adapter boots from the SAN if the EnableBootFromSan parameter is also enabled.

Note: To enable or disable boot on an iSCSI target, see the "SetiSCSIBoot" command.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
EnableBootCode <WWPN|NIC MAC> <Flag> <NetworkBootMethod>
```

Parameters

`WWPN`	The WWPN of an FC function.
`NIC MAC`	The MAC address of a NIC function.
`Flag`	D = Disable the boot code. E = Enable the boot code.
`NetworkBootMethod`	Network boot method to be used by the NIC ("PXE" or "iBFT"). The network boot types supported on the specific NIC may be found in the Available Network Boot Methods string displayed by the HbaAttributes command. This parameter is not required for FC or FCoE functions, and is only specified when enabling network boot.

Examples

The following example enables iBFT for a NIC:

```
C:\Program Files\Emulex\Util\OCManager>HBACMD  EnableBootCode
00-00-c9-11-22-33 e iBFT
```

The following example disables network boot:

```
C:\Program Files\Emulex\Util\OCManager>HBACMD  EnableBootCode
00-00-c9-11-22-33 d
```

GetBootParams

This command shows the FC boot parameters. If any arguments are missing or invalid, a suitable error is reported. If all arguments are correct, the data is displayed in tabular form.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetBootParams <WWPN> <Type>
```

Parameters

`WWPN` The WWPN of an FC function.

`Type` X86, OpenBoot, or UEFI.

SetBootParam

This command changes the FC boot parameters. You can change function parameters and boot device parameters for x86, OpenBoot, and UEFI boot.

- When changing adapter parameters, omit the BootDev keyword and value; otherwise, an error is reported.
- When changing boot device parameters for OpenBoot, omit the BootDev keyword and value; otherwise, an error is reported.
- For boot device parameters for x86 or UEFI, you must provide the BootDev keyword and value.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetBootParam <WWPN> <Type> <Param> <Value1> [BootDev <Value2>]
```

Parameters

`WWPN`	The WWPN of an FC function.
`Type`	Possible values are x86, OpenBoot, or UEFI.
`Param`	The parameter name.
`Value1`	The parameter value.
`BootDev`	The boot device.
`Value2`	The boot device entry number: 0–7.

Channel Management Commands

These commands enable and disable channel management and set channel properties for UCNAs. Channel management is not supported on LPe16202 adapters.

Each port on each adapter's physical port can be partitioned into isolated channels providing a converged conduit for network and storage traffic. Each channel has its own unique MAC address. Depending on the type of channel management in effect, each channel provides various traffic management and provisioning capabilities, such as enabling and disabling, minimum and maximum bandwidth, and VLAN ID (in UMC for untagged packets, also called the LPVID).

The OneCommand Manager application allows you to enable or disable channel management. In the case of UMC or SIMode, you can set of each channel's properties. For the vNIC1 and UFP channel management types, the OneCommand Manager application will display the channel properties, but not allow modification; except for vNIC1 where the LPVID (inner VLAN ID) can be modified.

Additionally, the OCe14000-series adapters support NPar. Use the GetAdapterPortConfig and SetAdapterPortConfig command to manage NPar for these adapters. See "GetAdapterPortConfig" on page 132 and "SetAdapterPortConfig" on page 137.

Notes

- For IBM adapters, UMC mode is referred to as "SIMode".
- SR-IOV is not supported with channel management.
- There are OneCommand Manager CLI commands for UMC management that are still available for backward compatibility with existing UMC scripts. They cannot be used to manage other channel management types. See "UMC Commands" on page 159 for information on UMC management.

CMGetParams

This command shows the current channel management configuration for an adapter's physical port.

Multichannel

When using multichannel, this command displays the adapter's active (booted) multichannel state, the configured state, the configured channel management mode (N/A if configured state is disabled), and the available channel management modes. This is followed by a table showing the specified port's channel properties. The Type column shows the protocol that is running on the channel. The output is different depending upon the multichannel type.

Note: While "Flex" is displayed in the output for the CMGetParams command as the multichannel type for HP adapters currently running in Flex mode, you cannot specify "Flex" for the "mctype" parameter of the SetAdapterPortConfig command. The only mctype parameter that can be specified on HP UMC-capable adapters is "UMC".

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CMGetParams <MAC | WWPN>
```

Parameters

`MAC` MAC address of any NIC or iSCSI function on an adapter port.

`WWPN` WWPN of an FCoE function on an adapter port.

Example

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Multichannel Disabled	See page 58.
Multichannel Enabled - UMC, NIC Only	See page 59.
Multichannel Enabled - UMC, with Storage	See page 59.
Multichannel Disabled - IBM	See page 59.
Multichannel Enabled - IBM UFP	See page 59.
Dell NPar Disabled	See page 60.
Dell NPar Enabled - 4 Functions/Port	See page 60.

Multichannel Disabled

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     None
Configured mode: None
```

```
Available modes: UMC
```

Multichannel Enabled - UMC, NIC Only

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     UMC
Configured mode: UMC
Available modes: UMC

Func# Type  MAC Address       LPVID Min BW Max BW
----- ----- ----------------- ----- ------ ------
0     NIC   00-00-c9-12-34-56  2      25     50
1     NIC   00-00-c9-12-34-57  3      25      50
2     NIC   00-00-c9-12-34-58  4      25     50
3     NIC   00-00-c9-12-34-59  5      50     75
```

Multichannel Enabled - UMC, with Storage

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     UMC
Configured mode: UMC
Available modes: UMC

Func# Type  MAC Address       LPVID Min BW Max BW
----- ----- ----------------- ----- ------ ------
0     NIC   00-00-c9-12-34-56  2      25     50
1     FCoE  n/a                n/a    40     100
2     NIC   00-00-c9-12-34-58  4      25     50
3     NIC   00-00-c9-12-34-59  5      10     20
```

Multichannel Disabled - IBM

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     None
Configured mode: None
Available modes: vNIC1, SIMode, UFP
```

Multichannel Enabled - IBM UFP

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     UFP
Configured mode: UFP
Available modes: vNIC1, SIMode, UFP
```

```
                                Outer
Func# Type  MAC Address         VLAN  Min BW Max BW
----- ----- ----------------- ----- ------ ------
0     NIC   00-00-c9-12-34-56  2      25     50
1     NIC   00-00-c9-12-34-57  3      25     50
2     NIC   00-00-c9-12-34-58  4      25     50
3     NIC   00-00-c9-12-34-59  5      25     75
```

Dell NPar Disabled

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     None
Configured mode: None
Available modes: NPAR
```

Dell NPar Enabled - 4 Functions/Port

Note: Even though function 1 has a minimum bandwidth of 0, some traffic flows through.

```
>hbacmd CMGetParams 00-00-c9-12-34-56
Active Mode:     NPAR
Configured mode: NPAR
Available modes: NPAR

Func# Type  MAC Address         Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   25     50
1     NIC   00-00-c9-12-34-57   0      50
2     NIC   00-00-c9-12-34-58   25     50
3     NIC   00-00-c9-12-34-59   50     75
```

CMMode

This command enables or disables channel management mode on OCe11100-series adapters only. For UMC configurations, the UMCEnable command can still be used to enable UMC only.

This command also sets the channel management type at the adapter level. A system reboot is required for the change take effect.

Note: For OCe14000-series adapters, you must set the mctype parameter in the SetAdapterPortConfig command to enable multichannel; including NPar. See the SetAdapterPortConfig command for more information. If you use the CMMode command on an OCe14000-series adapter, an error message is displayed indicating the command is not supported by the firmware or hardware.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CMMode <WWPN | MAC Address> <None | Type>
```

Parameters

WWPN	WWPN of an FCoE function on the physical port.
MAC	MAC address of any NIC function on the physical adapter port.
None	Specify "None" to disable channel management or a channel.
Type	Management type (see CMGetParams) to enable channel management.

Example

```
>hbacmd CMMode 00-00-c9-bb-cc-aa None
```

This example disables channel management on an adapter containing a NIC function with a MAC address of 00-00-c9-bb-cc-aa.

CMSetBW

This command sets the minimum and maximum bandwidths for each channel on the physical port. For UMC/SIMode configurations, this command can also be used to disable a channel's logical link by setting both the min and max bandwidths to 0. To enable the logical link, specify a non-zero value for the minimum and maximum bandwidth.

If you are using NPar, setting the minimum bandwidth to zero does not bring the logical link down on the NPar function or prevent the NPar function from receiving or transmitting a small amount of network traffic.

The number of channels, the number of channels that need to be specified, and the number of bandwidth combinations that need to be specified depend upon the adapter model. See "CMGetParams" on page 58 to determine how many bandwidths need to be specified for a port by looking at the number of functions indicated in the "Func #"column of the output.

The total of the minimum bandwidths for the enabled channels or partitions (NPar) must add up to 100. An exception to this rule is for UMC and SIMODE configurations when both the minimum and maximum bandwidth for all channels are 0; effectively bringing down the logical link on all channels. The maximum bandwidth must be

greater than or equal to the minimum bandwidth for that channel or partition (NPar) up to a maximum value of 100.

Notes

- If too many or too few minimum and maximum bandwidth combinations are provided, an error is generated.
- This command fails with an error message if the configured multichannel mode is vNIC1, UFP or None.
- For UMC, the UMCSetBW command can still be used instead of CMSetBW.
- A reboot is not required to change the channel bandwidths when multichannel is currently active including NPar on the adapter.

  For NPar, these bandwidths are only in effect when ETS priority group bandwidths are not available. ETS priority group bandwidths are set by the SetCnaPGBW command.
- If a channel's protocol is configured to “None”, the minium and maximum bandwidth must be 0.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CMSetBW <MAC | WWPN> <Min0,Max0> [Min1,Max1]  ...  [MinN,MaxN]
```

Parameters

`WWPN`	WWPN of an FCoE function on the physical adapter port.
`MAC`	MAC address of any NIC or iSCSI function on the physical adapter port.
`Min0, Max0`	Minimum and maximum bandwidths for channel 0.
`Min1, Max1`	Minimum and maximum bandwidths for channel 1.
`MinN, MaxN`	Minimum and maximum bandwidths for channel N.

Examples-Multichannel

Down Logical Link on 3rd Channel of a 4-Channel/Port Adapter

```
>hbacmd CMSetBW 00-00-c9-12-34-56 25,50 50,100 0,0 25,50

>hbacmd CMGetParams 00-00-c9-12-34-56
Active mode:     UMC
Configured mode: UMC
Available modes: UMC

Func# Type      MAC Address       LPVID Min BW Max BW
----- -----     ----------------- ----- ------ ------
```

```
0     NIC       00-00-c9-12-34-56  2     25    50
2     iSCSI     00-00-c9-12-34-57  n/a   50    100
4     NIC       00-00-c9-12-34-58  3     0     0
6     NIC       00-00-c9-12-34-59  4     25    50
```

CMSetLPVID

This command sets the LPVID values for the UMC and SIMode NIC channels. Use the CMGetParams command to determine the number of LPVIDs required. See "CMGetParams" on page 58 for more information. A reboot is not required for these changes take effect when UMC is enabled.

Note: When the current multichannel mode is not UMC or SIMode, the CMSetLPVID command fails.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CMSetLPVID <WWPN|MAC> <LPVID0> <LPVID1> ... [LPVIDn]
```

Parameters

`WWPN`	WWPN of an FCoE function on the physical adapter port.
`MAC`	MAC address of any NIC or iSCSI function on the physical adapter port.
`LPVID0`	LPVID for channel 0.
`LPVID1`	LPVID for channel 1.
`LPVIDn`	LPVID for channel n.

Considerations for Using CMSetLPVID

- LPVID values are in the range of 2-4094.
- Every NIC channel on a physical port must have a unique LPVID.
- For FCoE and iSCSI channels, '0' must be entered because LPVIDs can only be specified for NIC channels.
- LPVIDs specified for channels with protocols set to "None" are ignored.
- This command is not supported on 1 Gb ports.
- If channel management is disabled when this command is executed, an error message is displayed.

Examples

4 NIC Channels

```
>>hbacmd CMSetLPVID 00-00-c9-12-34-56 1001 1002 1003 1004
```

8 Channels, Storage on 2nd channel

```
>hbacmd CMSetLPVID 00-00-c9-55-43-21 1001 0 1002 1003 1004 1005 1006
1007
```

DCB Commands

This command shows the DCB and LLDP parameters for iSCSI, FCoE, and NIC adapter ports.

Notes

- DCB commands are for DCB management of OneConnect adapters only.
- These commands are not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. The following error message will be returned:

  ```
  ERROR: <222>: DCB not available
  ```

GetDCBParams

This command shows the active and configured DCB and LLDP settings on a port of a OneConnect adapter. The active parameters show what the adapter port is currently running, and the configured parameters show the value that the adapter port's DCB parameter is set to.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDCBParams <WWPN|MAC>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function on the port.
`MAC`	The MAC address of a NIC or iSCSI function on the port.

Example

```
hbacmd h=10.192.203.154 GetDCBParams 00-00-c9-93-2f-d8
```

GetPGInfo

This command shows the ETS priority group bandwidth percentages for the port of a OneConnect adapter. Additionally, this command displays the number of priority groups supported by an adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetPGInfo <WWPN|MAC>
```

Parameters

WWPN The WWPN address of an FC or FCoE function on the port.

MAC The MAC address of a NIC or iSCSI function on the port.

Example

```
hbacmd h=10.192.203.154 getpginfo 00-00-c9-93-2f-d8
```

SetCnaPGBW

This command sets the ETS priority group bandwidth percentages on a port of a OneConnect adapter according to the following rules:

- Bandwidths (BW0–BW7) for priority groups 0–7 (PG0–PG7) must total 100 (for 100%).
- Bandwidth can be assigned to a priority group that has priorities.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetCnaPGBW <WWPN|MAC> <BW0–BW7>
```

Parameters

WWPN The WWPN of an FC or FCoE function on the port.

MAC The MAC address of a NIC or function on the iSCSI port.

BW0–BW7 The bandwidths allocated for the priority groups 0–7.

Example

This command sets the bandwidth of PG0 to 50%, PG1 to 50%, and PG2–PG7 to 0%.

```
hbacmd SetCnaPGBW 10:00:00:00:c9:3c:f7:88 50 50 0 0 0 0 0 0
```

SetDCBParam

This command configures the DCB and LLDP settings on a OneConnect adapter port. Use the GetDCBParams command to obtain valid parameter names for use in this command.

Notes

- You cannot set DCBX mode. If you attempt to specify a “dcbxmode” parameter, an error message is displayed.
- RoCE is only available on the OCe140000-series of adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetDCBParam <WWPN|MAC> <Param> <Value>
```

Parameters

`WWPN` The WWPN of an FCoE function on the port.

`MAC` The MAC address of a NIC or iSCSI function on the port.

`Param` The parameter name. See the following "DCB Settings for <Param> and <Value>" and "LLDP Settings for <Param> and <Value>" sections.

`Value` The parameter value. See the following "DCB Settings for <Param> and <Value>" and "LLDP Settings for <Param> and <Value>" sections.

DCB Settings for <Param> and <Value>

<Param>	Description and <Value>
`DCBXState`	The DCBX protocol state. 0 = Disabled 1 = Enabled
`PFCEnable`	Flow control in both directions (transmit and receive). 0 = Disabled 1 = Enabled
`FCoEPriority`	This parameter is applicable for ports running FCoE only. A single priority must be specified. The range of valid values is 0-7. **Note:** Only one priority can be specified for each invocation of this command and must be for a protocol running on the port. If more than one protocol priority can be set, they should be unique values.
`iSCSIPriority`	This parameter is applicable for ports running iSCSI only. A single priority must be specified. The range of valid values is 0-7. **Note:** Only one priority can be specified for each invocation of this command and must be for a protocol running on the port. If more than one protocol priority can be set, they should be unique values.
`RoCEPriority`	This parameter is applicable for ports running RoCE only. A single priority must be specified. The range of valid values is 0-7. **Note:** Only one priority can be specified for each invocation of this command and must be for a protocol running on the port. If more than one protocol priority can be set, they should be unique values.
`PFCPriority`	A list of comma-separated values where multiple PFC priorities are supported. The comma-separated list can contain up to seven values ranging from 0-7.

`QCNEnable` This parameter is only applicable for ports on OCe14000-series adapters running NIC+RoCE, and only for RoCE traffic.

0 = Disabled
1 = Enabled

`defaults` Use to set the DCB parameters (including priority groups) to their default values. For example:

```
hbacmd SetDCBParam <WWPN|MAC> defaults
```

LLDP Settings for <Param> and <Value>

<Param>	Description and <Value>
`TxState`	Transmit State: DCBX uses LLDP to exchange parameters between two link peers. For the DCBX protocol to operate correctly, both LLDP Rx and Tx must be enabled. If either Rx or Tx is disabled, DCBX is disabled. 0 = Disabled 1 = Enabled
`RxState`	Receive State: DCBX uses LLDP to exchange parameters between two link peers. For the DCBX protocol to operate correctly, both LLDP Rx and Tx must be enabled. If either Rx or Tx is disabled, DCBX is disabled. 0 = Disabled 1 = Enabled
`TxPortDesc`	Transmit Port Description: provides a description of the port in an alpha-numeric format. 0 = Disabled 1 = Enabled
`TxSysDesc`	Transmit System Description: provides a description of the network entity in an alpha-numeric format. 0 = Disabled 1 = Enabled
`TxSysName`	Transmit System Name: provides the system's assigned name in an alpha-numeric format. 0 = Disabled 1 = Enabled
`TxSysCap`	Transmit System Capabilities: 0 = Disabled 1 = Enabled

Example

```
hbacmd h=10.190.103.165 m=cim u=root p=Host001 n=root/emulex
SetDCBParam 00-00-c9-3c-f7-88 fcoepriority 3
```

SetDCBPriority

This command sets the PFC priorities and the ETS priority groups priorities. The values must be set according to the following rules:

- The priorities range from 0 to 7.
- A priority (0-7) must exist in only one priority group.
- All priorities must appear once in any of the eight (PG0-PG7) priority groups or if available, PG15.

  Note: For an OCe14000-series adapter, you can use the PG15 priority group for RoCE priority only.

- To specify no priorities for a priority group use '-'.
- Any assigned PFC priority must be assigned as the single priority in a priority group (for example, no other priorities allowed in a group assigned the PFC priority).
- Any PG assigned one or more priorities should also be assigned a non-zero bandwidth value (see SetCnaPGBW).

The following rules are specific to FCoE and iSCSI adapters:

- A maximum of two PFC priorities can be assigned.
- If FCoE is running on the port, one of the PFC priorities must match the FCoE priority.
- If iSCSI is running on the port, one of the PFC priorities must match the iSCSI priority.

The following rules are specific to NIC-only adapters:

- Only one PFC priority can be assigned.

