Emulex® OneCapture™ for OneConnect® Adapters

User Guide

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Chapter 1: Introduction

OneCapture™ is an Emulex® device driver utility that collects information from the operating system, Emulex software, and Emulex adapters. Use this information to examine the functionality of the drivers.

OneCapture checks the library dependencies for the internal tool in OneCapture. This tool collects basic information and ASIC firmware dumps or core dumps. If the dependencies check failed (missing dependencies exist), you can select to continue collecting rest of the system logs without using the internal tool (onekat).

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

OneCapture supports Emulex OneConnect® OCe11000-series and OCe14000-series adapters.

1.1 Abbreviations

ARP	Address Resolution Protocol
BIOS	basic input/output system
CIM	Common Interface Model
CLI	command line interface
CPU	central processing unit
DOS	disk operating system
FCoE	Fibre Channel over Ethernet
GUI	graphical user interface
HBA	host bus adapter
HTML	Hypertext Markup Language
iBFT	iSCSI boot firmware table
INET	Internet Network Protocol
I/O	input/output
IP	Internet Protocol
iSCSI	Internet Small Computer System Interface
MPIO	multipath I/O
NIC	network interface controller
PCI	Peripheral Component Interconnect
RDMA	remote direct memory access
RoCE	RDMA over Converged Ethernet
RPM	Red Hat Package Manager
SCSI	Small Computer System Interface
SSH	Secure Shell
SMBIOS/DMI	System Management BIOS/Desktop Management Interface
TCP	Transmission Control Protocol
VHD	Virtual Hard Disk

VM	virtual machine
UUID	universally unique identifier

Chapter 2: Running OneCapture

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

- Windows (including the Nano Server system)
- 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 systems from which you want to collect data.

- For Windows systems, download the `brcmOneCapture.exe` file.
- For Windows Nano Server systems, download the `brcmOneCapture_Nano.exe` file.
- For Linux, Citrix, and FreeBSD systems download the `brcmOneCapture.sh` file.
- For Solaris systems, download the `brcmOneCapture.sh` or `brcmOneCapture_Solaris_ocmcore.sh` file
- For ESXi systems, download the `brcmOneCapture_ESX.sh` file to the ESXi host.

NOTE Before OneCapture can run the `.exe` or `.sh` file, it must be uncompressed from the tar or zip file.

You can run OneCapture from any directory or folder on your computer. Output is generated as HTML. Data may vary according to the system type in use.

2.1 Choosing a Capture Type

Using OneCapture, you can select one of four capture types; basic, full, safe, or custom. This section describes the available capture types.

2.1.1 Basic Capture

Basic capture is the default selection. Typically, you will use Basic capture unless instructed by Broadcom Technical Support to use one of the other types.

Basic capture does not reset live adapters, and it does not restart dead adapters. That is, live adapters remain alive and dead adapters remain dead.

NOTE I/O on live adapters can be temporarily interrupted during a live core dump.

Basic capture does the following:

- Captures all the available configuration files and log files
- Captures the existing adapter dump files (if present)
- Performs a new live core dump on live adapters
- Performs a new dead core dump on dead adapters

2.1.2 Full Capture

Full capture performs both a live and a dead core dump on the specified OCe11000-series and OCe14000-series adapters, regardless of whether the adapters are alive or dead. A dead core dump brings the adapter down, and it will remain down until the system is rebooted.

CAUTION No I/O is possible on the adapter until the system is rebooted. Perform a Full capture only when instructed by Broadcom Technical Support.

Full capture does the following:

- Captures all the available configuration files and log files
- Captures all existing adapter dump files (if present)
- Performs a new live core dump.
- Performs a new dead core dump.

For adapters not specified with the `/DumpAdapters` option, full capture performs like basic capture.

2.1.3 Safe Capture

Safe capture collects all the available current information, and any existing adapter dump files, but does not perform any new dumps. I/O is not interrupted on any adapters. Broadcom recommends that you use this option to collect existing logs and dumps when it is important not to interrupt I/O.

Safe capture does the following:

- Captures all the available configuration files and log files
- Captures all existing adapter dump files (if present)

2.1.4 Custom Capture

Custom Capture allows you to select from a variety of capture options. You select the components to capture in the check box list or with the `/Component` option in the CLI.

