OneCapture™ Version 10.3

User Manual

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

Table of Contents

1. Introduction

OneCapture™ is an Emulex® device driver utility that gathers system, adapter, device driver, and applications information. You can use this information to examine the functionality of the drivers.

Data collected by OneCapture is compressed into a single file which can be sent to Emulex Technical Support for analysis when debugging systems or for diagnostic purposes.

OneCapture is fully supported on OCe11000-series adapters. For other models, OneCapture can collect most data and basic dump data.

Abbreviations

ARP	address resolution protocol
CIM	Common Interface Model
CLI	command line interface
CPU	central processing unit
FC	Fibre Channel
FCoE	Fibre Channel over Ethernet
GUI	graphical user interface
HBA	host bus adapter
HTML	hyper-text markup language
IP	Internet Protocol
iSCSI	Internet Small Computer System Interface
NIC	network interface controller
OS	operating system
PCI	Peripheral Component Interconnect
SSH	Secure Shell
TCP	Transmission Control Protocol
UCNA	Universal Converged Network Adapter
RDMA	Remote Direct Memory Access
RoCE	RDMA over Converged Ethernet

2. Running OneCapture

You can run OneCapture on any of the following operating systems:

- Windows
- Linux
- Citrix
- FreeBSD
- Solaris
- VMware ESXi

OneCapture is installed as a single .exe or .sh file. Download the appropriate OneCapture file to each of the machines from which you want to collect data. You can run OneCapture from any directory or folder on your computer.

- For Windows systems download the OneCapture.exe file.
- For Linux, Citris, FreeBSD, and Solaris systems download the OneCapture.sh file.
- For ESXi systems:
  - Download the OneCapture_ESX.exe file to a remote Windows host. See "OneCapture for VMware ESXi with a Windows System" on page 7 for more information.
  - Download the OneCapture_ESX.sh to the ESXi host. See "OneCapture for VMware ESXi Locally" on page 8 for more information.
- Before OneCapture can run the .sh or .exe file, it must be uncompressed from the tar or zip file.

Output is generated as HTML. Data may vary according to the system type in use.

Running OneCapture on Windows

For Windows systems, if the OneCommand Manager application was not installed before running OneCapture, OneCapture will prompt you to install the basic ocmcore service. The service is used during the dump procedure, and is removed after execution.

If the OneCommand Manager application was not installed or allowed, only a degraded capture is available.

Refer to the *OneCommand Manager Application User Manual*, available from the Emulex website, for installation instructions.

To run OneCapture on Windows:

1. From **Start Menu>Run,** navigate to the folder in which OneCapture file was downloaded, and run the OneCapture.exe or double-click the .exe file.
2. From the popup window, select where you want the OneCapture output file stored. You can leave the default path or specify a different one.
3. From the drop-down menu, select the level of capture type you want to use. You can select 'Basic', 'Safe', 'Full' or 'Custom'.

- Basic – The default selection. Select Basic if you do not need to use another type of capture.
- Safe – Use Safe if you are capturing data on a Boot from SAN system.
- Full – Includes all available captures, but requires a system and adapter reboot. Use only if needed.
- Custom – Automatically selected when you do a custom pick of components to capture in the checkbox list.

4. Click **Capture**. OneCapture gathers the needed information and outputs the file to the specified folder.
5. After OneCapture is finished running, click **Finish** on the popup window to close OneCapture and view the results.

Running OneCapture on Linux, Citrix, FreeBSD, and Solaris

For Linux, Citrix and Solaris systems, if the OneCommand Manager application was not installed before running OneCapture, OneCapture will prompt you to install the basic ocmcore service (OneCapture_Linux_ocmcore.sh). The service is used during the dump procedure, and is removed after execution.

If the OneCommand Manager application was not installed or allowed, only a degraded capture is available.

Refer to the *OneCommand Manager Application User Manual*, available from the Emulex website, for installation instructions.

Two distributions are included for Linux, Citrix, and Solaris OneCapture.

```
OneCapture_Linux_10.0.623.0.tgz (OneCapture_Linux.sh)
OneCapture_Linux_ocmcore_10.0.623.0.tgz (OneCapture_Linux_ocmcore.sh)
```

or

```
OneCapture_Solaris_10.0.623.0.tgz (OneCapture_Solaris.sh)
OneCapture_Solaris_ocmcore_10.0.623.0.tgz
(OneCapture_Solaris_ocmcore.sh)
```

One is the general executable file and the other is the ocmcore service embedded executable file.