The following rules are specific to RoCE adapters:

- The RoCE priority should be assigned to the PFC priority and as the only priority to one of the following Priority Groups: PG0-PG7 or PG15.
- All non-RoCE priorities should be assigned together to only one priority group other than the RoCE priority group.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetDcbPriority <WWPN|MAC> <PFC> <PG0> <PG1> <PG2> <PG3> <PG4> <PG5>
<PG6> <PG7> [PG15]
```

Parameters

`WWPN`	The WWPN of an FCoE function on a port.
`MAC`	The MAC address of a NIC or iSCSI function on a port.

PFC	The PFC priority that is a comma-separated list of up to eight values, ranging from 0–7.
PG0-PG7	Priority group membership that is a comma-separated list of priorities ranging from 0–7. Each set of priorities for a group must be separated by a space. All priorities (0–7) must be assigned to some PGID.
PG15	PG15 group membership (required on RoCE ports only)

Example

```
hbacmd h=10.192.203.151 m=cim SetDCBPriority 10:00:00:00:c9:3c:f7:88 3
0,1,2,4,5,6,7 3 0 0 0 0 0 0
```

Diagnostic Commands

The Diagnostic Commands group provides commands that enable you to detect cabling problems, to examine transceiver data, and flash memory load lists. Additionally, you can run specific diagnostic tests such as the Loopback test and POST test.

DPortTest

Notes

- This command is only supported for LPe16000 FC adapters connected to D_Port-enabled Brocade switches.
- D_Port should not be enabled on the switch port.

D_Port, also called ClearLink, is a set of diagnostic tests that allows you to detect physical cabling issues that result in increased error rates and intermittent behavior.

The DPortTest command runs a series of tests including local electrical loopback, loopback to the remote optics, loopback from the remote port to the local optics, and a full-device loopback test with data integrity checks. It also provides an estimate of cable length, from the switch to the adapter, to validate that a proper buffering scheme is in place.

The various tests allow some fault isolation, so you can distinguish faults that are the result of marginal cables, optics modules, as well as, connectors or optics seating. If the adapter, firmware, SFP, or switch do not support D_Port testing, an error is generated.

Notes

- D_Port tests run with the physical connection in an offline diagnostic state, so normal I/O cannot be sent through the physical port while the test is in progress. While the port is in D_Port mode, the link will appear down on that port; similar to an unplugged cable.
- The DPortTest command only runs in on-demand mode with the host initiating the tests with the switch.

- When using D_Port in a boot from SAN configuration, the configuration must have redundant paths to the boot LUN and only one of the redundant adapter ports should be set to D_Port.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DPortTest <WWPN>
```

Parameters

WWPN	The WWPN of the FC function on the adapter.

Considerations When Using D_Port

- Because it is not possible to detect if a Brocade switch can support D_Port functionality, a test failure occurs if the DPortTest command is run with a switch that does not support D_Port testing.
- Typing <CTL-C> while the D_Port tests are running terminates the tests and the completed results are displayed.
- If the Overall Test Result is "FAILED", you must either re-run the tests successfully, or reset the adapter port to bring up the link.
- If a test phase fails, the D_Port diagnostics are automatically stopped. As a result, test phases that would have occurred after the failure are not displayed.
- When there is more than one error in a single test phase, multiple lines are displayed showing each error.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Successful Test	See page 70.
Test Failures	See page 71.

Successful Test

```
>hbacmd DPortTest 10:00:00:00:c9:d1:a2:d0

Running D_Port Tests. Please wait. Polling for results.............................

D_Port Test Status:     Passed
Buffers Required:       1
Frame Size:             2112
Round Trip Latency:     1898 nanoseconds
Estimated Cable Length: 172  meters

================================================================================
Test Phase               Result    Latency   Local Errors   Remote Errors
```

```
================================================================================
Electrical Loopback       Passed    122
Optical Loopback          Passed    1898
Reverse Optical Loopback  Skipped   0
Link Traffic              Passed    0
```

Test Failures

```
>hbacmd DPortTest 10:00:00:00:c9:d1:a2:d0

Running D_Port Tests. Please wait. Polling for results.............................

D_Port Test Status:     Failed
Buffers Required:       0
Frame Size:             0
Round Trip Latency:     0    nanoseconds
Estimated Cable Length: 0    meters

================================================================================
Test Phase                Result    Latency   Local Errors   Remote Errors
================================================================================
Electrical Loopback       Failed    n/a

>hbacmd DPortTest 10:00:00:00:c9:d1:a2:d0

Running D_Port Tests. Please wait. Polling for results.............................

D_Port Test Status:     Failed
Buffers Required:       0
Frame Size:             0
Round Trip Latency:     0    nanoseconds
Estimated Cable Length: 0    meters

================================================================================
Test Phase                Result    Latency   Local Errors   Remote Errors
================================================================================
Electrical Loopback       Passed    0
Optical Loopback          Failed    n/a

>hbacmd DPortTest 10:00:00:00:c9:d1:a2:d0

Running D_Port Tests. Please wait. Polling for results.............................

D_Port Test Status:     Failed
Buffers Required:       1
Frame Size:             2112
Round Trip Latency:     1898 nanoseconds
Estimated Cable Length: 172  meters

================================================================================
Test Phase                Result    Latency   Local Errors   Remote Errors
================================================================================
Electrical Loopback       Passed    127
```

```
Optical Loopback          Passed    1898
Reverse Optical Loopback  Skipped   0
Link Traffic              Failed    n/a
```

EchoTest

This command runs the echo test on FC functions.

Notes

- This command is only supported on FC functions.
- This command is not supported on OneConnect or LPxxx2-series adapters.
- The EchoTest command fails if the target WWPN does not support the ECHO ELS command.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
EchoTest <WWPN Source> <WWPN Destination> <Count> <StopOnError>
<Pattern>
```

Parameters

`WWPN Source`	The WWPN of the originating FC function.
`WWPN Destination`	The WWPN of the destination (echoing) FC functions.
`Count`	The number of times to run the test. Use "0" to run the test indefinitely.
`StopOnError`	Checks if the test must be halted on error: 0 = No halt 1 = Halt on error
`Pattern`	Hexadecimal data pattern to transmit (up to 8 characters).

GetBeacon

This command shows the current beacon state (either "on" or "off").

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetBeacon <WWPN|MAC>
```

Parameters

`WWPN`	The WWPN of the FC/FCoE function on the port.
`MAC`	The MAC address of the NIC or iSCSI function on the port.

GetXcvrData

This command shows transceiver data for a port on an adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetXcvrData <WWPN|MAC> [Type]
```

Parameters

`WWPN` The WWPN of an FC or FCoE function on the port.

`MAC` The MAC address of a NIC or iSCSI on the port.

`Optional` The type of SFP data to display:

- 1 = Formatted SFS data (default)
- 2 = Raw SFS data

Example

```
C:\Program Files\emulex\Util\OCManager>hbacmd h=10.192.203.154 m=cim
u=root p=Swamiji001 n=root/emulex GetXcvrData 00-00-c9-93-2f-d6
```

LoadList

This command shows the flash memory load list data for the FC function on the adapter.

Note: This command is not supported for OneConnect and LPe16202-series adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
LoadList <WWPN>
```

Parameters

`WWPN` The WWPN of the FC function on the adapter.

LoopBackTest

This command runs one of the loopback tests available on the adapter port specified by the WWPN or MAC address.

Notes

- PHY diagnostics are not supported on mezzanine cards and blade network daughter cards because they do not contain PHYs.
- The external loopback test is not supported for OCe11102-xT adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
LoopBackTest <WWPN|MAC> <Type> <Count> <StopOnError> [Pattern]
```

Parameters

`WWPN` The WWPN of an FC or FCoE function on the port.

`MAC` The MAC address of a NIC or iSCSI function on the port.

`Type` The type of loopback test to run:

- 0 = PCI loopback test; not supported for OneConnect or LPe16202 adapters
- 1 = Internal loopback test; not supported for OneConnect or LPe16202 adapters
- 2 = External loopback test (requires loopback plug)
- 3 = DMA loopback test; only supported for OneConnect adapters (not supported for LPe16202 adapters).
- 4 = PHY loopback test; only supported for OneConnect adapters
- 5 = MAC loopback test; only supported for OneConnect adapters

`Count` Number of times to run the test. Possible values are 1–99,9999. To run the test infinitely, use 0.

`StopOnError` Checks if the test must be halted on error.
0 = No halt
1 = Halt

`Pattern` An optional parameter that specifies 1–8 hexadecimal bytes to use for loopback data (for example: 1a2b3c4d).

Example

```
hbacmd h=10.192.193.154 m=cim u=root p=Swamiji001 n=root/emulex
LoopBackTest 00-00-c9-93-2f-9f 4 120 0
```

LoopMap

This command shows the arbitrated loop map data.

Note: This command is supported for FC functions only.

Supported By

Linux, Solaris, and Windows

Syntax

```
LoopMap <WWPN>
```

Parameters

`WWPN` The WWPN of the FC function

PciData

This command shows the PCI configuration data (if available).

The PCI registers displayed are specific to the function referenced in the OneCommand Manager CLI. For example, if you specify the WWPN for the FCoE function, the PCI registers for that FCoE function return. If you specify the MAC address for the NIC function on that same physical port, the PCI registers for that NIC function return.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
PciData <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`MAC` The MAC address of a NIC or iSCSI function.

Example

```
C:\Program Files\emulex\Util\OCManager>hbacmd h=10.192.203.154
m=cim u=root p=Swamiji001 n=root/emulex PciData 00-00-c9-93-2f-d6
```

The example output:

```
Vendor ID:        0x19A2        Device ID:          0x0700
Command:          0x0406        Status:             0x0010
Revision ID:      0x02          Prog If:            0x00
Subclass:         0x00          Base Class:         0x02
Cache Line Size:  0x10          Latency Timer:      0x00
Header Type:      0x80          Built In Self Test: 0x00
```

```
Base Address 0:   0x00000000    Base Address 1:     0xDF478000
Base Address 2:   0xDF480004    Base Address 3:     0x00000000
Base Address 4:   0xDF4A0004    Base Address 5:     0x00000000
CIS:              0x00000000    SubVendor ID:       0x10DF
SubSystem ID:     0xE622        ROM Base Address:   0x00000000
Interrupt Line:   0x00          Interrupt Pin:      0x01
Minimum Grant:    0x00          Maximum Latency:    0x00
Capabilities Ptr: 0x40
```

PostTest

This command runs the POST on the adapter.

Note: This command is not supported for OneConnect, LPe15000, and LPe16000-series adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
PostTest <WWPN>
```

Parameters

`WWPN`	The WWPN of the FC port.

SetBeacon

This command turns the beacon on or off on the adapter port.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetBeacon <WWPN> <BeaconState>
```

Parameters

`WWPN`	The WWPN of an FC function on the port.
`MAC`	The MAC address of a NIC or iSCSI function on the port.
`BeaconState`	Indicates the state of the beacon to be set to: 0 = Off 1 = On

SetCableNVP

This command sets the NVP, required for the TDRTest command, for the cable that connects to the physical port associated with the WWPN or MAC.

Note: This command supports only OCe11100-series adapters and OCe14000-series 10GBASE-T adapters.

Supported By

Linux, Solaris, and Windows

Syntax

```
SetCableNVP <WWPN|MAC> <NVP>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function on the port.
`MAC`	The MAC address of a NIC or iSCSI function on the port.
`NVP`	A percentage value between 1 and 100. Consult your cable documentation to obtain the proper NVP value.

TDRTest

Note: This command only supports OneConnect adapters that use coax copper cables such as the 10GBASE-T adapter.

The TDR test attempts to determine if any cable faults are compromising the integrity of the link. The test requires that the cable be free of disturbances—'down' and quiet. It is best if the cable is not terminated; however, if it is terminated then the link partner must not be active during the test.

For each twisted pair cable (labeled A, B, C, or D):

- If a fault cannot be detected, the test output displays “OK” and an estimated cable length (in meters), if possible. If the length cannot be determined, the estimated length is displayed as “invalid”.
- If one of two faults (a short or an open connection) is detected, the test output displays the fault type (“Shorted” or “Open”) and the distance to the fault (in meters).

Supported By

Linux, Solaris, and Windows

Syntax

```
TDRTest <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of the NIC or iSCSI port.

Example

```
hbacmd TDRTest 00-90-FA-27-A1-70
```

The example output:

```
Pair A: OK. Cable Length Estimation: 50m.
Pair B: OK. Cable Length Estimation: invalid.
Pair C: Open. Distance to Fault: 38m.
Pair D: Shorted. Distance to Fault: 36m.
```

Wakeup

This command shows the firmware's wakeup parameters for the FC function on the adapter.

Note: This command is not supported for OneConnect and LPe16200-series adapters.

Supported By

Linux, Solaris, and Windows

Syntax

```
Wakeup <WWPN>
```

Parameters

`WWPN` The WWPN of an FC function.

Driver Parameter Commands

The Driver Parameter Commands group allow you can show, set, and save the driver parameter values. You can also change the parameters back to factory default values.

Notes

- Driver Parameter commands are supported for FC and FCoE ports only.
- Driver parameters set to temporary or global values (using the “T” and “G” flags, respectively) must be read using the GetDriverParams command to view the current value of the parameter. The GetDriverParamsGlobal command returns only permanently set driver parameter values.

  Additionally, if temporary and global values are set for one or more driver parameters, the “SaveConfig” command must be run with the “N” flag (using the “N” flag is analogous to the GetDriverParams command) to force the driver parameter values for the specified adapter to be saved. Inaccurate values may be saved if the “G” flag is used for this command.

- The DriverConfig and SetDriverParamDefaults commands are not supported for Solaris.
- The list of available driver parameters that can be configured are different depending upon the operating system and protocol (FC or FCoE).

DriverConfig

This command sets all driver parameters to the values in the .dpv file type. The .dpv file's driver type must match the driver type of the host platform adapter.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DriverConfig <WWPN> <FileName> <Flag>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`FileName`	The name of the .dpv file, which is stored in the Emulex Repository directory.
`Flag`	G = Make change global (all FC and/or FCoE functions on this host). N = Make change non-global (function-specific).

Note: On Windows hosts, depending upon the .dpv file specified, the settings will be applied to either the FC or FCoE functions, but not both at the same time. This is because there are separate drivers for FC and FCoE. The .dpv file will have settings for only one of the driver types.

GetDriverParams

This command shows the name and values of each parameter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDriverParams <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

Note: On Windows, if an FC function is specified, the global parameters for the FC driver with be displayed. IF an FCoE function is specified, the global parameter for the FCoE driver will be displayed.

GetDriverParamsGlobal

This command shows the name and the global value of each driver parameter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDriverParamsGlobal <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

Note: On Windows, if an FC function is specified, the global parameters for the FC driver will be displayed. If an FCoE function is specified, the global parameters for the FCoE driver will be displayed.

SaveConfig

This command saves the specified adapter's driver parameters to a file. The resulting file contains a list of driver parameter definitions in ASCII file format with definitions delimited by a comma. Each definition has the following syntax:

```
<parameter-name>=<parameter-value>
```

The command saves either the values of the global set, or those specific to the adapter in the Emulex Repository directory.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SaveConfig <WWPN> <FileName> <Flag>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`FileName`	Name of the file that contains the driver parameters list.
`Flag`	G = Save the global parameter set. N = Save the local (function-specific) parameter set.

Note: On Windows hosts, depending upon the WWPN specified, the settings will be saved for either the FC or FCoE functions, but not both at the same time. This is because there are separate drivers for FC and FCoE. The .dpv file will be saved with the settings for only one of the driver types.

SetDriverParam

This command changes a driver parameter and designates the scope of the change.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetDriverParam <WWPN> <Flag1> <Flag2> <Param> <Value> <enable-dtm>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`Flag1`	L = Make change local for this function only. G = Make change global (all FC and/or FCoE functions on this host).
`Flag2`	P = Make change permanent (persists across reboot). For Linux, to make a permanent change that persists across reboots, you must set Flag1 to G (Global). T = Make change temporary.
`Param`	Name of the parameter to modify.
`Value`	New parameter value, decimal or hexadecimal (0xNNN).
`enable-dtm`	P = Make change permanent (persist across reboot).

Notes

- Dynamic target mode is only supported on Light Pulse FC HBA COMSTAR ports.
- On Windows hosts, when the G (global) flag is specified, the changes depend upon the WWPN specified, the settings will be applied to either the FC or FCoE functions, but not both at the same time. This is because there are separate drivers for FC and FCoE.

Example

To enable dynamic target mode:

```
hbacmd SetDriverParam 10:00:00:00:c9:ff:ff:ff L P enable-dtm 1
```

To disable dynamic target mode, set the flag to 0.

SetDriverParamDefaults

This command changes all values to the default for the adapter(s).

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetDriverParamDefaults <WWPN> <Flag1> <Flag2>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`Flag1` L = Make change local for this function only.
G = Make change global (applies to all FC and FCoE functions on this host).

`Flag2` P = Make change permanent (the change persists across reboot).
T = Make change temporary.

Note: On Windows hosts, when the G (global) flag is specified, the changes depend upon the WWPN specified, the defaults will be applied to either the FC or FCoE functions, but not both at the same time. This is because there are separate drivers for FC and FCoE.

Dump Commands

The diagnostic dump feature enables you to create a "dump" file for a selected adapter. Dump files contain information such as firmware version, driver version, and operating system information. This information is useful when troubleshooting an adapter, but is unavailable in read-only mode.

Caution: Disruption of service can occur if a diagnostic dump is run during I/O activity.

The dump files created are text files (".txt" extension) and binary files. The extension for binary files depends on the adapter type:

- OneConnect and LPe16202 adapters (Enhanced FAT Dump) – ".edf" extension
- OneConnect adapters (Core Dump) – ".core" extension
- LPe16000-series adapters (except LPe160202) – ".bin" extension
- LPe12000-series adapters – ".dmp" extension

DeleteDumpFiles

This command deletes all diagnostic dump files for an adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DeleteDumpFiles <WWPN|MAC>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function on the adapter.
`MAC`	The MAC address of a NIC or iSCSI port function on the adapter.

Dump

This command creates a diagnostic dump file in the HbaCmd dump file directory.

Note: In some cases, a core dump can be performed on an inoperative OneConnect adapter. To view inoperable adapters on the local host, use the "ListHBAs down" command. See "ListHBAs" on page 121.

Note: For OneConnect adapters, if the "core" optional parameter is not specified, an Enhanced FAT Dump is performed by default.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
Dump <WWPN|MAC> [core [Options]]
```

Parameters

`WWPN`	The WWPN of an FC or FCoE port.
`MAC`	The MAC address of a NIC or iSCSI port.
`core`	Perform a core dump on a OneConnect adapter (local host only).
`Options`	For available core dump options, contact Emulex technical support.

GetDumpDirectory

This command shows the dump file directory for the adapters in the host.

Notes

- The dump directory can be set on VMware ESXi hosts only.