2.2 Running OneCapture on Windows

OneCapture for Windows can be run using the GUI or CLI. This section describes both methods.

To run OneCapture on Windows using the GUI:

1. Download the `brcmOneCapture.exe` file.
2. Uncompress the file.
3. Launch the `brcmOneCapture.exe` file from Windows.

NOTE Although you can run OneCapture as a regular user, Broadcom recommends that you run it as the Administrator, or as a user with administrator privileges.

4. To run OneCapture as the administrator, no special steps are needed. Access to all output files is unrestricted.
   — To run OneCapture as a user with administrator privileges, the GUI prompts you to enter an administrator user name and password.

— For non-administrators, the GUI prompts you to enter an administrator user name and password. Access to output files may be restricted. In this case, you must give the desired user access to the OneCapture output folder. Typically, this is in `\Users\Administrator\Documents\Broadcom`.

5. From the popup window, select where you want the OneCapture output file stored. You can leave the default path or specify a different one.
6. From the drop-down menu, select the capture type you want to use. You can select Basic, Safe, Full, or Custom. See Section 2.1, Choosing a Capture Type for a description of the options.
7. If Core Dump Down was selected, choose the adapters from which you want dead dumps.
8. Click **Capture**. OneCapture gathers the requested information and outputs the file to the specified folder.
9. After OneCapture runs, click **Finish** on the popup window to close OneCapture and view the results.

To run OneCapture on Windows from the CLI:

1. Download the `brcmOneCapture.exe` file.
2. Uncompress the file.
3. Run the `brcmOneCapture.exe` from a DOS command shell.

NOTE Although you can run OneCapture as a regular user, Broadcom recommends that you run it as the administrator, or as a user with administrator privileges.

4. To run OneCapture as the administrator, no special steps are needed. Access to all output files is unrestricted.
   — To run OneCapture as a user with administrator privileges, start the DOS command shell with "Run As Administrator", and then enter an administrator user name and password. Access to all output files is unrestricted.
   — For non-administrators, start the DOS command shell with "Run As Administrator", then enter an administrator user name and password. Access to output files may be restricted. In this case, you must give the desired user access to the OneCapture output folder. Typically, this is in `\Users\Administrator\Documents\Broadcom`.
5. At the command line, define the type of capture you want. See Section 2.1, Choosing a Capture Type, for a description of the options.

   See Section 2.2.2, Windows Command Line Interface Parameters, for a list of the available commands.

2.2.1 Output File

OneCapture creates a single zip file containing all of the captured components. This zip file is named `OneCapture_Windows_<date-time>.zip`. The file is located in one of two different directories, depending on whether you run the OneCapture GUI or the CLI.

For the GUI, the output directory is `MyDocuments\Broadcom`. For the CLI, it is the working directory from which you run the CLI. The default output directory can be overridden; see Section 2.2.2, Windows Command Line Interface Parameters.

Most items in the OneCapture output zip file can be examined directly from the zip file, without the need to unzip the whole file. The exception is the `OneCapture_Windows.html` file, which is a navigable directory of the captured components. When you launch this file in your browser, you can browse through the captured objects, but you must unzip the OneCapture output file first.

The adapter dump files are placed in a directory called `CoreDump`. Typically you do not need to unzip these files individually, because Broadcom Technical Support will normally request the entire OneCapture output zip file.

2.2.2 Windows Command Line Interface Parameters

The following is an example of Windows command syntax:

```
brcmOneCapture.exe /FullCapture /Adapters=0,2 /Directory=C:\Capture\BE3
/FileName=output.zip
```

The following are the available CLI parameters for Windows.

/? | /H | /help

Displays a brief guide on command usage and supported parameters.

/L | /ListAdapters

Lists the discovered adapters. The list command shows each adapter's *Adapter Number* (0, 1, . . .), which is used in the actual dump command for the `/Adapters` option.

/Quiet or /Q

Forces the capture without displaying warning messages or prompts.

/Directory=<OutputDirectory> or /D=<OutputDirectory>

Specifies a directory in which OneCapture will create the output zip file. If this option is not used, the default is the working directory from which you run the CLI.