Use OneCapture_FreeBSD.sh for FreeBSD systems.

Note: FreeBSD systems do not support the OneCommand Manager application, therefore OneCapture does not collect the OneCommand Manager application related data, but OneCapture can collect firmware core dumps.

To run OneCapture on Linux, Citrix, FreeBSD, and Solaris:

1. Copy the script file onto the system through SSH (Secure Shell) or use any other method.
2. Run the shell script for corresponding systems, for example: ./OneCapture_Linux_ocmcore.sh

3. Change the script to executable mode, for example, Chmod 777 OneCapture.

   The progress of the script is displayed. For example:

```
Running Emulex OneCapture Solaris, version
Emulex Corporation Report Utility
Started at Friday, February  1, 2013 12:50:42 PM CST
Initializing report environment for host:solaris
Collecting System Information...
 [-]      1%                              uname -a
```

4. After the OneCapture script finishes gathering information it creates a zipped tarball file in its current working directory. Open that file to view the information.

Command Line Interface Parameters

The following are the available CLI parameters.

`-h|--help`

Displays a brief guide on command usage and supported parameters.

`--deaddump`

Collects the dead firmware dump data.

Note: This command causes system instability if the adapter is the boot device.

`--bootfromsan`

Skips collecting firmware dump files for all adapters.

Note: You must use this command if the adapter is the boot device in a boot from SAN configuration.

Running OneCapture on VMware ESXi

OneCapture for VMware ESXi with a Windows System

Before running OneCapture on VMware ESXi with a Windows system:

- The Windows system must have network access to the ESXi system being captured. Ensure the firewall rules and network configurations are correct.
- The Windows system can be a guest OS in a virtual machine.
- For VMware systems, the Emulex CIM Provider must be installed before running OneCapture. If the Emulex CIM Provider was not installed before running OneCapture, OneCapture will prompt you to install the CIM Provider. The CIM Provider is used during the dump procedure, and is removed after

execution. Refer to the *Emulex CIM Provider Package Installation Guide*, available on the Emulex website, for instructions.

- You must enable SSH access on the ESXi system.

  To enable SSH on the ESXi system:

  1. Press **F2** on the ESXi main screen.
  2. Go to **Troubleshooting Options**.
  3. Choose **Enable SSH**.

Note: Ensure that the user name and password do not include these special characters: !@#$%^&*()_+{|:"<>?. These special characters are not supported.

To run OneCapture:

1. From the Windows system run the OneCapture.exe file either through the **Start>Run** window or by double-clicking the .exe icon.
2. On the popup window, specify the directory where you want the OneCapture file to reside. By default, this path is set to C:\Users\<yourname>\Documents\Emulex\OneCapture
3. Specify the IP address, Username, and Password of the ESX server from which you want to capture data.
4. Specify the ESXi Connection Information. Both SSH and CIM use the same credential for the ESXi system.
5. Click **Capture**.
6. From the drop-down menu, select the level of capture type you want to use. You can select 'Basic', 'Safe', 'Full' or 'Custom'.
   - Basic – The default selection. Select Basic if you do not need to use another type of capture.
   - ESXi 5.5 Capture - removes proc pages which no longer exist on ESXi 5.5
   - Safe – Use Safe if you are capturing data on a Boot from SAN system.
   - Full – Includes all available captures, but results in a system and adapter reboot. Use only if needed.
   - Custom – Automatically selected when you do a custom pick of components to capture in the checkbox list.
7. Click **Capture**.

   After OneCapture collects the data, it generates a zipped file in the default directory or one that you specified. Open that file to view the information.

OneCapture for VMware ESXi Locally

Before obtaining a OneCapture on VMware ESXi locally:

- For VMware systems, the Emulex CIM Provider must be installed before running OneCapture. If the Emulex CIM Provider is not installed before running OneCapture, OneCapture cannot collect complete system information; such as adapter core dumps.
- You must enable the ESXi shell.

To enable the ESXi shell:

1. Press **F2** on the ESXi main screen.
2. Go to Troubleshooting Options.
3. Choose **Enable ESXi shell**.

- You may also run the "OneCapture_ESX.sh" by SSH to the ESXi host.