- The dump directory applies to all adapters in the server. There is not a separate dump directory for each adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDumpDirectory [WWPN|MAC]
```

Parameters

WWPN	Deprecated and ignored if specified.
MAC	Deprecated and ignored if specified.

GetDumpFile

This command gets the dump file. This command gets the user-specified dump file to the local client's dump directory. The dump directory (local and remote) is named "Dump". The dump files are copied from the dump directory of the remote host to the dump directory of the local host. Therefore, if the remote host option is not specified (h=IP_Address[:port]) this command returns an error, since the source and destination directory is the same.

Dump directory:

- Windows – SystemDrive_Letter:\Program Files\Emulex\Util\Dump
- Linux – /var/opt/emulex/ocmanager/Dump
- Solaris – /opt/ELXocm/Dump
- VMware ESXi – The dump directory set using the SetDumpDirectory command.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDumpFile <h=IP_Address[:port]>[WWPN|MAC] <filename>
```

Parameters

WWPN	Deprecated and ignored if specified.
MAC	Deprecated and ignored if specified.
filename	The name of the dump file to be copied from the remote host.

Example

```
hbacmd h=10.192.193.154  GetDumpFile
BG-HBANYWARE-15_10000000c97d1314_20100120-032820421.dmp
```

GetDumpFileNames

This command gets the names of the files in the host's dump directory.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetDumpFileNames [WWPN|MAC]
```

Parameters

`WWPN`	Deprecated and ignored if specified.
`MAC`	Deprecated and ignored if specified.

Example

```
hbacmd h=10.192.193.154  GetDumpFileNames
```

GetRetentionCount

This command shows the maximum number of diagnostic dump files to keep.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetRetentionCount [WWPN|MAC]
```

Parameters

`WWPN`	Deprecated and ignored if specified.
`MAC`	Deprecated and ignored if specified.

SetDumpDirectory

This command sets the dump directory (valid on VMware ESXi hosts only).

Supported By

VMware ESXi on a Windows remote host

To use the SetDumpDirectory command, you must have a directory (which must be a "Storage" partition) mapped under /vmfs/volumes where the files will be dumped. This directory points to the internal hard disk or an external storage area and can also be mapped using the vSphere Client utility from VMware.

The application checks for the dump directory and creates the dump files in that location.

Notes

- The dump directory applies to all adapters in the server. There is no separate dump directory for each adapter.
- In a remote environment, you can use the SetDumpDirectory command from a host running any operating system (including Linux, Solaris, and Windows), but only to a remote host that is running VMware ESXi.

Syntax

```
SetDumpDirectory <DumpDirectoryName>
```

Parameters

`DumpDirectoryName` The directory under /vmfs/volumes that you created to store the dump files.

Example

This example shows the dump directory set to /vmfs/volumes/ocm-datastore:

```
hbacmd h=10.192.203.173 m=cim u=root p=Swamiji001 n=root/emulex
SetDumpDirectory 10:00:00:00:c9:61:f2:64 ocm-datastore
```

SetRetentionCount

This command specifies the maximum number of diagnostic dump files for the adapter. When the count reaches the limit, the next dump operation deletes the oldest file.

Note: The retention count applies to all adapters in the server.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetRetentionCount ]WWPN|MAC] <Value>
```

Parameters

`WWPN` Deprecated and ignored if specified.

`MAC` Deprecated and ignored if specified.

`Value` The number of dump files to retain.

Example

```
hbacmd h=10.192.193.154 m=cim u=root p=Swamiji001 n=root/emulex
SetRetentionCount 00-00-c9-93-2f-9f 6
```

FCoE Commands

The FCoE Commands group manages the FIP parameters and displays the FCF for an FCoE function.

Note: These commands are supported only on OneConnect and LPe16202 FCoE adapters.

GetFCFInfo

This command shows the FCF information of the FCoE function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetFCFInfo <WWPN>
```

Parameters

`WWPN` The WWPN of an FCoE function.

Example

```
hbacmd GetFCFInfo 10:00:00:00:c9:3c:f7:88
Number of FCFs:  1
Active FCFs:     1
Entry 0:
   State:        1
   Priority:     133Fabric Name:10:00:00:05:1E:0C:54:49
   Switch Name:  10:00:00:05:1E:0C:54:49
   MAC:          00:05:9B:71:3D:71
   FC Map:       0x0EFC00
   VLAN IDs:
   LKA Period:   8
```

GetFIPParams

This command gets the FIP parameters of an FCoE function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetFIPParams <WWPN>
```

Parameters

`WWPN` The WWPN of an FCoE function.

Example

```
hbacmd h=10.231.140.83 getfipparams 10:00:00:00:c9:bc:a9:31
Param Description         Param Name     Value
-----------------         ----------     -----
Primary Fabric Name       pfabric        FF:FF:FF:FF:FF:FF:FF:FF
Primary Switch Name       pswitch        FF:FF:FF:FF:FF:FF:FF:FF
DCB VLan ID               vlanid         Any VLAN ID is valid
```

SetFIPParam

This command sets the FIP parameters of an FCoE function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetFIPParam <WWPN> <Param> <Value>
```

Parameters

`WWPN` The WWPN of an FCoE function.

`Param` The FIP parameter name:

- pfabric
- pswitch
- vlanid
- fcmap
- cinvlanid

`Value` The value based on the FIP parameter name:

- pfabric: 8-byte fabric name (format XX:XX:XX:XX:XX:XX:XX:XX)
- pswitch: 8-byte switch name (format XX:XX:XX:XX:XX:XX:XX:XX)
- vlanid: 2-byte VLAN ID [0-4095] or “any” for any VLANID
- fcmap: 3-byte FC_map, 0x0EFCxx
- cinvlanid: 2-byte VLAN_ID [0-4095]

Example

```
hbacmd SetFIPParam 10:00:00:00:c9:5b:3a:6d fcmap 0x0efc99
```

iSCSI Commands

The iSCSI Commands group support the iSCSI interface in the CLI.

Notes

- iSCSI commands are supported only on OneConnect iSCSI functions.
- Only OCe14000-series adapters support IPv6 addresses.

The MAC address <MAC_Address> of the iSCSI port must be passed to each command as the first argument.

Some commands require values to be set in a format similar to: "option_name=value". Type the full option name or the abbreviated option name (shown in Table 5-3, Option Names, on page 89) and enter the value. The abbreviations are not case sensitive.

Table 5-3 Option Names

Option Name	Abbreviation	Example
Auth	au	au=1
DataDigest	dd	dd=1
DHCP	dh	dh=1
HeaderDigest	hd	hd=1
ImmediateData	id	id=1
Initiator_Alias	ia	ia="initiator_alias"
Initiator_Name	in	in="initiator_name"
Priority	pr	pr=1
VLAN_ENABLED	ve	ve=1
VLAN_ID	vi	vi=1

AddARPTableEntry

This command adds an ARP table entry.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AddARPTableEntry <MAC_Address> <Dest_MAC_Address> <Dest_IP_Address>
```

Parameters

MAC_Address	The MAC address of the iSCSI function.
Dest_MAC_Address	The destination MAC address to add to the ARP table.
Dest_IP_Address	The destination IP address to add to the ARP table.

AddiSNSServer

This command adds a new iSNS server to the existing set of iSNS servers. It accepts either an IPv4 or IPv6 server addresses.

Note: For OCe11000-series and OCe11100-series adapters, only one iSNS server can be configured. For OCe14000-series adapters, up to four iSNS servers can be configured.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AddiSNSServer <MAC_Address> <Server_IP> <Port>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Server_IP`	IP address of the iSNS server to configure.
`Port`	Port number of the iSNS server to configure (value: 1024–65535).

Note: iSNS is not supported on iSCSI functions running the Open iSCSI driver. In this case, adding an iSNS server will not discover any iSCSI targets.

AddRouteTableEntry

This command adds a new route table entry to the route table of the specified function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AddRouteTableEntry <MAC_Address> <Dest_IP_Address> <Subnet_Mask>
<Gateway>
```

Parameters

`MAC_Address`	MAC address of an iSCSI function.
`Dest_IP_Address`	Destination IP address to add to the route table.
`Subnet_Mask`	Subnet Mask to add to the route table.
`Gateway`	Gateway to add to the route table.

AddTarget

This command adds a target to the list of targets seen by the initiator and logs into the target after it has been successfully created. This command requires that you specify a valid IPv4 or IPv6 target IP <Target_IP>, port number <Port>, and iSCSI name <iscsi_target_name>. If you do not specify the remaining options, these options are set to their default values.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "Target CHAP Name" and "Target Secret". For example:

```
hbacmd AddTarget 00-11-22-33-44-55 192.168.1.1 8000
iscsitarget Auth=1 "TgtCHAPName" "TargetSecret1"
```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), you must specify all four values. For example:

```
hbacmd AddTarget 00-11-22-33-44-55 192.168.1.1 8000
iscsitarget Auth=1 "TgtCHAPName" "TargtSecret1"
"InitCHAPName" "InitialSecret1"
```

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AddTarget <MAC_Address> <Target_IP> <Port> <iscsi_target_name>
[ImmediateData=<0|1>] [HeaderDigest=<0|1>] [DataDigest=<0|1>]
[Boot=<0|1>] [Login=<0|1>] [Auth=<0|1|2> "TgtCHAPName" "TgtSecret"
"InitCHAPName" "InitSecret"]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Target_IP`	IP address of the target portal. You can specify an IPv4 or IPv6 IP address.
`Port`	Port number of the target portal (value: 102–65535).
`iscsi_target_name`	Target's iSCSI name enclosed in quotes (string length: 11–255).
`ImmediateData`	0 = No 1 = Yes (default)
`HeaderDigest`	0 = None (default) 1 = CRC32C
`DataDigest`	0 = None (default) 1 = CRC32C

`Boot`	This optional parameter specifies whether the added target is a boot device: 0 = Added target is not a boot device 1 = Added target is a boot device
`Login`	This optional parameter specifies whether to log in to the target after it has been added: 0 = Do not log in to the target 1 = Specify log in to the target If the Login parameter is omitted, the default is 1.
`Auth`	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP
`TgtCHAPNam`	Target CHAP name enclosed in quotes (string length: 1–256). Required when Auth=1 or 2.
`TgtSecret`	Target Secret enclosed in quotes (string length: 12–16). Required when Auth=1 or 2.
`InitCHAPName`	Initiator CHAP name enclosed in quotes (string length: 1–256). Required when Auth=2.
`InitSecret`	Initiator Secret enclosed in quotes (string length: 12–16). Required when Auth=2.

AddTargetPortal

This command adds a new SendTarget Portal for the initiator and runs a target discovery after the SendTarget Portal is created. This command requires that you specify a valid IPv4 or IPv6 portal IP address <Target_IP> and a valid port number <Port>. If you do not specify the remaining options, these options are set to their default values.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "Target CHAP Name" and "Target Secret." For example:

```
hbacmd AddTargetPortal 00-11-22-33-44-55 10.0.0.1 8000 Auth=1
"TgtCHAPName" "TargetSecret1"
```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), you must specify all four values. For example:

```
hbacmd AddTargetPortal 00-11-22-33-44-55 10.0.0.1 8000 Auth=2
"TgtChapName" "TargetSecret1" "InitCHAPName" "InitialSecret1"
```

You must specify either the TSIH value or the ISID qualifier. If you specify the ISID qualifier, you must also specify the Target's ID address.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AddTargetPortal <MAC_Address> <Target_IP> <Port> [ImmediateData=<0|1>]
[HeaderDigest=<0|1>] [DataDigest=<0|1>] [Auth=<0|1|2> "TgtCHAPName"
"TgtSecret" "InitCHAPName" "InitSecret"]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Target_IP`	IP address of the target portal. You can specify an IPv4 or IPv6 IP address.
`Port`	Port number of the target portal (value: 1024-65535).
`ImmediateData`	0 = No 1 = Yes (default)
`HeaderDigest`	0 = None (default) 1 = CRC32C
`DataDigest`	0 = None (default) 1 = CRC32C
`Auth`	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP
`TgtCHAPNam`	Target CHAP name enclosed in quotes (string length: 1-256). Required when Auth=1 or 2.
`TgtSecret`	Target Secret enclosed in quotes (string length: 12-16). Required when Auth=1 or 2.
`InitCHAPName`	Initiator CHAP name enclosed in quotes (string length: 1-256). Required when Auth=2.
`InitSecret`	Initiator Secret enclosed in quotes (string length: 12-16). Required when Auth=2.

CleariSNSServer

This command clears the configured iSNS server and disables iSNS target discovery. If no iSNS server is currently configured or if two or more iSNS servers are defined, any attempt to use this command returns an error.

Note: This command works only if one iSNS server is defined.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CleariSNSServer <MAC_Address>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.

DelARPTableEntry

This command removes an ARP table entry.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DelARPTableEntry <MAC_Address> <Dest_MAC_Address> <Dest_IP_Address>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Dest_MAC_Address`	The destination MAC address to remove from the ARP table.
`Dest_IP_Address`	The destination IP address to remove from the ARP table.

DeleteiSNSServer

This command is used to delete an iSNS server from the current iSNS server list.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DeleteiSNSServer <MAC_Address> <IP_Address>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`IP_Address`	The IPv4 or IPv6 IP address of the iSNS server.

DelRouteTableEntry

This command removes a route table entry from the specified function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DelRouteTableEntry <MAC_Address> <Dest_IP_Address> <Subnet_Mask>
<Gateway>
```

Parameters

`MAC_Address`	MAC address of an iSCSI function.
`Dest_IP_Address`	Destination IP address to delete from the route table.
`Subnet_Mask`	Subnet Mask to delete from the route table.
`Gateway`	Gateway to delete from the route table.

DiscoveriSNSServer

This command discovers an iSNS server address through DHCP. If the DHCP server returns an iSNS server address, it replaces all manually configured iSNS servers and can be viewed using the ShowiSNSServer command.

Note: The OneConnect adapters can discover one iSNS Server, and the OCe14000-series adapters can discover up to four iSNS Servers.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
DiscoveriSNSServer <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

Note: iSNS is not supported on iSCSI functions running the Open iSCSI driver. In this case adding an iSNS server will not discover any iSCSI targets.

ExportiSCSI

This command outputs the iSCSI function and target information in the XML format. The output can be redirected to a specified file, and the file can be used for the ImportiSCSI command. This command only works o the local host.

Supported By

Windows Only

Syntax

```
ExportiSCSI
```

Example

In this example, the command exports all the iSCSI targets of all the adapters on the host. The output is re-directed to the file "targets.xml".

```
hbacmd ExportiSCSI > targets.xml
```

GetInitiatorProperties

This command shows all the initiator login options for the specified port.

These properties are set as the target portal's login properties to be used when discovering the targets on the target portal. The discovered targets inherit these properties.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetInitiatorProperties <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

GetiSCSILuns

This command shows all the LUNs and their information for a specified target. The command gathers the information from the iSCSI target indicated by the <iscsi_target_name> parameter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetiSCSILuns <MAC_Address> <iscsi_target_name>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

`iscsi_target_name` Target's iSCSI name enclosed in quotes (string length: 11-255)

GetiSCSIPortStats

This command shows all the iSCSI statistics for a specified function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetiSCSIPortStats <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

GetNetworkConfiguration

This command lists a port's TCP/IP information for IPv4 and IPv6 protocols for the iSCSI function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetNetworkConfiguration <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

Example

```
TCP/IP Configuration for 00-00-c9-ad-ad-b1:

VLAN Enabled:          No
VLAN ID:               0
Priority:              0

IPv4 Configuration:
DHCP Enabled:          Yes
IP Address:            10.192.81.204
Subnet Mask:           255.255.248.0
Gateway:               10.192.87.254

IPv6 Configuration:
Automatic Assignment:  No
Link Local Address:    fe80::a1d3:f062:f44a:7577
IP Address 1:          fd01::16
IP Address 2:          fd02::16
Gateway:               fd00::1
```

GetSessionInfo

This command lists all session information for a specified session.

You must specify the <iscsi_target_name> and either the <TSIH> of the session or the session's ISID Qualifier <ISID_Qual> and the target's IPv4 or IPv6 IP address <Target_IP>. These parameters tell the command to gather the information from the specified target and session. You can find the TSIH and ISID qualifier by running the ListSessions command.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetSessionInfo <MAC_Address> <iscsi_target_name> <TSIH | <ISID_Qual
Target_IP>>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`iscsi_target_name`	Target's iSCSI name enclosed in quotes (string length: 11–255).
`TSIH`	TSIH value of the session (value: 1–65535).
`ISID_Qual`	ISID qualifier of the session (value: 0–65535).
`Target_IP`	The Target's IP address. You can specify an IPv4 or IPv6 IP address.

ImportiSCSI

This command imports iSCSI function configuration and targets from an XML file to the iSCSI functions on the local host. The XML file is created by the ExportiSCSI command.

Supported By

Windows Only

Syntax

```
ImportiSCSI <Import_File> [clean]
```

Parameters

`Import_File`	The name of XML file containing import information that was generated by the ExportiSCSI command (see "ExportiSCSI" on page 95).

`clean` Erases entire iSCSI configuration on all iSCSI ports before importing targets.

Note: This command fails if the system is booted from an iSCSI target.

Example

In this example, the command imports the iSCSI targets found in the targets.xml file to the iSCSI ports found on the host, and erases the iSCSI configuration (including targets) of all iSCSI ports on these host before importing the targets.

```
hbacmd ImportiSCSI targets.xml clean
```

The example output:

```
All existing targets have been removed.
Added target iqn.2006-01.com.openfiler:target121-000.on.port.00-00-c9-be-1a-24
Added target iqn.2006-01.com.openfiler:target121-001.on.port.00-00-c9-be-1a-24
Added target iqn.2006-01.com.openfiler:target122-000.on.port.00-00-c9-2f-45-1b
Added target iqn.2006-01.com.openfiler:target122-001.on.port.00-00-c9-2f-45-1b
```

iSCSIPing

This command issues ICMP echo requests to an iSCSI target.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
iSCSIPing <MAC_Address> <IP_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

`IP_Address` IP address of target to send ICMP echo request. You can specify an IPv4 or IPv6 IP address.

ListSessions

This command lists all the sessions on a specified target. The command gathers the information from the iSCSI target indicated by the <iscsi_target_name> parameter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ListSessions <MAC_Address> <iscsi_target_name>
```

Parameters

MAC_Address	The MAC address of the an iSCSI function.
iscsi_target_name	Target's iSCSI name enclosed in quotes. The string length is 11–255.

RemoveTarget

This command removes the target with the specified iSCSI target name <iscsi_target_name>.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
RemoveTarget <MAC_Address> <iscsi_target_name>
```

Parameters

MAC_Address	The MAC address of an iSCSI function.
iscsi_target_name	Target's iSCSI name enclosed in quotes. The string length is 11–255.

RemoveTargetPortal

This command removes the Target Portal containing the IPv4 or IPv6 target IP <Target_IP> and the port <Port> from the list of target portals for the specified initiator.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
RemoveTargetPortal <MAC_Address> <Target_IP> <Port>
```

Parameters

MAC_Address	The MAC address of an iSCSI function.
Target_IP	The target portal's IP address. You can specify an IPv4 or IPv6 target IP address.
Port	The port number of the target portal. The possible values are 1024–65535.