For example:

```
brcmOneCapture.exe / Directory =C:\Users\Administrator\Desktop\Dump
```

/Filename=<OutputFilename> or /N=<OutputFilename>

Specifies the file name OneCapture uses when it creates the output zip file. If this option is not used, the default is `brcmOneCapture_Windows_<`*`date-time`*`>.zip`.

Example:

```
brcmOneCapture.exe  /Filename =example1.zip
```

/BasicCapture or /B

Specifies the Basic capture type.

Example:

```
brcmOneCapture.exe /BasicCapture
```

/SafeCapture or /S

Specifies the Safe capture type.

Example:

```
brcmOneCapture.exe /SafeCapture
```

/FullCapture or /F

Specifies the Full capture type. Use both the `/FullCapture` and `/Adapters` options.

Examples:

```
brcmOneCapture /FullCapture /Adapters=0
brcmOneCapture /FullCapture /Adapters=2,3
brcmOneCapture /FullCapture /Adapters=all
```

CAUTION This option can temporarily interrupt I/O on live adapters and can force live adapters offline.

/Adapters=<AdapterNumber | <list> | all>

Use only with `/FullCapture`. This option specifies the adapters for which OneCapture will perform a dead dump.

Examples:

Perform a full dump on adapter 0 only:

```
brcmOneCapture /FullCapture /Adapters=0
```

Perform a full dump on adapters 2 and 3 only:

```
brcmOneCapture /FullCapture /Adapters=2,3
```

Perform a full dump on all adapters:

```
brcmOneCapture /FullCapture /Adapters=all
```

/Components=< <component> | <list> > or /Components=< <component> | <list>>

OneCapture collects several types of components by default, such as system information, driver information, and iSCSI information. This option can be used to specify the individual components to be captured while ignoring all the rest. You can specify a single component, or a list of components, separated by commas.

Examples:

Capture system information only:

```
brcmOneCapture.exe /Components=System
```

Capture system information and driver information only:

```
brcmOneCapture.exe /Components=System,Driver
```

The following is a list of the available components:

`system` – System information

`driver` – Driver information

`iscsi` – iSCSI information

`roce` – RoCE information

`disk` – Disk information

`sestats` – SEstats log

`nic/ipmac` – IP and MAC information

`nic/driver` – NIC driver information

`nic/team` – NIC Teaming information

`win/setup` – Windows setup log

`win/event` – Windows event log

`ocm/log` – OneCommand® CNA Manager log

`ocm/status` – OneCommand CNA Manager status

`ocm/dumps` – Dumps collected in OneCommand CNA Manager dump folder

`ocm/roce` – RoCE Information by HBACMD

`hba/list` – HBA basic list

`hba/attr` – HBA attributes

`hba/info` – HBA information

`hba/dump` – HBA core dump

`hba/dumpdown` – HBA core dump down

`elxtrace` – ELX trace information

`autopilot` – AutoPilot Installer information

`milirpt` – Collect MILI report

`mpio` – MPIO information

`iBFTtable` – iBFT information

2.3 Running OneCapture on a Windows Nano Server

Nano Server is a remotely administered server operating system optimized for private clouds and datacenters. It is similar to Windows Server in Server Core mode, but significantly smaller, has no local logon capability, and only supports 64-bit applications, tools, and agents. It takes up far less disk space, sets up significantly faster, and requires far fewer updates and restarts than Windows Server. Restarts are much faster in a Nano Server.

NOTE Reverse Forwarders are an optional package that is not installed by default on Nano Server. OneCapture relies on Reverse Forwarders to be executed on Nano Server. Install the Nano Server image with Reverse Forwarder.

2.3.1 Installing OneCapture for Nano Server

Requirements:

- A system booted up to a Nano Server VHD
- A system from which a remote PowerShell connection can be established to manage the Nano Server system

Installation steps:

1. Using a remote PowerShell connection, create the directory on the Nano Server machine where you want the OneCapture binary file to be copied to.