To run OneCapture:

1. Copy the script file "OneCapture_ESX.sh" onto the system through SSH (Secure Shell) or use any other method.
2. Run the shell script for corresponding systems, for example: ./OneCapture_ESX.sh
3. Change the script to executable mode, for example, Chmod 777 OneCapture. The progress of the script is displayed. For example:

```
Verifying archive integrity... All good.
Uncompressing Emulex OneCapture ESX.....
Emulex OneCapture ESXi, version 10.3.96.0
Emulex Corporation Report Utility
Started at Mon Dec 13 08:53:58 UTC 2013
Initializing report environment for host:esxi55-sandbox.emulex.com
Collecting System Information...
Obtaining vm-support...
 [\]
```

4. After the OneCapture script finishes gathering information it creates a zipped tarball file in its current working directory. Open that file to view the information.

Command Line Interface Parameters

The following are the available CLI parameters for ESXi.

-h|--help

Displays a brief guide on command usage and supported parameters.

--deaddump

Collects the dead firmware dump data.

Note: This command causes system instability if the adapter is the boot device.

--bootfromsan

Skips collecting firmware dump files for all adapters.

Note: You must use this command if the adapter is the boot device in a boot from SAN configuration.

Silent Mode Execution

To run OneCapture with the GUI in Windows and ESXi in silent mode, without user input, use the following command line parameters.

For Windows and ESXi systems:

Usage example:

```
OneCapture.exe /silent /type=basic /dir="C:\Capture\BE3"
/outputfilename "output.zip"
```

Available parameters:

`/force`

Forces a capture without showing any prompts.

`/silent, /verysilent`

/silent must be used for silent mode, /verysilent is for not displaying the progress windows.

`/skip_ocm`

Does not use the Emulex OCM service to get driver related information and dump files. When used without this option in silent mode, OneCapture OCM related information is captured by default.

`/dir="x:\dirname"`

Overrides the default directory in the select output path. It can be omitted if default path is used.

`/outputfilename "output.zip"`

Specifies the OneCapture output file name.

`/type=type name`

Chooses the capture type which currently includes "Basic", "Safe", "Full", and "Custom".

`/h`

To see Help information. The available types and available components are listed.

For ESXi systems only:

Usage example:

```
OneCapture_ESX.exe /silent /type=basic /dir="C:\Capture\BE3" /connect
[ip address] /username [username] /password [password] /skip_cim
```

Available parameters:

`/connect [ip address]`

Sets the remote VMware host IP address to which to connect.

`/username [username]`

Sets the remote VMware host username to which to connect.

`/password  [password]`

Sets the remote VMware host password to which to connect.

`/skip_cim`

This option forces OneCapture to not check whether the CIM provider is installed on the remote VMware host.

3. Collected Data

OneCapture by default collects live firmware core dumps. For dead dumps, Emulex adapters are taken offline during OneCapture execution. You must reboot to bring the adapters online.

To skip collect FW dumps:

- For Linux and Solaris systems, use "--bootfromsan" to skip live dumps.
- For Windows and VMware systems, choose "safe" mode, or uncheck dump options in GUI interface, or use the "/type=safe" for the "/component" option to choose the necessary items.

To collect dead dumps:

- For Linux and Solaris systems, use "--deaddump".
- For Windows and VMware systems, choose "full" mode, or select options in GUI interface. Use the "/type=full" for the "/component" option to choose the necessary items in CLI interface.

OneCapture cannot collect data for certain non-default library commands. However, you can install add-on packages for those commands if the packages are compatible with your system.

Below is a list of packages that may not be included with default installations. Install these packages to capture the most data.

Note: OneCapture packet data may be captured as part of the memory dump within the firmware dump.

For Linux

- sysstat – to utilize iostat mpstat
- hwinfo – to utilize hwinfo
- sg3_utils – to utilize sg_map
- dmidecode – to utilize dmidecode, biosdecode
- smbios-utils – to utilize smbios
- netstat-nat – to utilize netstat
- libblkid – to utilize blkid
- procps – to utilize vmstat
- device-mapper-multipath – to utilize multipath
- bridge-utils – to utilize brctl
- libvirt-utils – to utilize virsh

For Solaris and FreeBSD

- pciconf – to utilize pciconf
- prtdiag – to utilize prtdiags

The following tables describe, by operating system, the information that is collected by OneCapture.