SetBootTargetSession

This command enables and disables a iSCSI target's session as a boot session. If a session is enabled as a boot session and the system reboots, it attempts to boot from that target.

Depending on whether the target is logged in, there are two different ways to specify the session. If the target is logged in, use the <TSIH> parameter. If the target is not logged in, use the <ISID_Qual Target_IP> parameter. You can specify an IPv4 or IPv6 target IP address.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetBootTargetSession <MAC Address> <Target> <TSIH | <ISID_Qual
Target_IP>> <0|1>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Target`	Specifies the iSCSI name of the desired iSCSI target.
`TSIH`	TSIH value of the session. The possible values are 1–65535.
`ISID_Qual Target_IP`	ISID qualifier of the session. The possible values are 0–65535. You can specify an IPv4 or IPv6 Target IP address that the target is using depending on the adapter type.
`0|1`	Specifies the state of the BootProperty for the target: 0 = Disabled 1 = Enabled

SetInitiatorProperties

This command sets the initiator properties for the specified iSCSI function. It allows you to specify an initiator name <Initiator_Name> and an initiator alias <Initiator_Alias>. If you opt not to specify these fields, a default iSCSI name is assigned.

Except for the <Initiator_Name> and <Initiator_Alias> properties, these properties are set as the target portal's login properties to be used when discovering the targets on the target portal. The targets inherit the target portal's properties when they are discovered. The discovered target's login properties can be changed using the SetTargetProperties command.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser. Additionally, these properties are used for iSNS target discovery to set the discovered target's login properties.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "TgtCHAPName" and "TgtSecret", which is used by the target to authenticate the initiator. For example:

  ```
  hbacmd SetInitiatorProperties 00-11-22-33-44-55 Auth=1
  "TgtChapName" "TargetSecret1"
  ```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), not only do you need to specify the TgtCHAPName and TgtSecret, but you must also specify the InitCHAPName and InitSecret. The InitCHAPName and InitSecret are used for the initiator to authenticate the target. For example:

  ```
  hbacmd SetInitiatorProperties 00-11-22-33-44-55 Auth=2
  "TgtChapName" "TargetSecret1" "InitCHAPName" "InitialSecret1"
  ```

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetInitiatorProperties <MAC_Address> [Initiator_Name="initiator_name"]
[Initiator_Alias="initiator_alias"] [ImmediateData=<0|1>]
[HeaderDigest=<0|1>] [DataDigest=<0|1>] [Auth=<0|1|2> "TgtCHAPName"
"TgtSecret" "InitCHAPName" "InitSecret"]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Initiator_Name`	Initiator iSCSI name enclosed in quotes (string length: 1–224).
`Initiator_Alias`	Initiator iSCSI alias enclosed in quotes (string length: 0–32).
`ImmediateData`	0 = No 1 = Yes (default)
`HeaderDigest`	0 = None (default) 1 = CRC32C
`DataDigest`	0 = None (default) 1 = CRC32C
`Auth`	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP
`TgtCHAPNam`	Target CHAP name enclosed in quotes (string length: 1–256). Required when Auth=1 or 2.
`TgtSecret`	Target Secret enclosed in quotes (string length: 12–16).Required when Auth=1 or 2.
`InitCHAPName`	Initiator CHAP name enclosed in quotes (string length: 1–256).Required when Auth=2.
`InitSecret`	Initiator Secret enclosed in quotes (string length: 12–16).Required when Auth=2.

SetiSCSIBoot

This command defines whether a specific iSCSI function's Boot ROM is active.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetiSCSIBoot <MAC_Address> <0|1>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`0|1`	Specifies the iSCSI boot ROM state: 0 = Disabled 1 = Enabled

SetNetworkConfiguration

This command sets the TCP/IP configuration on a specified port. The required fields for this command depend upon the values set for <DHCP> and <VLAN_ENABLED>.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetNetworkConfiguration <MAC address> VLAN_Enabled=<0|1>[VLAN_ID=<0-4094>
Priority=<0-7>]DHCP=<0|1> [<IPv4_Address> <Subnet> [IPv4_Gateway]] [AA=<0|1>
[<LL=IPv6_Address> [RA1=IPv6_Address RA2=IPv6_Address] [GW6=IPv6_Address]]]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`VLAN_ENABLED`	0 = Disabled 1 = Enabled
`VLAN_ID`	VLAN ID of the interface. The possible values are 0–4095. **Note:** This value is specified only when VLAN is enabled.
`Priority`	VLAN priority of the interface. The possible values are 0–7. **Note:** This value is specified only when VLAN is enabled.

`DHCP` Dynamic Host Configuration Protocol for automatic IPv4 address assignment

0 = Disabled
1 = Enabled

Note: If the DHCP parameter is disabled, you must specify its parameters. For example, IPv4_Address, Subnet, and IPv4_Gateway.

`IPv4_Address` IPv4 address of initiator port. For example: 10.192.1.1.

Note: IPv4_Address is required when DHCP is disabled.

`Subnet` Subnet mask of initiator port. For example: 255.255.255.0.

Note: Subnet is required when DHCP is disabled.

`IPv4_Gateway` IPv4 gateway of initiator port. For example: 10.192.1.1.

Note: IPv4_Gateway is optional when DHCP is disabled.

`AA` Automatic IPv6 address assignment

0 = Disabled

1 = Enabled

Note: If the AA (automatic assignment) parameter is disabled, you must specify its parameters. For example, LL, RA1, RA2 and GW6.

`LL` Link local IPv6 address

Note: LL is required when AA is disabled, and ignored when AA is enabled.

`RA1` Routable IPv6 address 1

Note: RA1 is ignored if AA is enabled.

`RA2` Routable IPv6 address 2

Note: RA2 is ignored if AA is enabled.

`GW6` IPv6 gateway address

Note: GW6 is ignored if AA is enabled.

Notes

- VLAN_ID and Priority are required only if VLAN_ENABLED is enabled; otherwise, these values should be omitted.
- IPv4_Address and Subnet are required only if DHCP is disabled; otherwise these values should be omitted.
- At a minimum, the DHCP or AA parameter must be specified and, if required, their associated parameters as well. If either the DHCP or AA parameter is not specified an error results.

- The AA, LL, RA1, RA2, and GW6 parameters are only valid on OCe14000-series adapters.

SetTargetLoginProperties

This command sets the login and authentication properties associated with a specific target. This command requires that you specify a valid iSCSI target name <iscsi_target_name>. If you do not specify some of the remaining properties, these options are set to their default values. However, if no properties are changed, an error is generated. You must change at least one property for this command to return successfully.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "TgtCHAPName" and "TgtSecret", which is used by the target to authenticate the initiator. For example:

  ```
  hbacmd SetTargetLoginProperties 00-11-22-33-44-55 iscsitarget
  Auth=1 "TgtCHAPName" "TargetSecret1"
  ```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), not only do you need to specify the TgtCHAPName and TgtSecret, but you must also specify the InitCHAPName and InitSecret. The InitCHAPName and InitSecret are used for the initiator to authenticate the target. For example:

  ```
  hbacmd SetTargetLoginProperties 00-11-22-33-44-55 iscsitarget
  Auth=2 "TgtChapName" "TargetSecret1" "InitCHAPName"
  "InitialSecret1"
  ```

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetTargetLoginProperties <MAC_Address> <iscsi_target_name>
[ImmediateData=<0|1>] [HeaderDigest=<0|1>] [DataDigest=<0|1>]
[Auth=<0|1|2> "TgtCHAPName" "TgtSecret" "InitCHAPName" "InitSecret"]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI port.
`iscsi_target_name`	Target's iSCSI name enclosed in quotes (string length: 11–255).
`ImmediateData`	0 = No 1 = Yes (default)
`HeaderDigest`	0 = None (default) 1 = CRC32C
`DataDigest`	0 = None (default) 1 = CRC32C

Auth	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP
TgtCHAPNam	Target CHAP name enclosed in quotes (string length: 1–256). Required when Auth=1 or 2.
TgtSecret	Target Secret enclosed in quotes (string length: 12–16). Required when Auth=1 or 2.
InitCHAPName	Initiator CHAP name enclosed in quotes (string length: 1–256). Required when Auth=2.
InitSecret	Initiator Secret enclosed in quotes (string length: 12–16). Required when Auth=2.

SetTargetProperties

This command sets the ETO value of an iSCSI target.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetTargetProperties <MAC_Address> <iscsi_target_name> <ETO>
```

Parameters

MAC_Address	The MAC address of an iSCSI function.
iscsi_target_name	Target's iSCSI name enclosed in quotes (string length: 11–255).
ETO	The extended time out option for the target: • For Windows, valid values are 0–3600 • For Linux and Solaris, valid values are 0–30

SetTPLoginProperties

This command sets a target portal's login properties. This command requires that you specify a valid IPv4 or IPv6 Target IP <Target_IP> and Port <Port>. However, if you specify no options other than the Target IP and Port, no changes are made. You must change at least one of the optional parameters for this command to make any changes to the target portal's login properties.

These properties are used when discovering the targets on the target portal. The targets inherit the target portal's properties when they are discovered. Targets already discovered do not inherit the updated properties, only newly discovered targets inherit the properties.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "TgtCHAPName" and "TgtSecret". For example:

```
hbacmd SetTPLoginProperties 00-11-22-33-44-55 10.192.1.1 5050
Auth=1 "TgtChapName" "TargetSecret1"
```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), not only do you need to specify the TgtCHAPName and TgtSecret, but you must also specify the InitCHAPName and InitSecret. The InitCHAPName and InitSecret are used for the initiator to authenticate the target. For example:

```
hbacmd SetTPLoginProperties 00-11-22-33-44-55 10.192.1.1 5050
Auth=2 "TgtChapName" "TargetSecret1" "InitCHAPName"
"InitialSecret1"
```

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetTPLoginProperties <MAC_Address> <Target_IP> <Port>
[ImmediateData=<0|1>] [HeaderDigest=<0|1>] [DataDigest=<0|1>]
[Auth=<0|1|2> TgtCHAPName TgtSecret InitCHAPName InitSecret]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI port.
`Target_IP`	The IP address of the target portal. You can specify an IPv4 or IPv6 Target IP address.
`Port`	The port number of the target portal (value: 1024–65535).
`ImmediateData`	0 = No 1 = Yes (default)
`HeaderDigest`	0 = None (default) 1 = CRC32C
`DataDigest`	0 = None (default) 1 = CRC32C
`Auth`	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP
`TgtCHAPNam`	The Target CHAP name enclosed in quotes (string length: 1–256). Required when Auth=1 or 2.
`TgtSecret`	The Target Secret enclosed in quotes (string length: 12–16). Required when Auth=1 or 2.
`InitCHAPName`	The Initiator CHAP name enclosed in quotes (string length: 1–256). Required when Auth=2.
`InitSecret`	The Initiator Secret enclosed in quotes (string length: 12–16). Required when Auth=2.

ShowARPTable

This command shows the current ARP table for the specified iSCSI function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowARPTable <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

ShowiSNSServer

This command shows the currently configured Internet Storage Name ServerOCe14000-series adapters only support one iSNS server. OCe14000 adapters support up to four iSNS servers and include IPv6 addresses, as well as IPv4 addresses.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowiSNSServer <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

ShowRouteTable

This command shows the route table for an iSCSI function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowRouteTable <MAC_Address>
```

Parameters

`MAC_Address` The MAC address of an iSCSI function.

Example

```
hbacmd h=10.192.203.240 ShowRouteTable 00-00-c9-a0-ce-77
```

ShowTarget

This command shows the properties for a specified target or all targets for an iSCSI function. If you do not specify the iSCSI target name, all targets and their associated properties are returned.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowTarget <MAC_Address> [iscsi_target_name | refreshtargets]
```

Note: Only a single command option can be specified with this command. That is, you can only specify either iscsi_target_name or refreshtargets.

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`iscsi_target_name`	iSCSI target name of a specific target. If not specified, all targets for the iSCSI function are displayed.
`refreshtargets`	Refresh all targets before displaying the information.

ShowTargetPortal

This command shows the properties for a specified Target Portal. If the <Target_IP> and <Port> are not specified, all Target Portals and their associated properties return.

Supported By

Linux, Solaris, and Windows

Syntax

```
ShowTargetPortal <MAC_Address> [<Target_IP> <Port>]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI port.
`Target_IP`	IP address of the target portal. You can specify an IPv4 or IPv6 address.
`Port`	Port number of the target portal.

TargetLogin

This command logs in to a target. The iSCSI target name <iscsi_target_name> is the only mandatory option. The <target_portal> and <port> information are optional and

if they are not provided a default target portal is used. If you do not specify the remaining options, these options are set to their default values.

When you set the authentication method <Auth> to a value other than 0, you must set additional parameters. Each string should be enclosed in quotations to avoid mishandling by the Windows, Linux, Solaris, or VMware shell's parser.

- If you set the authentication method to "One-Way CHAP" (<Auth>=1), you must also specify the "TgtCHAPName" and "TgtSecret", which is used by the target t authenticate the initiator. For example:

  ```
  hbacmd TargetLogin 00-11-22-33-44-55 iscsitarget Auth=1
  "TgtChapName" "TargetSecret1"
  ```

- If you set the authentication method to "Mutual CHAP" (<Auth>=2), not only do you need to specify the TgtCHAPName and TgtSecret, but you must also specify the InitCHAPName and InitSecret. The InitCHAPName and InitSecret are used for the initiator to authenticate the target. For example:

  ```
  hbacmd TargetLogin 00-11-22-33-44-55 iscsitarget Auth=2
  "TgtChapName" "TargetSecret1" "InitCHAPName" "InitialSecret1"
  ```

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
TargetLogin <MAC address> <Target Name> [<Target IP> <Port>]
[HeaderDigest=<0|1>][ImmediateData=<0|1>][DataDigest=<0|1>][Auth=<0|1|
2> ["TgtCHAPName"] ["TgtSecret"] ["InitCHAPName"] ["InitSecret"]]
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`target_name`	The target's iSCSI name enclosed in quotes (string length: 11–255 characters).
`Target IP`	Target IP Address. You can specify an IPv4 or IPv6 Target IP address.
`Port`	The port number of the target portal. The possible values are 1024–65535.
`HeaderDigest`	0 = None (default) 1 = Uses CRC32C checksum
`ImmediateData`	0 = No 1 = Yes (default) for appending solicited data to a command.
`DataDigest`	0 = None (default) 1 = CRC32C checksum
`Auth`	0 = None (default) 1 = One-Way CHAP 2 = Mutual CHAP

TgtCHAPName	The Target CHAP name enclosed in quotes (string length: 1–255 characters). **Note:** The Target CHAP name is required it you set Auth to 1 or 2.
TgtSecret	The Target Secret enclosed in quotes (string length: 12–16 characters). **Note:** The Target CHAP name is required it you set Auth to 1 or 2.
InitCHAPName	The Initiator CHAP name enclosed in quotes (string length: 1–255 characters). **Note:** The Target CHAP name is required it you set Auth to 2.
InitSecret	The Initiator Secret enclosed in quotes (string length: 12–16 characters). **Note:** The Target CHAP name is required it you set Auth to 2.

TargetLogout

This command logs out of an iSCSI target session.

You must specify the iSCSI target name <iscsi_target_name> and either the TSIH <TSIH> of the session, or the session's ISID Qualifier <ISID_Qual> and the target's IP address <Target_IP>.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
TargetLogout <MAC_Address> <iscsi_target_name> <TSIH | <ISID_Qual
Target_IP>>
```

Parameters

MAC_Address	The MAC address of an iSCSI function.
iscsi_target_name	The target's iSCSI name enclosed in quotes (string length: 11–255).
TSIH	The TSIH value of the session. The possible values are 1–65535.
ISID_Qual	The ISID qualifier of the session. The possible values are 0–65535.
Target_IP	The target's IP address.

UpdateiSNSServer

This command updates a configured iSNS server and accepts IPv4 or IPv6 iSNS server addresses. This command requires the server IP <Server_IP> and port number <Port> of the iSNS server to be available to respond to the iSNS requests. If a single iSNS server

is configured, this command replaces the single iSNS server IP address with a new IP address. If no iSNS server is configured, this command adds a new iSNS server.

Note: If two or more iSNS servers are already configured, any attempt to use this command results in an error.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
UpdateiSNSServer <MAC_Address> <Server_IP> <Port>
```

Parameters

`MAC_Address`	The MAC address of an iSCSI function.
`Server_IP`	IP address of the iSNS server to configure. You can specify an IPv4 or IPv6 server IP address.
`Port`	Port number of the iSNS server to configure (value: 1024–65535).

LUN Masking Commands

The LUN Masking Commands group manage LUN masking activities.

Notes

- LUN Masking commands are supported for FC/FCoE functions only.
- Linux does not support the GetLunUnMaskByHBA, GetLunUnMaskByTarget, and SetLunMask commands.
- Solaris and VMware ESXi on a Windows remote host do not support the GetLunUnMaskbyHBA, GetLunUnMaskbyTarget, RescanLuns, and SetLunMask commands.