   For example, you can create a directory under the C drive of the Nano Server machine as follows:

```
md C:\"<Directory Name>"
```

2. In an elevated PowerShell ISE prompt, run the following commands to copy the OneCapture binary file to the Nano Server system:

```
#set a variable with the IP address of the remote NS computer
$ip = "<NS IP Address>"

# Create a persistent connection to the remote NS computer
$s = New-PSSession -ComputerName $ip -Credential ~\Administrator
copy -tosession $s -Path <path to directory containing the OneCapture binary
file>\*
-Destination <Full path to Directory created in step 1> -Recurse -Force
```

   where `New-PSSesion` is the PS commandlet, and `-ComputerName` and `-Credential` are switches from this commandlet.

3. Using a remote PowerShell connection, navigate to the directory where the file was copied to, and execute `OneCapture_Nano.exe /h` to see the options.
4. After OneCapture data collection is complete in a zip package, download the collected data from the Nano Server to the local system.

   To download the collected data from Nano Server, run the following command:

```
copy-item -Fromsession $s -Path <path to file containing the zip package>\*
-Destination <path to directory on local>
```

2.3.2 Differences between OneCapture on a Windows Server and OneCapture on a Windows Nano Server

Nano Server is a lightweight operating system, unlike Windows Server. The following are the differences between OneCapture on a Windows Server and on a Windows Nano Server:

- On Nano Server, you can use CLI mode with powershell (PS) interface. The `nic_driver_reg_param.txt`, `IPv4_ps.txt`, and `IPv6_ps.txt` are new log files collected by powershell commands.
- Some of the windows driver tools and commands do not work on Nano Server.
- Nano Server does collect some of the NIC logs and `sestats.exe`.
- Teaming-related PS command outputs are not collected by Nano Server.
- If OneCommand CNA Manager is installed before installing OneCapture, OneCommand CNA Manager information is collected by OneCapture.
- Windows built-in commands, such as `systeminfo.exe`, `driverquery.exe`, and `diskpart.exe`, are not supported on Nano Server .
- OneCapture internal tools, such as `cpuinfo.exe` and `devcon.exe`, cannot be executed on Nano Server.
- On OneCapture Nano Server, when you select `FullCapture`, OneCapture displays a warning message without asking you to select either Yes or No in the next step, and thereby starts the capture option already selected.

2.4 Running OneCapture on Linux, Citrix, FreeBSD, and Solaris

NOTE While Linux offers the option to select a destination directory for the dump files, OneCapture does not. If you specify a destination directory for the dump files other than the default directory, the dump files are not created.

The following distributions are included for Linux (including Citrix), FreeBSD, and Solaris OneCapture.

- `brcmOneCapture_Linux_<version>.tgz` (`brcmOneCapture_Linux.sh`)
- `brcmOneCapture_Solaris_<version>.tgz` (`brcmOneCapture_Solaris.sh`)
- `brcmOneCapture_Solaris_ocmcore_<version>.tgz` (`brcmOneCapture_Solaris_ocmcore.sh`)
- `brcmOneCapture_FreeBSD_<version>.tgz` (`brcmOneCapture_FreeBSD.sh`)

For Solaris, two files are provided. One is the general executable file, and the other is the `ocmcore` service embedded executable file. If the OneCommand CNA Manager application was not installed before running OneCapture, OneCapture will prompt you to install the basic `ocmcore` service (`brcmOneCapture_Solaris_ocmcore.sh`). The service is used during the dump procedure, and it is removed after execution.

Refer to the *OneCommand CNA Manager Application for OneConnect Adapters User Guide,* available from the Broadcom website, for OneCommand CNA Manager application installation instructions.

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

For Linux, Citrix, and Solaris systems, if the OneCommand CNA Manager application is installed, OneCapture will collect OneCommand CNA Manager application related data.

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

For Ubuntu systems, install the `libnl1` package with `apt-get install libnl1` for OneCapture to collect adapter dumps.

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

1. Log in as `root`.
2. Copy the script file onto the system through SSH (Secure Shell) or another method.
   - For Linux, Citrix, and FreeBSD systems, copy the `brcmOneCapture.sh` file.
   - For Solaris systems, copy the `brcmOneCapture.sh` or `brcmOneCapture_Solaris_ocmcore.sh`
3. Uncompress the file.
4. Run the shell script for corresponding systems, for example:

   ```
   ./brcmOneCapture_Linux.sh /BasicCapture
   ```

   See Section 2.4.2, Linux, Citrix, FreeBSD, and Solaris Command Line Interface Parameters, for options.
5. Change the script to executable mode, for example, `Chmod 777 brcmOneCapture`.