Windows Systems

The following information is available for Windows systems.

Table 3-1 Windows information collected

Type	Information
System Configuration	
	System information
	System inventory
	PCI information
	CPU information
	CPUEx information
Driver Configuration	
	PnPutil information
	<HKLM>/Hardware/DeviceMap/Scsi
NIC	
	NIC occfg information
	becfg4 output
	becfg6 output
	registry parameter value
	driver parameter value
	adapters registry value
	CPU topology
	IP information
	NIC tcpglobal information
	NIC tcp offload information
	NIC SEstats parameters
	NIC tinylog
iSCSI	
	iSCSI information
	iSCSI target information
	iSCSI diskpark details
	iSCSI SEstats information
	iSCSI registry information
RoCE	
	TinyLogCM

Table 3-1 Windows information collected (Continued)

Type	Information
	TinyLog
	PowerShell RoCE Information
	SEstats RoCE information
	NetStat RoCE information
ElxTrace	
	Trace messages
MILI	
	MILI log
	MILI service status
	Hbacmd MILIReport
OneCommand Manager Application Information	
	Hbacmd version
	Hbacmd ListHBAs
	Hbacmd ListHBAs (local)
	Hbacmd HbaAttribute (local)
	Hbacmd PortAttribute (local)
	Cnaboardmgmt.log
	RM.log
	OneCommand Manager installer log
HBA Core Dump	
	Core dump (hbacmd dump)
	Core dump down (hbacmd dump down)
Windows Information	
	Emulex services status
	setupapi.*.log
	Event logs
Autopilot Information	
AutoPilotReport	
	FC
	FCoE
	iSCSI
	NIC

Table 3-1 Windows information collected (Continued)

Type	Information
AutoPilot Configuration Data	
	FC
	FCoE
	iSCSI
	NIC
MPIO Information	
	mpclaim -s
	mpclaim -e
	mpclaim -v

Linux Systems

The following information is available from Linux systems.

Table 3-2 Linux information collected

Type	Information	Parameter
System Information		
	Kernel version	
	Distributed version	
	Kernel modules currently loaded	lsmod
	Kernel memory allocations	numastat
	Running processes	ps
	Running tasks	top
	Processors statistics	mpstat
	Memory statistics	free
	Installed packages	rpm -qa
Hardware Information		
	System hardware description through SMBIOS/DMI	dmidecode
PCI Information		
	Tree diagram containing all buses, bridges, devices, and connections	
	Verbose and detailed information plus PCI configuration space dump on devices with Emulex vendor ID	

Table 3-2 Linux information collected (Continued)

Type	Information	Parameter
Kernel Information		
	CPU structures	/proc/cpuinfo
	Memory structures	/proc/meminfo
	Kernel version	/proc/version
	System uptime	/proc/uptime
	Kernel boot parameters	/proc/cmdline
	System memory mapping	/proc/iomem
	Memory zones and virtual memory	/proc/zoneinfo
	Devices group	/proc/partitions
	Kernel caches	/proc/slabinfo
	Network device status	/proc/net/dev
	SCSI devices	/proc/scsi/scsi
NIC Information		
	Network interfaces information	ifconfig -a
	NIC driver parameters	
	Firewall configurations	iptables
	NIC related packages information	
Kernel Runtime Parameters		
	List of all kernel runtime parameters	
Network Statistics		
	Summary statistics for each protocol	
	Table of all available network interfaces	
	All current TCP connections	
	Routing table	
Virtual Memory Statistics		
	Various event counters and memory statistics	
	Disk statistics	
	slabinfo	
Device Interrupts		
	Emulex device interrupts counter, in five-second intervals	
iSCSI Specific Information		

Table 3-2 Linux information collected (Continued)