GetLunList

This command queries for the presence of any masked LUNs.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetLunList <HBA WWPN> <Target WWPN> <Option>
```

Parameters

`HBA WWPN`	The WWPN of an FC or FCoE function on the adapter.
`Target WWPN`	The WWPN of the target.

`Option`	0 = Get information from the driver 1 = Get information from the configuration

GetLunUnMaskByHBA

This command queries for the presence of any unmasked LUNs by FC/FCoE functions.

Supported By

Solaris and Windows

Syntax

```
GetLunUnMaskByHBA <HBA WWPN> <Option>
```

Parameters

`HBA WWPN`	The WWPN of an FC or FCoE port.
`Option`	0 = Get information from the driver 1 = Get information from the configuration

GetLunUnMaskByTarget

This command queries for any unmasked LUNs by target.

Supported By

Solaris and Windows

Syntax

```
GetLunUnMaskByTarget <HBA WWPN> <Target WWPN> <Option>
```

Parameters

`HBA WWPN`	The WWPN of an FC or FCoE function.
`Target WWPN`	The WWPN of the target.
`Option`	0 = Get information from the driver 1 = Get information from the configuration

RescanLuns

This command rescans LUNs to find any new LUNs.

Supported By

Linux, Solaris, and Windows

Syntax

```
RescanLuns <HBA WWPN> <Target WWPN>
```

Parameters

`HBA WWPN`	The WWPN of an FC or FCoE function.
`Target WWPN`	The WWPN of the target.

SetLunMask

This command masks the specified LUNs.

Supported By

Solaris and Windows

Syntax

```
SetLunMask <HBA WWPN> <Target WWPN> <Option> <Lun> <LunCount> <MaskOp>
```

Parameters

`HBA WWPN`	The WWPN of an FC or FCoE function.
`Target WWPN`	The WWPN of the target.
`Option`	0 = Get information from the driver 1 = Get information from the configuration (make persistent) 2 = Send information to both
`Lun`	The starting LUN number.
`LunCount`	The number of LUNs.
`MaskOp`	A = Mask LUN B = Clear unmask target level C = Clear unmask HBA level D = Unmask LUN E = Unmask target level F = Unmask HBA level

LUN ExpressLane Commands

The LUN ExpressLane Commands group enables, disables and displays the ExpressLane status on a particular LUN.

The OneCommand Manager application allows you set special priority queuing for selected LUNs by making them ExpressLane LUNs. ExpressLane LUN performance is superior to that of regular LUNs. You can enable ExpressLane LUNs attached to both physical and virtual ports. ExpressLane LUN assignments persist across system reboots.

Notes

- ExpressLane is only supported on LPe16000-series FC adapters.
- For Linux operating systems, if ExpressLane LUNs are created, the VPort needs to be recreated after a system boot because they do not persist across system

reboots. If the VPort is re-created with the same WWPN that the ExpressLane LUN was previously assigned to and that same LUN is then discovered, it will become an ExpressLane LUN again.

GetExpressLaneLunList

This command displays LUNs on a target and their respective ExpressLane status.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Notes

- For Linux and VMware operating systems, only ExpressLane-enabled LUNs are shown by this command. LUNS without ExpressLane-enabled support are not shown.
- ExpressLane LUNs are supported on 16 Gb FC ports only.

Syntax

```
GetExpressLaneLunList <WWPN> [vport=<vPort WWPN>] <Target WWPN>
<Option>
```

Parameters

`WWPN`	The WWPN of the FC function connected to the target or physical WWPN if virtual ports are selected.
`vPort WWPN`	The WWPN of an optional vPort allowing you to get the ExpressLane LUNs of a vPort.
`Target WWPN`	The WWPN of the target LUNs.
`Option`	0=Get information from driver
	1=Get information from configuration

Example

```
>hbacmd h=10.192.87.198 GetExpressLaneLunList 10:00:00:00:00:87:01:98
20:22:d4:ae:52:6e:6f:08 0

Number of LUNs: 4
      FCP_LUN        OS_LUN    ExpressLane
------------------  ------    -------------
0000 0000 0000 0000  0           No
0001 0000 0000 0000  1           Yes
0002 0000 0000 0000  2           No
0003 0000 0000 0000  3           Yes
```

SetExpressLaneLunState

This command enables or disables ExpressLane on a particular LUN.

Note: ExpressLane cannot be enabled for Masked LUNs.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetExpressLaneLunState <WWPN> [vport=<vPort WWPN>] <Target WWPN> <Lun>
<State> <Option>
```

Parameters

`WWPN`	The WWPN of the FC/FCoE function connected to the target or physical WWPN if virtual ports are selected.
`vPORT WWPN`	The WWPN of an optional vPort allowing you to set the state of a vPort LUN.
`Target WWPN`	The WWPN of the target LUNs.
`LUN`	The LUN number on which to set the ExpressLane status. **Note:** Obtain the LUN number from the output of the GetExpressLaneLunList command under the "OS LUN" column.
`State`	0=Disable ExpressLane, 1=Enable ExpressLane
`Option`	0=Set ExpressLane LUN state in driver temporary - until reboot 1=Set ExpressLane LUN state in the configuration to persist across reboots 2=Set ExpressLane LUN state in both driver and in the configuration to persist across reboots

Example

```
>hbacmd h=10.192.87.198 SetExpressLaneLUNState 10:00:00:00:00:87:01:98
20:22:d4:ae:52:6e:6f:08 2 1 2
```

Miscellaneous Commands

Commands in the Miscellaneous Command group do not fit in other groups. See specific command for adapter limitations.

AddHost

This command adds a host to the hosts file for remote TCP/IP management in the OneCommand Manager application. The adapters for these hosts are also presented by the ListHBAs command.

Supported By

Linux, Solaris, and Windows

Syntax

To add non-VMware ESXi hosts:

```
AddHost <hostname|IP_address>[:Port_Number]
   HostName:Name of host to add to hosts file
   IP_address:  IP address (IPv4 or IPv6) of host to add to hosts file
                Example IPv4: 10.192.80.102
                Example IPv6: fe80::6445:80e9:9878:a527
   Port_Number: Optional IP port number to access remote host
                Example: 10.192.80.102:9876
                Note: When specifying IPv6 address with Port_Number,
                it must be enclosed in [].
                Example: [fe80::6445:80e9:9878:a527]:9876
```

Notes

- An attempt is made to contact the host to confirm remote access before adding it to the host list. If the attempt fails, the host is not added.
- The "h=" option (for specifying an optional IP address or host name) after "hbacmd" is not available for the AddHost command.

To add VMware ESXi hosts to Windows the OneCommand Manager application:

```
m=cim [u=<username>] [p=<password>] [n=<namespace>] AddHost
<IP_Address>
```

If the username, password, and namespace are not specified, see "Default CIM Credentials" on page 31.

Parameters

`host_address` The IP address (using the IPv4 or IPv6 format) or the host name.

CnaClearEventLog

This command clears the event log for the adapter specified by the WWPN or MAC address.

Note: Supported for OneConnect and LPe16202 adapters only.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CnaClearEventLog <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FCoE function on the adapter.

`MAC` The MAC address of a NIC or iSCSI function on the adapter.

CnaGetEventLog

This command shows the adapter event log for the adapter specified by the WWPN or MAC address.

Note: Supported for OneConnect adapters only.

Supported By

Linux, Windows, and VMware ESXi on a Windows remote host

Syntax

```
CnaGetEventLog <WWPN|MAC>
```

Parameters

`WWPN` The WWPN of an FCoE function on the adapter.

`MAC` The MAC address of a NIC or iSCSI function on the adapter.

Download

This command downloads a firmware image to the port FC function or adapter specified by the WWPN or MAC address.

Notes

- For 16Gb HBA firmware downloads, the OneCommand Manager application only accepts ".grp" files.
- For OneConnect and LPe15000- and LPe16000-series adapters, while the WWPN or MAC address is used to identify the adapter, the updated firmware applies to the entire adapter. Older FC HBA models require downloading the firmware on each FC port.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
Download <WWPN|MAC> <FileName>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function on the adapter.

`MAC` The MAC address of a NIC or iSCSI function on the adapter.

`FileName` The name and location of the firmware image (any file accessible to the CLI client).

ExportSANInfo

For reporting purposes, this command captures the SAN information in ".xml" for XML-formatted files and ".csv" for CSV-formatted files. Since this command can output a large amount of information, Emulex recommends that you re-direct the output to a file.

Note: Due to the amount of information that must be obtained and reported, this command can take a long time on large SAN configurations.

Supported By

Linux, Solaris, and Windows

Syntax

```
ExportSANInfo [format]
```

Note: The "h=" option (for specifying an optional IP address or host name) after "hbacmd" is not available for the ExportSANInfo command.

Parameters

`format` An optional parameter that specifies the format of the adapter information:

- csv
- xml

Note: Leaving the format blank shows the data in xml format (default).

FecEnable

This command enables or disables FEC on LPe16000-series FC adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

FecEnable WWPN <0|1>

Parameters

WWPN	The WWPN of the FC function.
0	Disables FEC on the function
1	Enables FEC on the function

GetCimCred

This command shows the default credentials set for the CIM client.

Note: The password is encrypted.

Supported By

Windows

Syntax

```
GetCimCred
```

Parameters

None.

GetQoSInfo

This command shows the QoS information for a specified NIC function if multichannel support is enabled for the port on which the NIC function exists.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetQoSInfo <MAC_Address>
```

Parameters

MAC	The MAC address of a NIC function.

Example

```
hbacmd GetQoSInfo 00-00-c9-93-20f-d6
```

GetVPD

This command shows the port's VPD.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetVPD <WWPN|MAC>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`MAC`	The MAC address of a NIC or iSCSI function.

ListHBAs

This command shows a list of the manageable Emulex adapters found by local discovery. For a NIC-only or iSCSI adapter, the MAC address is displayed rather than the port WWN. The node WWN and fabric WWN are not displayed. The type of information listed may vary according to the adapter model.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ListHBAs [local] [m=model] [pt=type] [down]
```

Parameters

`local`	Displays only local adapters.
`m=model`	Model filter. Append * to the end of the model name for a wildcard match. For example: `LP9*`
`pt=type`	The port type filter. Valid types are NIC, RoCE, iSCSI, FC, and FCoE.
`down`	Displays only the NIC functions of OneConnect and LPe16202 adapters on the local system in which the adapter's ARM processor has stopped. This is used to detect adapters which need a core dump collected as well as ones that may not respond to commands from the OneCommand Manager CLI or application.

ListVFunctions

This command lists the virtual functions (SR-IOV) on a specified NIC function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ListVFunctions <MAC>
```

Parameters

MAC The MAC address of a NIC function.

Example

```
hbacmd ListVFunctions 00-00-c9-12-34-56
```

The example output:

```
Virtual Functions for 00-00-c9-12-34-56:

MAC Address    : 00-00-c9-12-34-ab
VLADID         : 10
Transmit Rate  : 100 Mbit/sec.

MAC Address    : 00-00-c9-12-34-cd
VLADID         : 10
Transmit Rate  : 100 Mbit/sec.

MAC Address    : 00-00-c9-12-34-ef
VLADID         : 10
Transmit Rate  : 1 bbit/sec.

MAC Address    : 00-00-c9-13-34-01
VLADID         : 20
Transmit Rate  : 1 Gbit/sec.
```

RemoveHost

This command removes a host from the hosts file use for TCP/IP management in the OneCommand Manager application GUI. The <host_address> can be an IP address, using the IPv4 or IPv6 format, or a host name.

Supported By

Linux, Solaris, and Windows

Syntax

For the remote management interface:

```
RemoveHost host_address
```

For VMware ESXi using the CIM interface:

```
m=cim RemoveHost <IP_Address>
```

Note: The “h=” option (for specifying an optional IP address or host name) after “hbacmd” is not available for the RemoveHost command.

Parameters

`host_address`	The host to remove.
`IP_Address`	The IP address of the host to remove.

Reset

This command resets the FC/FCoE function. An adapter reset can require several seconds to complete, especially for remote devices. When the reset is completed, the system command prompt is displayed.

Notes

- Supported for FC and FCoE functions only.
- For OneConnect and LPe16202 FCoE functions, this command only resets the driver to update changed driver parameters that require a driver reset. It does not cause a hardware reset of the FCoE function.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
Reset <WWPN>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.

SetCimCred

This command sets the default CIM credentials. You must specify all four credentials: username, password, namespace, and port number. Default credentials are used if any credential is not in the hbacmd command argument. After the default credentials for a host are set, any other command can be issued by specifying “m=cim”.

Supported By

Windows

Syntax

```
SetCimCred <username> <password> <namespace> <portnum>
```

Note: Use this command to set only the CIM credentials. After this is finished, subsequent hbacmd commands do not require you to specify the CIM credentials in the command line.

Parameters

`username`	Login User ID of the VMware ESXi.
`password`	The login password of the VMware ESXi.
`namespace`	The namespace where the Emulex provider is registered in the SFCB CIMOM of VMware ESXi, specifically "root/emulex".
`portnum`	The port number of the SFCB CIMOM listening to, that is, 5988 (HTTP) or 5989 (HTTPS).

SRIOVEnable

This command enables or disables SR-IOV on a NIC function or all NIC functions on an OCe14000-series adapter.

Notes

- This command is not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. The following error will be returned:

  ```
  ERROR: <251>: Hardware or firmware does not support command.
  ```

- SR-IOV is not supported with RoCE configurations.
- SRIOVEnable will return an error if any channel management is enabled.
- For OCe11000-series adapters, this command enables/disables SR-IOV only on the NIC function specified. For OCe14000-series adapters, this command enables or disables SR-IOV on all NIC functions on the adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SRIOVEnable <MAC> <0|1>
```

Parameters

`MAC`	The MAC address of a NIC function.
`0|1`	0 = Disables SR-IOV 1 = Enables SR-IOV

Example

The following command enables SR-IOV on NIC function with MAC address 00-00-c9-12-34-56:

```
hbacmd SRIOVEnable 00-00-c9-12-34-56 1
```

TargetMapping

This command shows a list of mapped targets and the LUNs for the port.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
TargetMapping <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FoE adapter.

VEPAEnable

This command enables or disables VEPA Management. VEPA Management is only supported for OCe1400x NIC ports which have SR-IOV enabled. For all other board types and port types, this feature is undefined, and this command returns a "Hardware Does Not Support" error.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
VEPAEnable <MAC> <0|1>
```

Parameters

`MAC` The MAC Address of the NIC function.

`0|1` The VEPA state:

0 = Disabled

1 = Enabled

Note: The current VEPA state for the NIC function is displayed by the PortAttributes command.

Version

This command shows the current version of the OneCommand Manager CLI Client.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

For the remote management interface:

```
Version
```

Note: The "h=" option (for specifying an optional IP address or host name) after "hbacmd" is not available for the Version command.

For VMware ESXi using the CIM interface:

```
h=<IP address> m=cim Version
```

Parameters

None

Persistent Binding Commands

The Persistent Binding Commands group facilitates persistent binding operations.

In a remote environment, you can perform persistent bindings operations from a host running any operating system (including Linux or VMware ESXi), but only to a remote host that is running Windows or Solaris.

For a binding to take effect immediately (that is, SetPersistentBinding parameter: Scope = I or B), the <SCSIBus> and <SCSITarget> parameters must match the SCSI bus and SCSI target to which the FC target is already automapped. If automapping is disabled, the binding takes effect immediately if the FC target is not already persistently bound, and the specified <SCSIBus> and <SCSITarget> parameters are available to be persistently bound. Also, the <BindType> parameter must match the currently active bind type. Otherwise, you are notified that you must reboot the system to cause the persistent binding to become active.

Notes

- These commands are supported for FC/FCoE ports only.
- The following persistent binding commands are not supported on Linux or VMware ESXi:
  - BindingCapabilities
  - BindingSupport
  - PersistentBinding
  - RemoveAllPersistentBinding
  - RemovePersistentBinding
  - SetPersistentBinding
  - SetBindingSupport

AllNodeInfo

This command shows target node information for each target accessible by the adapter.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
AllNodeInfo <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

BindingCapabilities

This command shows the binding capabilities of the adapter. If a binding is configured, it is maintained across reboots.

Supported By

Solaris and Windows

Syntax

```
BindingCapabilities <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

BindingSupport

This command shows the binding support for the FC/FCoE function.

Supported By

Solaris and Windows

Syntax

```
BindingSupport <WWPN> <Source>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`Source` C = Configuration support
L = Live support

PersistentBinding

This command specifies which set of persistent binding information (configuration or live state) is requested.

Supported By

Solaris and Windows

Syntax

```
PersistentBinding <WWPN> <Source>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`Source`	C = Configuration support L = Live support

RemoveAllPersistentBinding

This command removes all persisting bindings for the FC/FCoE function.

Supported By

Solaris and Windows

Syntax

```
RemoveAllPersistentBinding <WWPN>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.

RemovePersistentBinding

This command removes persistent binding between an FC target and a SCSI bus and target. The binding to be removed can be to a target WWPN, target WWNN, or target D_ID.

Supported By

Solaris and Windows

Syntax

```
RemovePersistentBinding <WWPN> <BindType> <ID> <SCSIBus> <SCSITarget>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`BindType`	P = Remove binding by WWPN N = Remove binding by WWNN D = Remove binding by D_ID
`ID`	The type of ID based on <BindType>: • Target WWPN if <BindType> = P • Target WWNN if <BindType> = N • Target D_ID if <BindType> = D

SCSIBus	The bus number of the SCSI device.
SCSITarget	The target number of the SCSI device.

SetBindingSupport

This command enables and sets the binding support(s) for the FC/FCoE function.

Supported By

Solaris and Windows

Syntax

```
SetBindingSupport <WWPN> <BindFlag>
```

Parameters

WWPN	The WWPN of an FC or FCoE function.
BindFlag	The type of binding support for the adapter: D = Binding by D_ID (not available for Windows driver) P = Binding by WWPN N = Binding by WWNN (not available for Windows driver) A = Binding by automap (not available for Windows driver) DA = Binding by D_ID and automap PA = Binding by WWPN and automap NA = Binding by WWNN and automap

SetPersistentBinding

This command sets a persistent binding between an FC target and a SCSI bus target. The binding can be to a target WWPN, target WWNN, or target D_ID.

Supported By

Solaris and Windows

Syntax

```
SetPersistentBinding <WWPN> <Scope> <BindType> <TargetId> <SCSIBus>
<SCSITarget>
```

Parameters

WWPN	The WWPN of an FC or FCoE function.
Scope	P = Permanent binding (survives reboot) I = Immediate binding B = Binding is both permanent and immediate

`BindType`	P = Enable binding by WWPN N = Enable binding by WWNN D = Enable binding by D_ID
`TargetId`	If BindType = P, Target WWPN If BindType = N, Target WWNN If BindType = D, Target D_ID
`SCSIBus`	The bus number of the SCSI device.
`SCSITarget`	The target number of the SCSI device.

Personality Change Commands

The OneCommand Manager application enables you to change the personality or protocol running on OneConnect adapters. If you change the personality of the adapter and reboot the host, the adapter starts running the new personality. The personalities that the OneConnect adapters currently run are NIC-only, NIC + FCoE, NIC + iSCSI, and NIC + RoCE for OCe14000-series adapters.

Notes

- For NFS on Linux, choose the RoCE-1 profile.
- For SMB Direct on Windows Server 2012 and Windows Server 2012 R2, choose the RoCE-2 profile.
  - Check the Implementer's Lab on the Emulex website for any updated information on additional use cases.
- It is possible to install one (or more) driver kits for the current personality profile, then change the personality profile and no longer have the drivers necessary to run the adapter. If you change personality profiles, you must install the appropriate drivers. The appropriate drivers are available on the Emulex website.
- These commands are not available on LPe16202 adapters.

ChangePersonality

This command changes the personality on the adapter. It is the only way to change the personality of an OCe11000-series adapter. For an OCe14000-series adapter, ChangePersonality is an efficient way to set all ports on the adapter to run the same protocols.

However, the OCe14000-series adapter is capable of running different protocols on different ports. If you wish to set different protocols on different ports, use the SetAdapterPortConfig command. See “SetAdapterPortConfig” on page 137 for more information.

After a successful personality change, a reboot is required.