   The progress of the script is displayed. For example:

   ```
   Running Emulex OneCapture Solaris, version
   Emulex Corporation Report Utility
   Started at Friday, February  1, 2014 12:50:42 PM CST
   Initializing report environment for host:solaris
   Collecting System Information...
    [-]      1%                              uname -a
   ```
6. 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.

2.4.1 Output File

OneCapture creates a single tgz file containing all the captured components. This tgz file is named `brcmOneCapture_Linux_<date-time>.tgz`. This file is placed in the working directory from which you run OneCapture.

To examine the items in the OneCapture output tgz file, first untar it. This creates a directory in the current working directory called `dump`. It also creates a file in the current working directory called `brcmOneCapture-Linux.html`.

`brcmOneCapture-Linux.html` is a navigable directory of the captured components. When you launch this file in your browser, you can browse through the captured objects.

Or, you can examine the captured components directly by browsing through the folders and files in the `dump` directory.

The adapter dump files are placed in a directory called `dump/CoreDump`. Typically you do not need to examine these files individually, since Broadcom Technical Support will usually request the entire OneCapture output tgz file.

2.4.2 Linux, Citrix, FreeBSD, and Solaris Command Line Interface Parameters

The following are the available CLI parameters.

`-h | --help`

Displays the help text.

`-L | --ListAdapters`

Lists the discovered adapters. The list command shows each adapter's *Adapter Number* (0, 1, . . .), which is used in the actual dump command for the `/Adapters` option.

When running on Ubuntu systems but without `libnl1` installed, the following warning message appears:

```
OneCapture requires the libnl1 package.
You must install it manually, and then re-run OneCapture.
To install the libnl1 package, use "apt-get install libnl1".
```

This message indicates that you must install `libnl1` manually, then rerun OneCapture. To install the `libnl1` package, enter `apt-get install libnl1` at the CLI prompt. Once `libnl1` is installed, re-enter the `-L` or `-ListAdapters` parameter.

`-Q | --Quiet`

Forces the capture without displaying a warning message or prompt.

`-X | --NoCrashDump`

Does not collect crash dump files under `/var/crash`.

For example:

```
./brcmOneCapture_Linux.sh -- NoCrashDump
```

-B | --BasicCapture

Specifies the Basic capture type. To specify a Basic capture, omit the /FullDump and /DumpAdapters options.

For example:

```
./brcmOneCapture_Linux.sh --BasicCapture
```

-F | --FullCapture

Specifies the Full capture type. To specify a Full capture, use both the /FullCapture and /Adapters options.

Examples:

```
./brcmOneCapture_Linux.sh --FullCapture --Adapters=0
./brcmOneCapture_Linux.sh --FullCapture --Adapters=2,3
./brcmOneCapture_Linux.sh --FullCapture --Adapters=all
```

CAUTION This option can temporarily interrupt I/O on live adapters and can force live adapters offline.

-S | --SafeCapture

Specifies the Safe Capture type. To specify a Safe capture, use the /S or /SafeCapture option with no other options.

Examples:

```
./brcmOneCapture_Linux.sh -S
./brcmOneCapture_Linux.sh -- SafeCapture
```

--Adapters=<AdapterNumber | <list> | all> or -A=<AdapterNumber | <list> | all>

Use only with the /FullCapture option. This option specifies the adapters for which OneCapture will perform a dead dump.

Examples:

Perform a full dump on adapter 0 only:

```
/brcmOneCapture_Linux.sh --FullCapture --Adapters=0
```

Perform a full dump on adapters 2 and 3 only:

```
/brcmOneCapture_Linux.sh --FullCapture --Adapters=2,3
```

Perform a full dump on all adapters:

```
/brcmOneCapture_Linux.sh --FullCapture --Adapters=all
```

2.5 Running OneCapture on VMware ESXi

Before running OneCapture on VMware ESXi systems 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**.

NOTE You can also run the `brcmOneCapture_ESX.sh` by SSH to the ESXi host.