Type	Information	Parameter
	Current multipath topology	multipath -ll
	iSCSI module information	modinfo be2iscsi
	Partition tables	
	File system mount	
	Disk UUID	
	Disk space available	
	File system table	/etc/fstab
	SCSI information	
	Mount information	
FC Specific Information		
		modinfo
		SCSI device info
		SCSI class information
FCoE Specific Information		
	lpcs driver information	
	SCSI class information	/sys/class/scsi/..
	lpfcmlp information	/proc/scsi/lpfcmpl/*
Library Information		
	The version number for the following libraries: • libdfc • libmili • libHBA • libemulexhbaapi	
Driver Information		
	RPM packages with be2 prefix name	
	Loaded kernel modules with be2 prefix name	
	NIC kernel module information	modinfo be2net
	lpfc kernel module information	modinfo lpfc
OneCommand Manager Application Information		
	RPM packages with elx prefix name	
	Running status of process hbanywhere	
	Running status of process ocmanager	

Table 3-2 Linux information collected (Continued)

Type	Information	Parameter
	List of executable files with elx prefix name	
	List of executable files with mili prefix name	
	rm.log	
	cnaboardmgnt.log	
	utils-install.log	
	mili2d.log	
	Installer.log	
HBACMD		
	listhbas	
	milirpt	
	version	
	hbaattr (local HBA only)	
Kernel Log		
	dmesg kernel log	
Kernel Configuration		
	Compile time kernel configuration	/proc/config.gz
	xinetd configuration, network services daemon configuration	
	Module loading configuration	/proc/modprobe.conf
Core Dump		
	hbacmd dump	
	hbacmd dump down	
Crashdump		
	dump	/CrashDump/
MPIO Info		
	multipath -ll	/etc/multipath.conf
Virtualization Logs		
		/var/log/xen/xend.log
		/var/log/libvirt/libvirtd.log

Solaris Systems

The following information is available from Solaris systems.

Table 3-3 Solaris information collected

Type	Information	Parameter
System Information		
	Kernel version	uname -a
	Network interface	ifconfig -a
	Processors info	psrinfo -pv
	Swap info	swap -s
	Last reboot time	last reboot
	Uptime	uptime
	Running tasks	top -d 5 -n 2
	Running processes	ps -ef)
	Loaded modules	modinfo
	Service status	svcs
	Device status	cfgadm -al
Hardware Information		
	BIOS information	smbios
	PCI buses info	scanpci
	System peripherals info	prtconf -v
	System peripherals tree	prtconf -vp
	Host HBA info	fcinfo hba-port
NIC Specific Information		
	Network interface	ifconfig -a
	IP filter rule	/etc/ipf/ipf.conf
Network Statistics		
	Per-protocol statistics	netstat -s
	ARP tables	netstat -p
	All TCP statistics	netstat -aP tcp
	Routing tables	netstat -rn
	Multicast memberships	netstat -g
	INET family streams stats	netstat -idm -f inet
System Statistics		
	System events since boot	vmsat -s

Table 3-3 Solaris information collected (Continued)

Type	Information	Parameter
	Paging Activity in 5 seconds	vmstat -p 1 5
Device Interrupts		
	Emulex device interrupts counter, 5 seconds	
Kernel Parameters		
	System definition	sysdef -D
	System definition, in device tree format	sysdef -dD
	Kernel statistics	kstat
OneCommand Manager Application Information		
	Running status of process hbanywhere	
	Running status of process ocmanager	
	List of executables with elx prefix name	
	List of executables with mili prefix name	
	rm.log	
	cnaboardmgnt.log	
	utils-install.log	
	mili2d.log	
	installer.log	
HBACMD		
	listhbas	
	milirpt	
	version	
	hbaattr (local only)	
	portattr (local only)	
Kernel Log		
	dmesg kernel log	
Kernel Configuration		
	System parameters	/etc/system)
	Kernel symbols	nm -x /dev/ksysm | grep OBJ
Core Dump		
	hbacmd dump	
	hbacmd dump down	

Table 3-3 Solaris information collected (Continued)

Type	Information	Parameter
Crash Dump		
	dump	/CrashDump/

FreeBSD Systems

The following information is available from FreeBSD systems.

