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Application Note

CPE OMCI

OMCI Message Capture and Playback

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CPE-AN2700-R	04/20/16	Format update from first release of 09/01/10

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About This Document

Purpose and Audience

This document describes the ONT Management Control Interface (OMCI) message capture and replay facility.

This tool can capture both downstream and upstream OMCI messages into an internal data file, and playback downstream OMCI messages from the data file. It also supports downloading the data file to an ONU using the terminal server. The tool is invoked from the Broadcom CLI shell.

This tool can be used for OMCI interoperability troubleshooting, field support, and evaluation of protocol compliance during the software development.

This documentation is primarily for engineers who provide technical support, or develop features related to the OMCI protocol.

Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use.

For a comprehensive list of acronyms and other terms used in Broadcom documents, go to: http://www.broadcom.com/press/glossary.php.

Document Conventions

The following conventions may be used in this document:

Convention	***Description***
Bold	User input and actions: for example, type **exit**, click **OK**, press **Alt+C**
`Monospace`	Code: `#include <iostream>` HTML: `<td rowspan = 3>` Command line commands and parameters: `wl [-l] <command>`
< >	Placeholders for *required* elements: enter your <username> or `wl <command>`
[ ]	Indicates *optional* command-line parameters: `wl [-l]` Indicates bit and byte ranges (inclusive): [0:3] or [7:0]

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Technical Support

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Introduction

Objectives

The primary objectives of the OMCI Message Capture and Playback debug utility are to support the following:

- The capture of both raw downstream and upstream OMCI message traffic to an internal data file.
- The capture of raw downstream OMCI message traffic to the serial console.
- The playback from the internal capture data file of OMCI downstream message traffic.
- The selective XML formatted display of OMCI message traffic to the serial console.
- The upload of capture data from the serial port to the internal capture file.
- The download of internal capture data file to a USB Flash stick on one of the two USB ports.
- The upload of a capture data file from a USB Flash stick on one of the two USB ports to the internal capture data file.

Requirements

The OMCI message capture and playback utility must satisfy the following high level requirements:

- Provide full CLI based control over all aspects of the capture and playback of OMCI messages.
- Integrate the OMCI message capture and playback utility into the existing Linux based OMCI CLI based debugging paradigm.
- Support the capture of all “real” OMCI messages received from the GPON MAC, while filtering out CMS messages and OMCI messages being played back.
- Provide for temporary buffering of captured OMCI messages to a disk file or RAM based data structure.
- Time stamp each OMCI message.
- Tag all OMCI downstream messages for replay.
- Provide CLI commands to perform the following operations:
  - Enable OMCI message capture.
  - Disable OMCI message capture.
  - Copy OMCI message buffer/file to USB storage device (Linux).
  - Playback OMCI messages from internal capture file.
  - Upload and download the internal data file to/from USB memory stick.
  - Dump OMCI message buffer/file to UART console display.
  - Interpret raw OMCI messages and display in decoded format.

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Commands

This section describes the commands of the OMCI message capture and playback feature.

OMCI Capture Control

The purpose of this command is to provide basic state control over whether OMCI message capture is enabled or disabled.

By default, OMCI messages are captured to the following internal text file: `/var/omci.msg`.

Syntax:

```
omci capture control --state <on [--overwrite <y|n>] | off>
```

Parameters:

--state

Indicates to the console that the following argument be used to set the control state to the value provided.

--overwrite

Indicates to the console that the next argument be used to control whether the existing file is overwritten or appended to when opened. The default behavior is to overwrite the file.

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OMCI Capture Replay

The purpose of this command is to provide the ability to replay a set of captured OMCI messages by sequentially executing each one in the file as though it was received from the OLT.

Syntax:

```
omci capture replay --state <on [--filename <src_file_name>] | off>
```

Parameters:

--state

Indicates to the console that the next argument be used to control the state of the replay feature.

--filename

Replay defaults to using the standard internal capture file located under /var. But this behavior can optionally be altered and the replay performed using any capture file that is accessible by the OMCI stack software running under Linux on the target ONT. This option indicates to the console that the argument that follows should be used as the full file name, and any required path, for the file to be used for replay.

OMCI Capture View

The purpose of this command is to provide the ability to view a set of captured OMCI messages by sequentially printing each one in the file to the console screen.

Syntax:

```
omci capture view [--filename <src_file_name>]
```

Parameters:

--filename

Viewing defaults to the contents of the capture file using the standard internal capture file located under /var. The filename option allows this behavior to be altered and the contents of any capture file that is accessible by the OMCI stack software running under Linux on the target ONT be viewed. This option indicates to the console that the argument that follows should be used as the full file name, and any required path, for the file to be used for viewing.

OMCI Capture Save

The purpose of this command is to provide the ability to save the captured OMCI message file /var/omci.msg to an external USB device accessible on either USB1_1 or USB2_2.

Syntax:

```
omci capture save [--filename <dest_file_name>]
```

Parameters:

--filename

The save feature defaults to copying the internal capture file to the root level of the first USB device found, and uses the same name for the file. This option indicates to the console that the default behavior will be deviated from, by using the argument that follows as the base file name to be used for the saved file. The file will still be stored in the same location using the provided file name as shown:

/mnt/usb1_1/<dest_file_name>

or

/mnt/usb2_2/<dest_file_name>

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OMCI Capture Restore

The purpose of this command is to provide the ability for a previously saved capture file to be restored to an ONT so that it can be subsequently replayed.

Syntax:

```
omci capture restore [--filename <src_file_name>]
```

Parameters:

--filename

The default behavior is to locate the omci.msg on either of the USB devices and to copy it to /var/omci.msg. This option indicates to the console that the default behavior will be deviated from, by using the argument that follows as the base file name to be used for the file to be restored. The file will still be expected to be located at the root level of one of the USB devices as shown:

/mnt/usb1_1/<src_file_name>

or

/mnt/usb2_2/<src_file_name>

and if found, will be used to restore /var/omci.msg.

OMCI Grab

The purpose of this command is to provide an alternate method for uploading or restoring a previously saved capture file by either pasting or sending it to the console input where it is captured and saved as a disk file.

Syntax:

```
omci grab --filetype <txt|bin> --filename <dest_file_name>
```

Parameters:

--filetype

OMCI grab provides the ability to capture both, text files containing a carriage return line feed at the end of each line, and files that are not line oriented but are fixed record oriented similar to a binary file. The filetype option allows the user to specify the type of file they are trying to upload, and tells the console that the data that follows should be treated as conventional line oriented text, or fixed record oriented data.

--filename

This option is required to tell the console where to store the data that follows the command. If the user is uploading an OMCI message capture file it could be stored at /var/omci.msg, but since the other features support filename options, it can be located elsewhere and referenced in that location.

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Terminating OMCI Grab

The OMCI grab command is unique among the other commands in that it continues to receive input until it is terminated by a specific sequence. The termination sequence for a text file upload is:

```
[GRAB:END]<CR>
```

While the termination sequence for a binary file upload is simply <CR>.

If the command is used manually then the termination sequence must be entered manually at the console, but if the command is used in a script containing the uploaded data, it can be added to the end of the script file itself.

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