To run OneCapture on ESXi systems:

1. Log in as `root`.
2. Copy the zipped script file `brcmOneCapture_ESX_<version>.tgz`.
3. Run the following command:

```
- tar -zxvf brcmOneCapture_ESX_<version>.tgz.
```

4. Show the available target volumes. Type:

```
./brcmOneCapture_ESX.sh [-T | --ShowVolumes]
```

For example:

```
# ./brcmOneCapture_ESX.sh -T
Verifying archive integrity... All good.
Uncompressing Emulex OneCapture ESX.........
--showvolumes selected
Volume ID :  538474e9-59b93266-e8b8-f04da23f74e4  Free space:  74379689984
Volume ID :  538555c4-c83454f8-d9d2-f04da23f74e4  Free space:  4267900928
Volume ID :  e2026c71-52b57cde-56c2-b9ae66445c72  Free space:  96399360
Volume ID :  cc98d67e-0a7c79da-97d1-27c3a68e6d5f  Free space:  87855104
Volume ID :  538555bd-5c9bd074-35cc-f04da23f74e4  Free space:  97705984
```

5. Select the target volume. Broadcom recommends specifying a larger local volume for the dump. Type:

```
[-V | --Volume]=volume_id
```

6. Run the shell script for the corresponding systems with the selected options.

For example:

```
./brcmOneCapture_ESX.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--BasicCapture
```

The progress of the script is displayed in this example.

```
Verifying archive integrity... All good. Uncompressing Emulex OneCapture
ESX..... Emulex OneCapture ESXi, version 10.2.96.0
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...
```

7. After the OneCapture script finishes gathering information it creates a zipped tarball file and places it in the volume that you created. Open that file to view the information.

Example output:

```
OneCapture_ESX_2015-12-15_172850.tgz in under
/vmfs/volumes/4dbe20fd-14f1689b-950d-78e7d1fbfe0e
```

2.5.1 ESXi Command Line Interface Parameters

The following are the available CLI parameters for ESXi systems.

`-h | --help`

Displays the help text.

-T | --ShowVolumes

Lists available volumes. The Volume IDs given can be used in a `-V` or `--Volume` option

-V | --Volume

Sets up the dump volume. Broadcom recommends specifying a larger local volume for the dump.

For example:

```
--DumpVolume=53874dd8-cf5f5e64-5396-002564fab52f
```

NOTE If you select a non-local volume connected to an Broadcom adapter, the dump procedure may fail.

-L | --ListAdapters

Lists discovered adapters. The list command shows each adapter's *Adapter Number* (0, 1, . . .), which is used in the actual dump command for the `/Adapters` option.

-Q | --Quiet

Forces the capture without displaying a warning message or prompt.

-B | --BasicCapture

Specifies the Basic capture type. To specify a Basic capture, omit the `/FullDump` and `/DumpAdapters` options.

For example:

```
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--BasicCapture
```

-F | --FullCapture

Specifies the Full capture type. To specify a Full capture, use both the `/FullCapture` and `/Adapters` options.

Examples:

```
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--FullCapture --Adapters=0
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--FullCapture --Adapters=2,3
./brcmOneCapture_Linux.sh -V=538555c4-c83454f8-d9d2-f04da23f74e4 --FullCapture
--Adapters=all
```

CAUTION This option can temporarily interrupt I/O on live adapters and can force live adapters offline.

-S | --SafeCapture

Specifies the Safe Capture type. To specify a Safe capture, use the /S or /SafeCapture option with no other options.

Examples:

```
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4 -S
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--SafeCapture
```

```
-Adapters=<AdapterNumber | <list> | all> or -A=<AdapterNumber | <list> | all>
```

This option specifies the adapters for which OneCapture will perform a dead dump. Use only with the /FullCapture option.

Examples:

Perform a full dump on adapter 0 only:

```
./brcmOneCapture_Linux.sh --Volume=538555c4-c83454f8-d9d2-f04da23f74e4
--FullCapture   --Adapters=0
```

Perform a full dump on adapters 2 and 3 only:

```
./brcmOneCapture_Linux.sh --FullCapture --Adapters=2,3
```

Perform a full dump on all adapters:

```
./brcmOneCapture_Linux.sh --FullCapture --Adapters=all
```

-SVM |--SkipVMsupport

Broadcom OneCapture skips the collection of VMsupport data.