Table 3-4 FreeBSD information collected

Type	Information	Parameter
System Information		
	Kernel information	uname -a
	Kernel release	uname -r
	Network interfaces	ifconfig -a
	Hardware model	sysctl -a | egrep -I hw.model
	Clockrate	sysctl -a | egrep hw.clockrate
	CPU Count	sysctl -a | egrep hw.ncpu
	Boot time	sysctl -a | grep boottime
	Running tasks	top -d 5 -n 2
	Running processes	ps -ef
	Kernel modules	kldstat
Hardware Information		
	System hardware description through DMI	dmidecode
PCI Information		
	PCI devices list with capabilities supported with vendor device information	pciconf -l -cv
NIC Information		
	Interfaces info	ifconfig ifx
	OneConnect info	sysctl -a | grep dev.oce
	IP Firewall	ipfw list
	OneConnect package	pkg_info |grep oce-
Kernel Runtime Parameters		
	List of all kernel runtime parameters	sysctl -a

Table 3-4 FreeBSD information collected (Continued)

Type	Information	Parameter
	TCP send buffer size	sysctl -a | grep wmem
Netstat Information		
	Per-protocol statistics	netstat -s
	All Interfaces state	netstat -i
	All TCP statistics	netstat -aP tcp
	Routing tables	netstat -rn
	INET family Streams Stats	netstat -idb -f inet
Virtual Memory Statistics		
	Various event counters and memory statistics	vmstat -s
	slabinfo	vmstat -m
Device Interrupts		
	Emulex device interrupts counter, in 5 seconds interval	
Log		
	Installer Log	
Kernel Log		
	All /var/log/messages* files	
Kernel Configuration		
	Kernel Compile configuration	(/usr/src/sys/i386/conf/GENERIC)
	Kernel Bootstrap configuration	/boot/defaults/loader.conf
Crash Dump		
	dump	/CrashDump/
Core Dump	dump	dump/CoreDump

VMware Systems

The following information is available from VMware systems.

Table 3-5 VMware information collected

Type	Information
VMware vm-support package (as provided by default manifest in ESXi)	
	Active directory

Table 3-5 VMware information collected (Continued)

Type	Information
	CIM
	Configuration
	Crash
	Fault
	File system
	Hardware
	Hung VM
	Installer
	Integrity checks
	Logs
	Network
	Performance snapshot
	Storage
	System
	Testing
	Userworld
	Virtual
	Host profiles
SCSI /proc/lpfc820 dump (ESXi 5.0 and 5.1 systems only)	
	Debug pages from lpfc device driver
HBA Dump	
	Core dump
HBACMD (ESXi 5.0 and 5.1 systems only)	
	HBA list (all under management)
	HBA attributes
	HBA list (local)
	Port attributes
MILI log	
	RM.log
	mili2d.log

Table 3-5 VMware information collected (Continued)

Type	Information
Log config	
	/tmp/*.log
	/tmp/ucna.txt
	/etc/cim/emulex/*.log
	/etc/cim/emulex/*.dmp
	/etc/cim/emulex/*.conf
VM_KV_PAGE	
	vm_kv_page -v
	lpfc-kv-pages.txt
	vm_kv_page -q all -p all
	lpfc-kv-pages.txt

4. Troubleshooting

There are several circumstances in which your system may operate in an unexpected manner. The Troubleshooting section explains many of these circumstances and offers one or more workarounds for each situation.

Note: If no operating system is specified, then the issue is applicable to all operating systems.

Table 4-1 OneCapture troubleshooting

Situation	Resolution
UCNA information was not captured.	You must install OneCapture on the system where you are collecting data. Install the OneCommand Manager application from the Emulex website. Additionally, install the driver for the devices on the system. The drivers must be installed before driver information is available for capture.
The output HTML file displays a "missing Data File" error.	Ensure that the zipped file has been extracted completely from the archive folder before you open the HTML file.
Cannot connect although the user name and password are correct. Access through OneCapture VMware ESXi is denied. (VMware systems only)	Due to the nature of command line processing, OneCapture cannot handle the parameter when it includes these special characters: ~!@#$%^&*()_+{}|:"<>?[]\;',./ . Make sure that the username and password do not include any of these special characters, and try again.
After connecting, the OneCapture VMware script displays an "Emulex CIM-provider" warning. (VMware systems only)	Install the Emulex CIM Provider on the VMware ESXi system. You can download it from the Emulex website.
By default, OneCapture only collects live firmware dump data. If you manually choose dead dump collection, the dump procedure temporarily takes the adapter offline.	If you select dead dumps for OCe11102 or OCe14000 series adapters, the adapters are taken offline and require a system reboot to recover.