Note: RoCE is only available on OCe14000-series adapters.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ChangePersonality <WWPN|MAC> <type> [Profile_ID]
```

Parameters

`WWPN`	The WWPN of an FCoE function on the adapter.
`MAC`	The MAC address of a NIC, NIC+RoCE, or iSCSI function on the adapter.
`type`	The personality type to which the adapter is being changed. The available values are shown when using the "ShowPersonalities" command. See "ShowPersonalities" on page 132.
`Profile_ID`	Optionally specifies the profile ID number to used to identify the personality. This number can be obtained from the "ListProfiles"command on page 136 by looking at the "Active Profile ID" field.

Notes

- Profile_ID is only required when specifying a NIC or NIC+RoCE personality. For all other personalities, Profile_ID should not be specified.
- Selecting a profile that cannot be used with the specified personality results in an error.

Example

Changing to FCoE personality:

```
hbacmd ChangePersonality 00-12-34-56-78-9A fcoe
```

Changing to FCoE personality:

```
hbacmd changepersonality 00-00-c9-12-34-56 fcoe
```

Changing to NIC + RoCE personality with Profile ID 21:

```
hbacmd ChangePersonality 00-00-c9-12-34-56 nic+roce 21
hbacmd ShowPersonalities 00-00-c9-12-34-56

Adapter Personalities:
NIC
NIC+RoCE (configured)
iSCSI
FCoE (active)
```

ShowPersonalities

This command displays the list of single personalities available on an adapter. The personality type is displayed as either NIC, NIC + RoCE, iSCSI, or FCoE.

Notes

- If the active configuration is not a single personality (OCe14000-series only), the active personality indicators are not displayed.
- The available personalities are adapter dependent.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ShowPersonalities <WWPN|MAC>
```

Parameters

WWPN	The WWPN of an FCoE function on the adapter.
MAC	The MAC address of a NIC, NIC + RoCE or iSCSI function on the adapter.

Example

```
>hbacmd showpersonalities 00-00-c9-12-34-56

Adapter Personalities:
NIC
NIC+RoCE
iSCSI
FCoE (active) (configured)
```

Profile Management Commands

The Profile Management Commands group manages profile configuration for OCe14000-series adapters. You can display active and reboot port configurations for an adapter, list available profile IDs, and configure the function protocol for all ports on OCe14000-series adapters.

GetAdapterPortConfig

This command displays the active and reboot adapter port configurations of an OCe14000-series adapter. This includes the total number of ports, the maximum number of FCoE and iSCSI functions that can be defined, and whether mixed mode and concurrent mode storage are supported by the adapter. Additionally, it shows if RoCE is supported on the adapter and if a reboot is currently required to activate the new configuration.

The number of functions displayed per port depends upon the current configuration of the adapter, such as mixed or concurrent storage mode, multichannel, or NPar.

Notes

- In the information displayed for the reboot configuration, each of the ports displays the pN parameter name in parenthesis. The pN parameter is used in the SetAdapterPortConfig command to change the port's protocol assignments. This is helpful when the physical port numbering on the adapter does not start at 0.
- Depending upon the presence of ARI on a host, this command may show more partitions per port than are actually running on the host.
- For multichannel and Dell NPar configurations, this command only displays the port protocol assignments. For the entire multichannel configuration use the "CMGetParams" command on page 58.
- While "Flex" is displayed in the output for the GetAdapterPortConfig command as the multichannel type for HP adapters currently running in Flex mode, you cannot specify "Flex" for the "mctype" parameter of the SetAdapterPortConfig command. The only mctype parameter that can be specified on HP UMC-capable adapters is "UMC".

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetAdapterPortConfig <MAC|WWPN>
```

Parameters

`MAC` MAC address of any iSCSI, or NIC, NIC + RoCE function on the adapter.

`WWPN` WWPN of any FCoE function on the adapter.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Mixed Mode -- 4 Port Adapter	See page 133.
Concurrent Mode -- 2 port adapter, port number starting at 1	See page 134.
Concurrent Mode - UMC	See page 135.
RoCE + NIC	See page 135.

Mixed Mode-4 Port Adapter

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
```

```
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : No
ROCE Functions Allowed      : Yes
RebootRequired              : No

Active Configuration
  Profile ID  : 37
  MCType      : None SR-IOV State: disabled
  Port Assignments:
    Port 0: NIC,iSCSI
    Port 1: NIC,iSCSI
    Port 2: NIC,FCoE
    Port 3: NIC,FCoE

Reboot Configuration
  Profile ID  : 37
  MCType      : None SR-IOV State: disabled
  Port Assignments:
    Port 0 (p0): NIC,iSCSI
    Port 1 (p1): NIC,iSCSI
    Port 2 (p2): NIC,FCoE
    Port 3 (P3): NIC,FCoE

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Concurrent Mode - 2 port adapter, port number starting at 1

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 2
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 37
  MCType      : None SR-IOV State: disabled
  Port Assignments:
    Port 1: NIC,iSCSI,FCoE
    Port 2: NIC,iSCSI,FCoE
```

```
Reboot Configuration
  Profile ID  : 23
  MCType      : None SR-IOV State: disabled
  Port Assignments:
    Port 1 (p0): NIC,FCoE,None
    Port 2 (p1): NIC,FCoE,None

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Concurrent Mode - UMC

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : No

Active Configuration
  Profile ID  : 37
  MC Type     : UMC SR-IOV State: disabled
  Port Assignments:
    Port 0: NIC,iSCSI,FCoE,NIC
    Port 1: NIC,iSCSI,FCoE,NIC
    Port 2: NIC,FCoE,NIC,NIC
    Port 3: NIC,iSCSI,NIC,NIC

Reboot Configuration
  Profile ID  : 37
  MC Type     : UMC SR-IOV State: disabled
  Port Assignments:
    Port 0 (p0): NIC,iSCSI,FCoE,NIC
    Port 1 (p1): NIC,iSCSI,FCoE,NIC
    Port 2 (p2): NIC,FCoE,NIC,NIC
    Port 3 (p3): NIC,iSCSI,NIC,NIC

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

NIC+RoCE

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
```

```
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : No

Active Configuration
  Profile ID  : 21
  MC Type     : None SR-IOV State: disabled
  Port Assignments:
    Port 0: NIC+RoCE,None,None
    Port 1: NIC,None,None
    Port 2: NIC+RoCE,None,None
    Port 3: NIC,None,None

Reboot Configuration
  Profile ID  : 21
  MC Type     : None SR-IOV State: disabled
  Port Assignments:
    Port 0 (p0): NIC+RoCE,None,None
    Port 1 (p1): NIC,None,None
    Port 2 (p2): NIC+RoCE,None,None
    Port 3 (p3): NIC,None,None

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

ListProfiles

This command shows a list of the available profile IDs and their descriptions for an adapter including the currently active and configured profile IDs. This information helps to determine the appropriate profile ID to specify to the ChangePersonality and SetAdapterPortConfig commands required for RoCE and NIC-only configurations. The specific profiles listed may vary according to the adapter model.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ListProfiles <MAC|WWPN>
```

Parameters

MAC MAC address of any NIC, NIC+RoCE or iSCSI function on the adapter.

WWPN WWPN of any FC/FCoE function on the adapter

Example

Note: Different adapter models will have a different set of profiles.

```
>hbacmd ListProfiles 00-00-c9-12-34-56

Active Profile ID: 23
Configured Profile ID:  23

Available Profiles
ID  Description
--  --------------------------------

16  NIC
17  ISCSI initiator, no DIF
19  FCOE initiator + Target, with DIF
20  RoCE-1
21  RoCE-2
23  FCOE initiator + Target, no DIF
24  NIC - ETS Disabled
36  Mixed Storage, 25% ISCSI initiator only, 75% FCOE, no DIF
37  Mixed Storage, 50% ISCSI initiator only, 50% FCOE, no DIF
38  Mixed Storage, 75% ISCSI initiator only, 25% FCOE, no DIF
```

SetAdapterPortConfig

This command configures the function protocol assignments for all ports on an OCe14000-series adapter. It can also be used to restore the adapter to its factory default profile and settings.

The number of ports and function protocol assignments specified in this command depends upon the available ports, storage mode (mixed or concurrent), and multichannel and NPar state.

To support up to 16 functions on an adapter, ARI must be available on the system with the following conditions: the system hardware, such as the motherboard and BIOS, must support ARI, ARI must be enabled in the system BIOS, the operating system must support ARI, such as the Windows Server 2012 and later, and any management tools that you use must support ARI, such as OneCommand Manager 10.2 and later. If these conditions are not met, although you may configure all 16 functions, only eight functions will be present and discovered by the OneCommand Manager application after a reboot.

This command can also be used to enable or disable SR-IOV on the entire adapter.

Notes

- SR-IOV is not supported with RoCE configurations.
- SR-IOV is not supported for multichannel configurations, including NPar.
- For a Linux or VMware operating system, SR-IOV must be enabled on the system BIOS when NParEP is used. See the documentation that accompanied your Dell server for more information.
- NParEP support is available only on Dell 13G or newer systems.
- Only OCe14000-series adapters support ARI.
- You cannot specify "Flex" for the "mctype" parameter of the SetAdapterPortConfig command. The only mctype parameter that can be specified on HP UMC-capable adapters is "UMC" even though "Flex" is displayed in the output for the GetAdapterPortConfig and the CMGetParams commands as the multichannel type for HP adapters currently running in Flex mode.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
SetAdapterPortConfig <MAC|WWPN> defaults
```

or

```
SetAdapterPortConfig <MAC | WWPN> p0=fcnCfg [p1=fcnCfg] [p2=fcnCfg]
[p3=fcnCfg] [pid=ProfileID] [mctype=Type]
[NParEpMode=State][sriov=SriovState]
```

Parameters

`MAC`	MAC address of any iSCSI, NIC or NIC+RoCE function on the adapter.
`WWPN`	WWPN of any FCoE function on the adapter
`defaults`	Sets the adapter port configuration back its factory default configuration. No additional parameters should be specified with the "default" parameter.
`p0=fcnCfg`	First port's function
`p1=fcnCfg`	Second port's function (required for 2 and 4 port adapters)
`p2=fcnCfg`	Third port's function (required for 4 port adapters)
`p3=fcnCfg`	Fourth port's function (required for 4 port adapters)

`fcnCfg` :: f0[,f1[,...fM]] where:

f0	1st function protocol on port (must be NIC or NIC+RoCE).
f1	2nd function protocol on port (optional).
fm	Mth function protocol on port (optional). The number of functions per port, the value of "M", are model and multichannel type specific.

`pid=ProfileID` This parameter is required when specifying a NIC only or NIC+RoCE personality. Otherwise this parameter must be omitted.

`mctype=Type` Optional multichannel type specification. This parameter is required to enable multichannel. Specify "None" to disable multichannel. If you do not specify an mctype, no change to the configured multichannel type is made. Multichannel types are listed below.

Restrictions	Options: Type =
None	None
None	UMC[a]
IBM only	vNIC1
IBM only	SIMode
IBM only	UFP
Dell only	NPar

a. This option is not available for IBM or Dell.

`NParEpMode=State` NParEP Mode state (DELL Only). This parameter can only be specified when mctype=NPar. See "NParEP Mode" on page 150 for more information.

0=Disable, 1=Enable sriov=SriovState (0=disabled, 1=enabled)

Note: The protocols specified by the f0-fm parameters are the names displayed by the ShowProperties command.

The following rules apply when using this command with non-NPar multichannel enabled:

- There must be no spaces before or after the "=" and commas (,) in the port specification. For instance, "p0 = nic, iscsi" would cause an error.
- The only choice for f0 is NIC or NIC+RoCE. Choices for f1 through fm are "None", iSCSI, FCoE or NIC. NIC for f1 through fm can only be specified for multichannel configurations. Except for NPar, iSCSI and FCoE are limited to f1 and f2.
- This command will fail under the following conditions:
  - Two storage protocols on a port are specified and concurrent storage mode is not available.

  - Three storage protocols on a port are specified.
  - Two of the same storage protocols on a port are specified.
- NIC+RoCE can only be specified as the f0 parameter with no other "f" parameters specified and cannot be specified with multichannel configurations. If NIC+RoCE is specified for any of the port functions, all other port function specifications must be NIC or NIC+RoCE only. For example, a single NIC or NIC+RoCE function per port is all that is allowed. Also, NIC+RoCE can only be specified when mctype=none.
- The number of functions (f) specified depends upon the adapter model and configuration type, for example, non-multichannel, multichannel, RoCE, and NPar. If an incorrect number of functions are specified, an error is generated.
- The pid=ProfileID option is required for NIC+RoCE configurations. If it specified and the profile does not work with the specified port functions, an error is generated.
- f0 must always be specified. However if the rest of the functions on a port can be set to "None", they do not need to be specified. For example, p0=NIC,iSCSI p1=NIC,None could be specified as p0=NIC,iSCSI p1=NIC.
- Storage protocols can be configured on f1 or f2 or both, however, you must be aware of whether you are configuring in "concurrent mode" or "mixed mode."
  - If you are configuring storage protocols in "concurrent mode," f1 and f2 cannot be assigned the same storage protocol.
  - If you are configuring storage protocols in "mixed mode," only f1 or f2 can be assigned a storage protocol, but not both.
- If mctype is specified, it must be an available multichannel type or set to "None" to disable multichannel. If not specified, the currently configured multichannel type (including "None") remains unchanged. See page 139 for supported multichannel types.
- If the functions being set to "None" are the last function(s) on a port, they do not need to be specified. For example, p0=nic,iscsi,none can be shortened to p0=nic,iscsi.
- NParEP Mode can only be specified when the mctype= parameter is set to NPar or when the currently configured multichannel type is NPar.
- When disabling NPar, that is mctype=none, NParEP Mode is automatically disabled.
- A reboot is required to activate the new port configuration.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Mixed Mode	See page 140.
Concurrent Mode -- 2 Ports	See page 141.
RoCE	See page 142.

Mixed Mode with SR-IOV

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic,iscsi
p1=nic,fcoe p2=nic,fcoe p3=nic sriov=1

>hbacmd GetAdapterPortConfig 00-00-c9-12-34-56
Number of Ports              : 4
Maximum FCoE Functions       : 4
Maximum iSCSI Functions      : 4
Mixed Mode I/O Allowed       : Yes
Concurrent Mode I/O Allowed  : No
ROCE Functions Allowed       : Yes
RebootRequired               : Yes

Active Configuration
 Profile ID  : 37
 MCType      : None
 SR-IOV State: Disabled
 Port Assignments:
   Port 0: NIC,iSCSI
   Port 1: NIC,FCoE
   Port 2: NIC,iSCSI
   Port 3: NIC,FCOE

Reboot Configuration
  Profile ID : 37
  MCType     : None SR-IOV State: Enabled
  Port Assignments:
    Port 0 (P0): NIC,iSCSI
    Port 1 (P1): NIC,FCoE
    Port 2 (P2): NIC,FCoE
    Port 3 (P3): NIC,None
    Note:  (pN)labels are the port parameter names to use in the
           SetAdapterPortConfig command (e.g. p0=NIC,FCoE 1=NIC,iSCSI).
```

Concurrent Mode - 2 ports

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic,iscsi,fcoe
p1=nic,fcoe

>hbacmd GetAdapterPortConfig 00-00-c9-12-34-56
Number of Ports             : 2
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
```

```
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 33
  MCType      : None
  SR-IOV State: Disabled
  Port Assignments:
     Port 1: NIC,iSCSI,FCoE
    Port 1: NIC,iSCSI,FCoE

Reboot Configuration
  Profile ID  : 33
  MCType      : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 1 (p0): NIC,iSCSI,FCoE
    Port 2 (p1): NIC,FCoE,None
    Note:  (pN)labels are the port parameter names to use in the
           SetAdapterPortConfig command (e.g. p0=NIC,FCoE 1=NIC,iSCSI).
```

RoCE

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic+roce p1=nic
p2=nic p3=nic+roce pid=21
>hbacmd GetAdapterPortConfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent I/O Mode Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 37
  MCType      : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 0: NIC,iSCSI,FCoE
    Port 1: NIC,FCoE,None
    Port 2: NIC,iSCSI,None
    Port 3: NIC,None,None
```

```
Reboot Configuration
  Profile ID  : 21
  MCType      : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 0 (p0): NIC+RoCE,None,None
    Port 1 (p1): NIC,None,None
    Port 2 (p2): NIC,None,None
    Port 3 (p3): NIC+RoCE,None,None
    Note:  (pN)labels are the port parameter names to use in the
           SetAdapterPortConfig command (e.g. p0=NIC,FCoE 1=NIC,iSCSI).
```

Multichannel Configurations

For additional information about universal multichannel, see the *Universal Multichannel Reference Guide*.

Note: ARI must be available to support sixteen functions on an adapter. OCe14000-series adapters automatically support ARI. However, the system's motherboard must support ARI, it must be enabled in the system BIOS, and the operating system must support ARI. If these conditions are not met, although you may configure all sixteen functions, only eight functions will be present and discovered by the OneCommand Manager application after a reboot.

Enabling and Disabling Multichannel

Use the "mctype" parameter in the SetAdapterPortConfig command to enable or disable multichannel on an adapter. This parameter is required to enable multichannel. For a list of supported mctypes, see page 141.

Disable multichannel on an adapter by setting the "mctype" to "None." When enabling multichannel, the additional function protocols must be specified for the extra channels that are not available when multichannel is disabled.

Note: The CMMode command used to enable or disable multichannel for OCe11100-series adapters cannot be used on OCe14000-series adapters. If it is used, an error message is generated. Use the SetAdapterPortConfig command to enable or disable multichannel for OCe14000-series adapters.

Examples

Enable Multichannel for UMC

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic,iscsi,nic,nic
p1=nic,fcoe,nic,nic p2=nic,fcoe,nic,nic p3=nic,iscsi,nic,nic
mctype=umc
```

Disable Multichannel

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic,iscsi p1=
nic,fcoe p2=nic,fcoe p3=nic,iscsi mctype=none
```

Showing Multichannel Configuration

The CMGetParams command shows the current multichannel configuration for an adapter's physical port. See "CMGetParams" on page 58 for more information.

Setting Channel Protocols using SetAdapterPortConfig

Use the SetAdapterPortConfig command to configure the protocols running on the channels or functions.

The following rules apply when using SetAdapterPortConfig with non-NPar multichannel enabled:

- The first function must always be "NIC"; other functions can be "None."
- If NIC+RoCE is specified on any port, all other ports must be either NIC or NIC+RoCE only.
- Storage functions cannot be specified on adapters running NIC+RoCE.
- RoCE cannot be specified for any multichannel configurations.
- This command fails under the following conditions:
  - Two storage protocols are specified for f1 and f2 and concurrent storage mode is not available.
  - Three storage protocols are specified on a port.
  - The f2 and f3 storage protocols are the same.
- For mixed mode, f2 through fm must be NIC or "None".
- For concurrent mode, f3 must be NIC or "None".
- The optional "mctype=" parameter can specify the multichannel type or be set to "None" to disable multichannel. If the "mctype=" parameter is not specified, the currently configured multichannel type is not changed.

Note: You must reboot your system after running this command to run the new protocols assigned to the channels.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Mixed Mode--UMC 4 Port, 4 Channels/Port	See page 144.
Enable UMC on 2 Port - 8 Channels/Port	See page 145.