Collect the VMsupport data manually using any of the following commands:

With the local ESXi:

```
vm-support -w <path_to_destination_directory>
```

With a remote system:

1. Using any HTTP client, download the resource from <*ESX host name or IP address*>/cgi-bin/vm-support.cgi.
2. Download the resource using the wget utility on a Linux or other Posix client, such as the vSphere Management Assistant appliance.

   A compressed bundle of logs is produced on the client at the specified location

   ```
   wget <ESX host name or IP address>/cgi-bin/vm-support.cgi
   ```
3. Using a Linux or Posix client, such as the vSphere Management Assistant appliance, login to the ESXi host, and run the vm-support command with the streaming option enabled, specifying a new local file. A compressed bundle of logs is produced on the client at the specified location.

   For example:

   ```
   ssh root@<ESX host name or IP address> vm-support -s > vm-support-<Host
   name>.tgz
   ```

Chapter 3: Collected Data

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

To skip collecting firmware dumps:

- For Linux and Solaris systems, use the `/SafeCapture` option to skip live dumps.
- For Windows and VMware systems, choose Safe mode, or uncheck dump options in the GUI. Use `/SafeCapture`, or specify the `/component` option to choose the necessary items in the CLI.

To collect dead dumps:

- For Linux and Solaris systems, use `/FullCapture`.
- For Windows and VMware systems, choose full mode, or select options in GUI interface. Use `/FullCapture` or specify the `/component` option to choose the necessary items in the CLI.

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.

- For Linux
  - `sysstat` – To use `iostat mpstat`
  - `hwinfo` – To use `hwinfo`
  - `sg3_utils` – To use `sg_map`
  - `dmidecode` – To use `dmidecode` and `biosdecode`
  - `smbios-utils` – To use `smbios`
  - `netstat-nat` – To use `netstat`
  - `libblkid` – To use `blkid`
  - `procps` – To use `vmstat`
  - `device-mapper-multipath` – To use `multipath`
  - `bridge-utils` – To use `brctl`
  - `libvirt-utils` – To use `virsh`
- For Solaris and FreeBSD
  - `pciconf` – To use `pciconf`
  - `prtdiag` – To use `prtdiags`

NOTE OneCapture packet data can be captured as part of the memory dump within the firmware dump.

NOTE If you do not use OpenMpi on RoCE, some special information commands, such as `ompi_info` and `ofed_info`, are not required.

The following sections describe, by operating system, the information collected by OneCapture.

3.1 Windows Systems

The following information is available for Windows systems.

Table 1 Windows Information Collected

Type	Information
System Configuration	
	System information
	System inventory
	PCI information
	CPU information
	CPUEx information
Driver Configuration	
	Devcon collected information
	<HKLM>/Hardware/DeviceMap/Scsi
	Driverquery collected information
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
	TinyLog
	PowerShell RoCE Information
	NetStat RoCE information
ElxTrace	
	Trace messages
MILI	

Table 1 Windows Information Collected (Continued)

Type	Information
	MILI log
	MILI service status
	MILI service information
OneCommand CNA Manager Application Information	
	Hbacmd version
	Hbacmd ListHBAs
	Hbacmd ListHBAs (local)
	Hbacmd HbaAttribute (local)
	Hbacmd PortAttribute (local)
	Cnaboardmgmt.log
	RM.log
	OneCommand CNA Manager installer log
OneKat	
	MILI report
	Onekat Adapter list
Core Dump	
	adapter core dump
	adapter core dump down
Windows Information	
	Broadcom services status
	setupapi.*.log
	Event logs
Disk	
	disk detail
Win logs	
	Win logs
Win Setup Log	
	Win Setup Log
AutoPilot Report	
	FCoE
	iSCSI
	NIC
MPIO Information	
	mpclaim -s
	mpclaim -e
	mpclaim -v
iBFT Information	
	iSCSI Crashdump
	iBFTtable information by ibftinfo utility

3.2 Linux Systems

The following information is available from Linux systems.