Mixed Mode - UMC 4 Port, 4 Channels/Port

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56 p0=nic,iscsi,nic,nic
p1=nic,fcoe,nic,nic p2=nic,fcoe,nic,nic p3=nic,iscsi,nic,nic
mctype=umc


Successfully changed port configuration. A reboot is required to
complete changes.


>hbacmd GetAdapterPortConfig 00-00-c9-12-34-56
```

```
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : No
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 37
  MC Type     : UMC
  SR-IOV State: Disabled
  Port Assignments:
    Port 0: NIC,NIC,NIC,NIC
    Port 1: NIC,NIC,NIC,NIC
    Port 2: NIC,NIC,NIC,NIC
    Port 3: NIC,NIC,NIC,NIC

Reboot Configuration
  Profile ID  : 37
  MC Type     : UMC
  SR-IOV State: Disabled
  Port Assignments:
    Port 0 (p0): NIC,iSCSI,NIC,NIC
    Port 1 (p1): NIC,FCoE,NIC,NIC
    Port 2 (p2): NIC,FCoE,NIC,NIC
    Port 3 (p3): NIC,iSCSI,NIC,NIC

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Enable UMC on 2 Port - 8 Channels/Port

```
>hbacmd SetAdapterPortConfig 00-00-c9-12-34-56
p0=nic,iscsi,fcoe,nic,nic,nic,nic,nic p
1= nic,fcoe,iscsi,nic,nic,nic,nic,nic mctype=UMC

Successfully changed port configuration. A reboot is required to
complete changes.

>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
```

```
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 37
  MC Type     : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 0: NIC,iSCSI,FCoE
    Port 1: NIC,FCoE,iSCSI

Reboot Configuration
  Profile ID  : 37
  MC Type     : UMC
  SR-IOV State: Disabled
  Port Assignments:
    Port 0 (p0): NIC,iSCSI,FCoE,NIC,NIC,NIC,NIC,NIC
    Port 1 (p1): NIC,FCoE,iSCSI,NIC,NIC,NIC,NIC,NIC

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Setting Multichannel Bandwidths

See “CMSetBW” on page 61 for more information.

Dell NPar Configurations

Note: NParEP must be available to support sixteen functions on an adapter. OCe14000-series adapters automatically support NParEP. However, the system’s motherboard must support NParEP, it must be enabled in the system BIOS, and the operating system must support NParEP. If these conditions are not met, although you will be required to configure all sixteen functions, only eight functions will be present and discovered by the OneCommand Manager application after a reboot.

Enabling and Disabling NPar

To enable NPar, set the “mctype” parameter in the SetAdapterPortConfig command to “NPar”. When enabling NPar, the additional function protocols must be specified for the extra channels or they will be set to “None”; meaning that there is no protocol running on the function. Disable NPar by setting “mctype” to “None”.

Notes

- The existing CMMode command, used to enable or disable multichannel for OCe11100-series adapters, cannot be used to enable or disable NPar. Using the CMMMode command to enable or disable NPar displays an error message indicating that the command is not supported by the firmware or hardware.
- When NPar is disabled, NParEP Mode is automatically disabled as well. It is not necessary to specify the nparepmode= parameter on the command line when disabling NPar (mctype=none), and an error is generated if you attempt to do so.
- After enabling NPar with the SetAdapterPortConfig command, default bandwidths will be automatically assigned to each partition with an assigned protocol. See "Default NPar Bandwidths" on page 155 for more information.
- SR-IOV can only be enabled when NPar is disabled.

Showing NPar Configuration

Both the GetAdatperPortConfig command and the CMGetParams command show different aspects of the NPar configuration.

Showing NPar Configuration Using GetAdapterPortConfig

The GetAdatperPortConfig command displays all of the adapter's ports and the functions running on each port. It also shows the state of NParEP Mode. See "GetAdapterPortConfig" on page 132 for more information.

Examples Using GetAdatperPortConfig

Use the following table to locate the appropriate examples for your application.

Example Types	Location
NPar disabled - 2 Ports, NParEP Mode Disabled	See page 147.
NPar enabled - 2 Ports, NParEP Mode Enabled on Reboot	See page 148.

NPar disabled - 2 Ports, NParEP Mode Disabled

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : No

Active Configuration
  Profile ID  : 16
  MC Type     : None
```

```
  SR-IOV State: Enabled
  Port Assignments:
    Port 1: NIC
    Port 2: NIC

Reboot Configuration
  Profile ID  : 16
  MC Type     : None
  SR-IOV State: Enabled
  Port Assignments:
    Port 1 (p0): NIC
    Port 2 (p1): NIC

    Note:(pN) labels are the port parameter names to use in the
         SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

NPar enabled - 2 Ports, NParEP Mode Enabled on Reboot

```
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 37
  MC Type     : NPAR
  SR-IOV State: Disabled
  Port Assignments:
    Port 1: NIC,iSCSI,FCoE,NIC
    Port 2: NIC,iSCSI,FCoE,NIC

Reboot Configuration
  Profile ID  : 37
  MC Type     : NPAR
  SR-IOV State: Disabled
  NParEP Mode : Enabled
  Port Assignments:
    Port 1 (p0): NIC,iSCSI,NIC,NIC,NIC,NIC,NIC,NIC
    Port 2 (p1): NIC,iSCSI,FCoE,NIC,NIC,NONE,NONE,NONE
```

```
Note:(pN) labels are the port parameter names to use in the
     SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Showing NPar Configuration Using CMGetParams

The CMGetParams command shows the current NPar configuration for an adapter's physical port. When NPar is enabled, "CMGetParams" shows the function information such as the protocol and bandwidths. See "CMGetParams" on page 58 for more information.

When you are using NPar, this command displays the adapter's active (booted) mode as NPar or None, the configured mode as NPar or None, and the available management mode, which is NPar only. This is followed by a table showing the specified port's functions and function properties. When NPar is active, the Type column shows the protocol that is running on each function.

Examples Using CMGetParams

Use the following table to locate the appropriate examples for your application.

Example Types	Location
NPar Disabled	See page 149.
NPar Enabled — 8 Partitions/Port	See page 149.

NPar Disabled

```
>hbacmd cmgetparams 00-00-c9-12-34-56
Active Mode:     None
Configured mode: None
Available modes: NPAR
```

NPar Enabled — 4 Partition/Port

```
>hbacmd cmgetparams 00-00-c9-12-34-56
Active Mode:     NPAR
Configured mode: NPAR
Available modes: NPAR

Func# Type  MAC Address       Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   20     75
4     iSCSI 00-00-c9-12-34-57   60     100
8     FCoE  00-00-c9-12-34-58   40     100
12    NONE  00-00-c9-12-34-59   0      0
```

NPar Enabled — 8 Partitions/Port

```
>hbacmd cmgetparams 00-00-c9-12-34-56
Active Mode:     NPAR
Configured mode: NPAR
```

```
Available modes: NPAR

Func# Type  MAC Address       Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   10     50
2     iSCSI 00-00-c9-12-34-57   20     100
4     NIC   00-00-c9-12-34-58   10     50
6     FCoE  00-00-c9-12-34-59   30     100
8     NIC   00-00-c9-12-34-5A   10     50
10    NIC   00-00-c9-12-34-5B   10     50
12    NIC   00-00-c9-12-34-5C   10     50
14    NIC   00-00-c9-12-34-5C   0      50
```

NParEP Mode

When using NPar adapters, you can change the total number of partitions displayed and configured on the adapter to eight when the NParEP Mode property is disabled or up to 16 when the NParEP Mode property is enabled. Use the "nparepmode" parameter in the SetAdapterPortConfig command to enable or disable this property. See page 139 for mor information.

Notes

- When NPar is disabled, NParEP Mode is automatically disabled too. It is not necessary to specify the "nparepmode" parameter on the command line when disabling NPar by setting the "mctype" parameter to "None".
- After enabling or disabling NParEP Mode with the SetAdapterPortConfig command, default bandwidths will be automatically assigned to each partition with an assigned protocol. See "Default NPar Bandwidths" on page 155 for more information.

Syntax

```
SetAdapterPortConfig <MAC | WWPN> p0=fcnCfg [p1=fcnCfg] [p2=fcnCfg]
[p3=fcnCfg] [pid=ProfileID] [mctype=Type]
[NParEpMode=State][sriov=SriovState]
```

Parameters

`MAC`	MAC address of any iSCSI, NIC or NIC+RoCE function on the adapter.
`WWPN`	WWPN of any FCoE function on the adapter
`defaults`	Sets the adapter port configuration back its factory default configuration. No additional parameters should be specified with the "default" parameter.
`p0=fcnCfg`	1st port's function
`p1=fcnCfg`	2nd port's function (required for 2 and 4 port adapters)

`p2=fcnCfg` 3rd port's function (required for 4 port adapters)

`p3=fcnCfg` 4th port's function (required for 4 port adapters)

`fcnCfg` :: f0[,f1[,...fM]] where:

f0	1st function protocol on port (must be NIC or NIC+RoCE).
f1	2nd function protocol on port (optional).
fm	Mth function protocol on port (optional). The number of functions per port, the value of "M", are model and multichannel type specific.

`pid=ProfileID` This parameter is required when specifying a NIC only or NIC+RoCE personality. Otherwise this parameter must be omitted.

`mctype=Type` Optional multichannel type specification. This parameter is required to enable multichannel. Specify "None" to disable multichannel or NPar if you are using the NParEP mode. If you do not specify an mctype, no change to the configured multichannel type is made.

`NParEpMode=State` NParEP Mode state (DELL Only). This parameter can only be specified when mctype=NPar. See "NParEP Mode" on page 150 for more information.

1 = enables the NParEP Mode to display and configure 16 functions.

0 = disables the NParEP Mode to display and configure 8 functions only.

sriov=SriovState (0=disabled, 1=enabled

Setting NPar Function Protocols

When NPar is enabled, the protocols for additional functions on each port can be specified depending upon the board model, the number of ports available on the adapter, and the NParEPMode setting, otherwise they will be set to "None"; meaning there is no protocol running on the function. The SetAdapterPortConfig command configures the protocols running on each function.

After enabling NPar mode with the SetAdapterPortConfig command, default bandwidths will be automatically assigned to each partition with an assigned protocol. See "Default NPar Bandwidths" on page 155 for more information.

The following rules apply when using the SetAdapterPortConfig command with multichannel enabled to configure NPar:

- First function on a port is always NIC. NIC+RoCE is not available when NPar is enabled.

- Storage can be configured on the 2nd, 3rd or 4th partitions only. A total of 2 different storage protocols can be configured on a port.
- Any partition other than the first partition can be configured as “None”; that is for no protocol.
- A reboot is required after executing this command to run the new protocols assigned to the functions.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
4 Ports - NParEP Mode-Disabled, 2 Functions/Port	See page 152.
2 Ports - NParEP Mode-Disabled, 4 Functions/Port	See page 153.
4 Ports - NParEPMode-Enabled, 4 Functions/Port	See page 154.

4 Ports - NParEP Mode-Disabled, 2 Functions/Port

```
>hbacmd setadapterportconfig 00-00-c9-12-34-56 p0=nic,iscsi
p1=nic,fcoe p2=nic,fcoe p3=nic,iscsi mctype=npar nparepmode=0

Successfully changed port configuration. A reboot is required to
complete changes.

>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 16
  MC Type     : NPAR
  Port Assignments:
    Port 1: NIC,NIC
    Port 2: NIC,NIC
    Port 3: NIC,NIC
    Port 4: NIC,NIC

Reboot Configuration
  Profile ID  : 37
  MC Type     : NPAR
  NParEP Mode : Disabled
```

```
  Port Assignments:
    Port 1 (p0): NIC,iSCSI
    Port 2 (p1): NIC,FCoE
    Port 3 (p2): NIC,FCoE
    Port 4 (p3): NIC,iSCSI

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

2 Ports - NParEP Mode-Disabled, 4 Functions/Port

```
>hbacmd setadapterportconfig 00-00-c9-12-34-56 p0=nic,iscsi,nic,fcoe
p1=nic,fcoe,iscsi,nic mctype=npar nparepmode=0

Successfully changed port configuration. A reboot is required to
complete changes.

>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 2
Maximum FCoE Functions      : 2
Maximum iSCSI Functions     : 2
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : No
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 16
  MC Type     : None
  Port Assignments:
    Port 1: NIC
    Port 2: NIC

Reboot Configuration
  Profile ID  : 33
  MC Type     : NPAR
  NParEP Mode : Disabled
  Port Assignments:
    Port 1 (p0): NIC,iSCSI,NIC,FCoE
    Port 2 (p1): NIC,FCoE,iSCSI,NIC

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

4 Ports - NParEPMode-Enabled, 4 Functions/Port

```
>hbacmd setadapterportconfig 00-00-c9-12-34-56 p0=nic,iscsi,fcoe,nic
p1=nic,iscsi,none,nic p2=nic,iscsi,nic,fcoe p3=nic,nic,iscsi,none
mctype=npar nparepmode=1

Successfully changed port configuration. A reboot is required to
complete changes.
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 33
  MC Type     : NPAR
  SR-IOV State: Disabled
  Port Assignments:
    Port 1: NIC,NIC,NIC,NIC
    Port 2: NIC,NIC,NIC,NIC
    Port 3: NIC,iSCSI,NIC,FCoE
    Port 4: NIC,iSCSI,FCoE,None

Reboot Configuration
  Profile ID  : 33
  MC Type     : NPAR
  SR-IOV State: Disabled
  NParEP Mode : Enabled
  Port Assignments:
    Port 1 (p0): NIC,iSCSI,FCoE,NIC
    Port 2 (p1): NIC,iSCSI,None,NIC
    Port 3 (p2): NIC,iSCSI,NIC,FCoE
    Port 4 (p3): NIC,NIC,iSCSI,None

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

Setting NPar Bandwidths

After enabling NPar with the SetAdapterPortConfig command, default bandwidths are set for each partition that is enabled. Use the CMSetBW command to configure new bandwidths if the default bandwidths are not acceptable. See "CMSetBW" on page 61 for more information.

Note: A partition is referred to as a channel in the CMSetBW help.

The number of bandwidth combinations that need to be specified depend upon the adapter model. See "GetAdapterPortConfig" on page 132 to determine how many bandwidths need to be specified for a port by looking at the number of functions indicated for each port number under "Reboot Configuration". The example below shows that there are four functions for each port number under "Reboot Configuration", which requires that four sets of bandwidths be specified; a minimum and a maximum.

Note: If too many or too few minimum and maximum bandwidth combinations are provided, an error is generated.

The total of the minimum bandwidths for the enabled functions, such as partitions assigned protocols, must add up to 100. While you are allowed to set the minimum bandwidths on some enabled functions to 0, you are not allowed to set them all to 0. The maximum bandwidth of a partition must be greater than or equal to the minimum bandwidth for that partition up to a maximum of 100. The minimum and maximum bandwidths on disabled functions, those configured for "None", must be 0.

Notes

- A reboot is not required for bandwidth changes to take effect when channel management is enabled or when currently running NPar on the adapter.
- Setting the minimum and maximum bandwidths to zero will not bring the logical link down on the NPar function nor prevent receiving or transmitting packets on that function as a small amount of network traffic trickles through.

Default NPar Bandwidths

After enabling or disabling NParEP Mode or NPar, the default bandwidths that are automatically assigned to each partition with an assigned protocol have minimum and maximum bandwidths. The default minimum bandwidths are set by dividing 100 by the number of partitions with assigned protocols to run on them. This may cause an uneven distribution when 100 divides evenly by the number of partitions; meaning some partitions minimum bandwidths may be one greater than others. The maximum bandwidth defaults to 100 for all partitions with assigned protocols.

Note: If default bandwidths are not desirable, use the CMSetBW command to configure the minimum and maximum bandwidths. See "CMSetBW" on page 61 for more information.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
4 Partitions/Port	See page 156.
4 Partitions/Port - 3rd, 4th Partition Protocol=None	See page 156.
8 Partitions/Port - 2 Port Card, NParEP Mode Enabled, Last Channel MinBandwith=0	See page 156.

4 Partitions/Port

```
>hbacmd CMSetBW 00-00-c9-12-34-56 15,50 30,100 40,100 15,50

>hbacmd CMGetParams 00-00-c9-12-34-56
Active mode:     NPAR
Configured mode: NPAR
Available modes: NPAR

Func# Type  MAC Address       Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   15     50
1     iSCSI 00-00-c9-12-34-57   30     100
2     FCoE  00-00-c9-12-34-58   40     100
3     NIC   00-00-c9-12-34-59   15     50
```

4 Partitions/Port - 3rd, 4th Partition Protocol=None

```
>hbacmd CMSetBW 00-00-c9-12-34-56 50,100 60,100 0,0 0,0

>hbacmd CMGetParams 00-00-c9-12-34-56
Active mode:     NPAR
Configured mode: NPAR
Available modes: NPAR

Func# Type  MAC Address       Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   40     100
1     iSCSI 00-00-c9-12-34-57   60     100
2     None  00-00-c9-12-34-58   0      0
3     None  00-00-c9-12-34-59   0      0
```

8 Partitions/Port - 2 Port Card, NParEP Mode Enabled, Last Channel MinBandwith=0

```
>hbacmd cmsetbw 00-00-c9-12-34-56 10,100, 30,100 10,100, 10,100,
10,100, 10,100, 10,100, 10,100
```

```
>hbacmd cmgetparams 00-00-c9-12-34-56
Active mode:     NPAR
Configured mode: NPAR
Available modes: NPAR

Func# Type  MAC Address       Min BW Max BW
----- ----- ----------------- ------ ------
0     NIC   00-00-c9-12-34-56   10     100
1     iSCSI 00-00-c9-12-34-57   40     100
2     NIC   00-00-c9-12-34-58   10     100
3     NIC   00-00-c9-12-34-59   10     100
4     NIC   00-00-c9-12-34-5a   10     100
5     NIC   00-00-c9-12-34-5b   10     100
6     NIC   00-00-c9-12-34-5c   10     100
7     NIC   00-00-c9-12-34-5d   0      100
```

Configuring Ports When Disabling NPar

When NPar is being disabled, each of the ports can be configured to run with a single NIC or NIC+RoCE function. Use SetAdapterPortConfig command to configure these ports. See "SetAdapterPortConfig" on page 137 for more information.

The syntax when disabling NPar is the following:

```
SetAdapterPortConfig <MAC> <p0=NIC|NIC+RoCE> <p1=NIC|NIC+RoCE>
[p2=NIC|NIC+RoCE] [p3=NIC|NIC+RoCE] [pid=20|21]
```

where:

```
  MAC          : MAC address of one of the NIC functions on the adapter
  p0=NIC|NIC+RoCE : Protocol to run on 1st port (NIC or NIC+RoCE)
  p1=NIC|NIC+RoCE : Protocol to run on 2nd port (NIC or NIC+RoCE)
  p2=NIC|NIC+RoCE : Protocol to run on 3rd port, if available (NIC or
NIC+RoCE)
  p3=NIC|NIC+RoCE : Protocol to run on 2nd port, if available (NIC or
NIC+RoCE)
  pid=20|21    : Required when setting any port to NIC+ROCE
(NIC+RoCE-1=20, NIC+RoCE-2=21)
```

Note: When specifying any of the ports to run NIC+RoCE for example, p1=RoCE, the RoCE Profile ID must be specified. It can be either 20 or 21 depending upon the preferred protocol. See "ChangePersonality" on page 130 for more information.

Examples

Use the following table to locate the appropriate examples for your application.

Example Types	Location
Disable NPar - 4 Ports, All NIC	See page 158.
2 Ports - Switching from all NIC to NIC+RoCE on First Port. Run Profile 21: RoCE-2	See page 158.

Disable NPar - 4 Ports, All NIC

```
>hbacmd setadapterportconfig 00-00-c9-12-34-56 p0=nic p1=nic p2=nic
p3=nic mctype=none sriov=0

Successfully changed port configuration. A reboot is required to
complete changes.
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 4
Maximum FCoE Functions      : 4
Maximum iSCSI Functions     : 4
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 33
  MC Type     : NPAR
  SR-IOV State: Disabled
  Port Assignments:
    Port 1: NIC,iSCSI,FCoE,NIC
    Port 2: NIC,iSCSI,None,NIC
    Port 3: NIC,iSCSI,NIC,FCoE
    Port 4: NIC,iSCSI,FCoE

Reboot Configuration
  Profile ID  : 16
  MC Type     : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 1 (p0): NIC
    Port 2 (p1): NIC
    Port 3 (p2): NIC
    Port 4 (p3): NIC

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

2 Ports - Switching from all NIC to NIC+RoCE on First Port. Run Profile 21: RoCE-2

```
>hbacmd setadapterportconfig 00-00-c9-12-34-56 p0=nic+roce p1=nic
pid=21 mctype=none
```

```
Successfully changed port configuration. A reboot is required to
complete changes.
>hbacmd getadapterportconfig 00-00-c9-12-34-56
Number of Ports             : 2
Maximum FCoE Functions      : 2
Maximum iSCSI Functions     : 2
Mixed Mode I/O Allowed      : Yes
Concurrent Mode I/O Allowed : Yes
ROCE Functions Allowed      : Yes
RebootRequired              : Yes

Active Configuration
  Profile ID  : 16
  MC Type     : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 1: NIC
    Port 2: NIC

Reboot Configuration
  Profile ID  : 21
  MC Type     : None
  SR-IOV State: Disabled
  Port Assignments:
    Port 1 (p0): NIC+RoCE
    Port 2 (p1): NIC

    Note: (pN) labels are the port parameter names to use in the
          SetAdapterPortConfig command (e.g. p0=NIC,FCoE p1=NIC,iSCSI).
```

UMC Commands

The adapter's physical ports provide a converged conduit for network and storage traffic. Each channel has its own unique MAC address. Each channel provides traffic management capabilities such as enabling and disabling, minium and maximum bandwidth, and VLAN ID (for untagged packets). For additional information on UMC, refer to the *Emulex Universal Multichannel Reference Guide*.

The CLI's UMC commands allow viewing of the UMC configuration, enabling and disabling of the UMC at the adapter level, and the modification of some of the channel properties. The UMC commands cannot be used to manage other channel management types; see "Channel Management Commands" on page 57 for more information.

UMC commands are available only on OneConnect adapters.

Notes

- SR-IOV is not supported with UMC.
- The UMC command "UmcSetChanLink" is no longer available. Its functionality can be performed by the "UmcSetBw" command by setting the min and max bandwidths to 0.
- Properties for all channels on a port can be viewed and modified with the UMC commands even when UMC is disabled. This allows enabling and configuration of UMC (on all channels), and rebooting and running UMC without further configuration.
- For IBM adapters, UMC mode may be referred to as "SIMODE".
- The UMC commands are not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. When attempting to use UMC commands with these adapters, the following error is returned:

  ```
  ERROR: <251>: Hardware or firmware does not support command.
  ```

UmcEnable

This command enables or disables UMC on OCe11100-series adapters at the adapter level. A system reboot is required to make the change take effect.

Notes

- The UmcEnable command will enable UMC channel management only, but it will disable any channel management type in effect when it is used.
- The CMMode command can also be used to enable UMC or other channel management modes.
- If you are using an OCe14000-series adapter, you must set the mctype parameter in the SetAdapterPortConfig command to enable UMC. See the SetAdapterPortConfig command for more information.

  If you try using the UmcEnable command on an OCe14000-series adapter, an error message is displayed indicating the command is not supported by the firmware or hardware.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
UmcEnable <WWPN | MAC Address> <0 | 1>
```

Parameters

WWPN	WWPN of the FCoE function on the adapter.
MAC Address	MAC address of any NIC function on the adapter.
0	Disables UMC or SIMode
1	Enables UMC or SIMode

Example

```
>hbacmd UmcEnable 00-00-c9-bb-cc-aa 1
```

UmcGetParams

Note: This command has been replaced by the CMGetParams command and is provided for backward compatibility for OCe11100-series adapters only.

This command shows the current UMC configuration for an adapter's physical port. The command's output is the current UMC state for the adapter followed by a table showing the port's channels and their UMC properties. The Type property also shows the protocol that is running on the channel. This is controlled by the ChangePersonality and SetAdapterPortConfig commands; not the UMC commands. See "ChangePersonality" on page 130 and "SetAdapterPortConfig" on page 137 for more information.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
UmcGetParams <WWPN | MAC Address>
```

Parameters

WWPN	WWPN of an FCoE function on the port.
MAC Address	MAC address of any NIC function on the port.

Example

All NIC

```
>hbacmd UmcGetParams 00-00-c9-bb-cc-aa

Active UMC State:       Enabled
Configured UMC State:   Enabled

Func# Type  MAC Address          LPVID  Min BW  Max BW
----- ----  -----------------    -----  ------  ------
0     NIC   00-00-c9-bb-cc-aa      2       25      50
1     NIC   00-00-c9-bb-cc-ab      3       0       0
```

```
2     NIC   00-00-c9-bb-cc-ac      4       25      50
3     NIC   00-00-c9-bb-cc-ad      5       50      75
```

NIC Plus Storage

```
>hbacmd UmcGetParams 00-00-c9-bb-cc-aa

Active UMC State:       Enabled
Configured UMC State:   Enabled

Func# Type  MAC Address          LPVID  Min BW  Max BW
----- ----  -----------------    -----  ------  ------
0     NIC   00-00-c9-bb-cc-aa     1001    20      50
1     FCoE  00-00-c9-bb-cc-ab     n/a     50      100
2     NIC   00-00-c9-bb-cc-ac     1002    20      50
3     NIC   00-00-c9-bb-cc-ad     1003    10      75
```

UmcSetBW

Note: This command has been replaced by the CMSetBW command and is provided for backward compatibility for OCe11100-series adapters only.

This command sets the minimum and maximum bandwidths for each channel (up to four) on the physical port. This command can also be used to disable the link on a channel by setting the minimum and maximum bandwidths of that channel to 0.

The total of the minimum bandwidths must add up to 100. An exception to this rule is for UMC/SIMODE configurations when both the minimum and maximum bandwidth for all channels are 0; effectively bringing the logical link down on all channels. The maximum bandwidth must have a value greater than or equal to the minimum bandwidth and have a maximum value of 100.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
UmcSetBW <WWPN | MAC Address> <Min0,Max0> <Min1,Max1> <Min2,Max2>
[Min3,Max3]
```

Parameters

`MAC Address`	MAC address of any NIC function on the port.
`WWPN`	WWPN of the FCoE function on the port.
`Min0,Max0`	Minimum and maximum bandwidths for channel 0.
`Min1,Max1`	Minimum and maximum bandwidths for channel 1.
`Min2,Max2`	Minimum and maximum bandwidths for channel 2.
`Min3,Max3`	Minimum and maximum bandwidths for channel 3.

Example

```
>hbacmd UmcSetBW 00-00-c9-bb-cc-aa 25,50 0,50 50,75 25,100
```

Considerations

- This command is not supported on 1 Gb ports.
- If UMC is disabled when this command is executed, a warning message will be displayed indicating that UMC is currently disabled and must be enabled for these changes to take effect.

UmcSetLPVID

Note: This command has been replaced by the CMSetLPVID command and is provided for backward compatibility for OCe11100-series adapters only.

This command sets the LPVID values for the UMC and SIMode NIC channels. Use the UmcGetParams command to determine the number of LPVIDs required. See "UmcGetParams" on page 161 for more information.

A reboot is not required for these changes take effect when UMC is enabled

Note: When the current multichannel mode is not UMC or SIMode, the UmcSetLPVID command fails.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
UmcSetLPVID <WWPN|MAC> <LPVID0> <LPVID1> ... [LPVIDn]
```

Parameters

`WWPN`	WWPN of an FCoE function on the port.
`MAC`	MAC address of any NIC or iSCSI function on the port.
`LPVID0`	LPVID for channel 0.
`LPVID1`	LPVID for channel 1.
`LPVIDn`	LPVID for channel n.

Considerations for Using UmvSetLPVID

- LPVID values are in the range of 2-4094.
- Every NIC channel on a physical port must have a unique LPVID.
- For FCoE and iSCSI channels, '0' must be entered because LPVIDs can only be specified for NIC channels.
- LPVIDs specified for channels with protocols set to "None" are ignored.
- This command is not supported on 1 Gb ports.

- If channel management is disabled when this command is executed, an error message is displayed.

Examples

All NIC Channels

```
>hbacmd UmcSetLPVID 00-00-c9-12-34-56 1001 1002 1003 1004
```

Storage on 2nd channel

```
>hbacmd UmcSetLPVID 00-00-c9-12-34-56 1001 0 1002 1003
```

vPort Commands

The vPort Commands group manages virtual ports and functions on FC/FCoE adapters only.

Notes

- Supported by FC and FCoE adapter functions only.
- In Linux, VPorts do not persist across system reboots. VPorts must be recreated after a system reboot.

CreateVPort

This command creates a virtual port with an automatically-generated WWPN or a user-specified virtual WWPN on the specified physical port. If you specify "auto", the virtual WWPN is generated automatically. Otherwise, you must specify the virtual WWPN for this parameter. If creation is successful, the WWPN is displayed as part of the output from the command. The [vname] optional parameter can be specified for the virtual port's name.

Supported By

Linux, Solaris, and Windows

Syntax

```
CreateVPort <physical WWPN> auto [vname]
```

-or-

```
CreateVPort <physical WWPN> <virtual WWPN> <virtual WWNN> [vname]
```

Parameters

`physical WWPN`	The WWPN of an FC or FCoE function.
`auto`	The virtual WWPN is automatically generated for the virtual port.
`vname`	The virtual port's name (optional).
`virtual WWPN`	The virtual WWPN to create.
`virtual WWNN`	The virtual WWNN to create.

DeleteVPort

This command deletes the virtual port specified by a physical and virtual WWPN.

Supported By

Linux, Solaris, and Windows

Syntax

```
DeleteVPort <physical WWPN> <virtual WWPN>
```

Parameters

`physical WWPN` The WWPN of an FC or FCoE function.

`virtual WWPN` The WWPN of the virtual port.

ListVPorts

This command lists virtual ports on the specified physical FC/FCoE function. Leaving the physical WWPN parameter blank lists all virtual ports on all manageable hosts that support virtual ports.

Supported By

Linux, Solaris, and Windows

Syntax

```
ListVPorts <physical WWPN>
```

Parameters

`physical WWPN` The WWPN of an FC or FCoE function.

VPortTargets

This command lists targets visible to the specified virtual port.

Supported By

Linux, Solaris, and Windows

Syntax

```
VPortTargets <physical WWPN> <virtual WWPN>
```

Parameters

`physical WWPN` The WWPN of an FC or FCoE function.

`virtual WWPN` The WWPN of the virtual port.

WWN Management Commands

WWN Management Commands group validates WWNs carefully to avoid WWPN duplication; WWNN duplication is acceptable however. You may see error and warning messages if a name duplication is detected. Emulex recommends that the activation requirement be fulfilled after each WWN is changed or restored. When running with "pending changes", some diagnostic and maintenance features are not allowed.

Note: Supported for FC/FCoE functions only.

ChangeWWN

This command changes the volatile state of WWNs. If the volatile change is requested on an adapter that does not support volatile WWNs, a "not supported" error is returned.

Notes

- When a volatile change is supported, a reboot is required to activate the new setting. Volatile names are active until system power-down or adapter power-cycle.
- For VMware ESXi:
  - After changing the WWN of a function, update your zoning settings before you reboot your ESXi server. If the zoning is not updated before your reboot, the subsequent boot may take a long time.
  - After changing the WWN of a function, you must reboot the ESXi system before trying to access the adapter on that system. For information on rebooting the ESXi system, refer to the VMware documentation.
- For ESXi: If you are using the CIM interface to access functions, after changing the WWN of a function, you must restart the CIMOM (that is, SFCB) on the ESXi system before trying to access the function on that system. For information on restarting the CIMOM, refer to the VMware documentation.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ChangeWWN <WWPN> <New WWPN> <New WWNN> <Type>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`New WWPN`	The WWPN of the FC or FCoE function.
`New WWNN`	The WWNN of an FC or FCoE function.
`Type`	0 = Volatile 1 = Non-Volatile

GetWWNCap

This command shows if volatile change is supported for the WWPN.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
GetWWNCap <WWPN>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

ReadWWN

This command reads different types of WWNs.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
ReadWWN <WWPN> <Type>
```

Parameters

`WWPN` The WWPN of an FC or FCoE function.

`Type` 0 = Volatile
1 = Non-Volatile
2 = Factory Default
3 = Current
4 = Configured

RestoreWWN

This command changes the WWNs to the factory default or non-volatile values. The change is non-volatile.

Notes

- A reboot is required to activate the new setting.
- For VMware ESXi: After changing the WWN of an function, you must reboot the ESXi system before trying to access the adapter on that system. For information on rebooting the ESXi system, see the VMware documentation available from the VMware website.
- For ESXi: If you are using the CIM interface to access adapters, after changing the WWN of a function, you must restart the CIMOM (that is, SFCB) on the ESXi system before trying to access the function on that system. For information on

restarting the CIMOM, see the VMware documentation available from the VMware website.

Supported By

Linux, Solaris, Windows, and VMware ESXi on a Windows remote host

Syntax

```
RestoreWWN <WWPN> <Type>
```

Parameters

`WWPN`	The WWPN of an FC or FCoE function.
`Type`	0 = Restore Default WWNs 1 = Restore NVRAM WWNs

Appendix A. OneCommand Manager Error Messages

Table A-1, OneCommand Manager Error Messages, on page 169 contains a list of some of the error messages that may be encountered during a OneCommand Manager session.

Table A-1 OneCommand Manager Error Messages

Error Message	Command(s)	Description
`Warning: SR-IOV is not enabled at an adapter-wide level.` `Run the SetAdapterPortConfig command in order to enable SR-IOV on all NIC functions.`	GetAdapterPortConfig	This message is displayed following the normal output of the GetAdapterPortConfig command indicating that not all NIC functions have SR-IOV enabled.
`Error: Read-only management mode is currently set on this host. The requested command is not permitted in this mode.`	Active management commands that change a property on an adapter or host.	This message is returned when certain commands are attempted when the CLI is configured for read-only mode. See "CLI in Read-Only Mode May Cause an Error Message" on page 28.
`Error: Read-only management mode is currently set on this host. The requested command is not permitted in this mode.`	various	The CLI does not allow the execution of certain commands when it is configured for read-only mode. See "CLI in Read-Only Mode May Cause an Error Message" on page 28.
`Not supported.`	ChangeWWN	If a volatile change is requested on an adapter that does not support volatile WWNs, it returns a "not supported" error. See "ChangeWWN" on page 166.
`There are no license features for this adapter`	ShowLicenseAdapterID InstallAdapterLicense ShowAdapterLicenseFeatures	Adapter License Management commands are not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. See "Adapter License Management Commands" on page 43.
`ERROR: HBACMD_GetDumpFile: RM_GetDumpFile call failed (2)` `ERROR: <2>: Not Supported`	GetDumpFile	Dump files are copied from the Dump directory of the remote host to the Dump directory of the local host. Specifying a local port identifier for this command returns an error, since the source and destination directory are the same. See "GetDumpFile" on page 84.

Table A-1 OneCommand Manager Error Messages (Continued)

Error Message	Command(s)	Description
`ERROR: <180>: Authentication: User unknown`	All	The specified username is not valid or could not be authenticated by the system. See "OneCommand Manager Secure Management" on page 13 for more information.
`ERROR: <181>: Authentication: Insufficient credentials`	All	The specified username and password are valid and the user is a member of an OneCommand Manager group, however the OneCommand Manager group does not have sufficient privileges to execute the specified command. See "OneCommand Manager Secure Management" on page 13 for more information.
`ERROR: <183>: Secure Mgmt: user not a member of OCM group`	All	The specified username and password could be authenticated, but the user is not a member of an OneCommand Manager group. See "OneCommand Manager Secure Management" on page 13 for more information.
`ERROR: <206>: Authentication Failed`	All	This indicates either a valid username, but invalid password, or a general user authentication error. See "OneCommand Manager Secure Management" on page 13 for more information.
`ERROR: <222>: DCB not available`	GetDCBParams SetDCBParam GetPGInfo SetDCBPriority SetCnaPGBW	These commands are not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. See "DCB Commands" on page 64.
`ERROR: <251>: Hardware or firmware does not support command.`	SRIOVEnable UmcEnable UmcGetParams UmcSetBW UmcSetLPVID SetPhyPortSpeed	These commands are not available on OCe11101-EM/EX or OCe11102-EM/EX adapters. See "SRIOVEnable" on page 124, and "UMC Commands" on page 159.

Table A-1 OneCommand Manager Error Messages (Continued)

Error Message	Command(s)	Description
`Error: <431> Cable length required for force mode and interface type`	SetPhyPortSpeed	This error is displayed when a length value is not included when the mode is set to 2. Example: hbacmd setphyportspeed 00-00-c9-a9-41-88 2 100Mb See “Examples” on page 50.

Appendix B. Commands Supported in Target-Mode (COMSTAR) Ports

The following HbaCmd commands are supported for managing target-mode ports:

- CreateVPort
- DeleteDumpFiles
- DeleteVPort
- Download
- DriverConfig
- ExportSanInfo
- GetDriverParams
- GetDriverParamsGlobal
- GetDumpDirectory
- GetDumpFile
- GetRetentionCount
- GetVPD
- GetXcvrData
- HbaAttributes
- ListHBAs
- ListVPorts
- PortAttributes
- PortStatistics
- Reset
- SaveConfig
- ServerAttributes
- SetDriverParam
- SetDriverParamDefaults
- SetPortEnabled
- SetRetentionCount