Table 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 Broadcom vendor ID.	
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	
ROCE Specific Information		
	Network information	
	SCSI device info	
	System states and logs	

Table 2 Linux Information Collected (Continued)

Type	Information	Parameter
	Module info	
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		
	Broadcom device interrupts counter, in five-second intervals	
iSCSI Specific Information		
	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	
FCoE Specific Information		
	brcmfcoe	
	SCSI class information	/sys/class/scsi/..
	lpfcmlp information	/proc/scsi/lpfcmpl/*
Library Information		
	The version number for the following libraries: ■ libbrcmdfc ■ libbrcmmili ■ libHBA	
Driver Information		
	RPM packages with be2 prefix name	
	Loaded kernel modules with be2 prefix name	
	NIC kernel module information	modinfo be2net
	brcmfcoe kernel module information	brcmfcoe
OneCommand CNA Manager Application Information		
	RPM packages with elx prefix name	

Table 2 Linux Information Collected (Continued)

Type	Information	Parameter
	Running status of process hbanywhere	
	Running status of process ocmanager	
	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	
	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	
Crash dump[a]		
	kdump	
Adapter Info		
	Onekat Adapter list	
	Onekat milirpt	
MPIO Info		
	multipath -ll	/etc/multipath.conf
Virtualization Logs		
		/var/log/xen/xend.log
		/var/log/libvirt/libvirtd.log

a. Use only the `/var/crash` directory for crash dump files. Dump files will not be created under any other path.

3.3 Solaris Systems

The following information is available from Solaris systems.

Table 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
	Paging Activity in 5 seconds	vmstat -p 1 5
Device Interrupts		
	Broadcom device interrupts counter, 5 seconds	
Kernel Parameters		
	System definition	sysdef -D
	System definition, in device tree format	sysdef -dD
	Kernel statistics	kstat

Table 3 Solaris Information Collected (Continued)

Type	Information	Parameter
OneCommand CNA 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	
	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	
Crash Dump[a]		
	kdump	

a. Use only the `/var/crash` directory for crash dump files. Dump files will not be created under any other path.

3.4 FreeBSD Systems

The following information is available from FreeBSD systems.

Table 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

Table 4 FreeBSD Information Collected (Continued)

Type	Information	Parameter
	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
	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		
	Broadcom device interrupts counter, in 5-s intervals	
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[a]		
	kdump	
Core Dump	dump	dump/CoreDump

a. Use only the `/var/crash` directory for crash dump files. Dump files will not be created under any other path.

3.5 VMware Systems

The following information is available from VMware systems.

Table 5 VMware Information Collected

Type	Information
VMware vm-support package (as provided by default manifest in ESXi)	
	Active directory
	CIM
	Configuration
	Crash
	Fault
	File system
	Hardware
	Hung VM
	Installer
	Integrity checks
	Logs
	Network
	Performance snapshot
	Storage
	System
	Testing
	Userworld
	Virtual
	Host profiles
HBA Dump	
	Core dump
	Onekat Adapter list
MILI log	
	RM.log
	mili2d.log
Log config	
	/tmp/*.log
	/tmp/ucna.txt
	/etc/cim/brcmccx/*.log
	/etc/cim/brcmccx/*.dmp
	/etc/cim/brcmccx/*.conf
VM_KV_PAGE	
	vm_kv_page -v
	lpfc-kv-pages.txt
	vm_kv_page -q all -p all

Table 5 VMware Information Collected (Continued)

Type	Information
	lpfc-kv-pages.txt
MILI Report	
	Onekat milirpt

Chapter 4: Troubleshooting

This section describes circumstances under which your system may operate in an unexpected manner, and it offers resolutions for each situation.

NOTE If an operating system is not specified, the issue is applicable to all operating systems.

Table 1 OneCapture Troubleshooting

Situation	Resolution
Adapter information was not captured.	1. You must install OneCapture on the system where you are collecting data. 2. Additionally, install the driver for the devices on the system. The drivers must be installed before driver information is available for capture. 3. Install the OneCommand CNA Manager application from the Broadcom website.
The output HTML file displays a `missing Data File` error.	Verify that the zipped file has been extracted completely from the archive folder before you open the HTML file.
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, the adapters are taken offline and require a system reboot to recover.


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