Software Upgrade

This chapter describes the methods available for upgrading software on the ONS 15216 EDFA3. It provides both procedures for upgrading an ONS 15216 EDFA3 release, and a software uninstall procedure to return to the old release. This chapter contains the following sections:

12.1 Upgrading the Software

During the download of new software file, the NE supervision is granted with no traffic disruption. Only one download session at time (using FTP or TL1) is permitted. During the download, the TL1 commands COPY-RFILE and APPLY are inhibited. The ONS 15216 EDFA3 stores two versions of its software on its flash file system (FFS):

- Active version (specified in the first boot entry)
- Standby version (specified in the second boot entry).

The module firmware download is transparent to the user (that is, the user is not aware of it happening during the software download). A checksum test on the downloaded software file is performed to prevent loading of wrong or corrupted files on the ONS 15216 EDFA3. The agent download message contains the following parameters:

- FTP server IP address
- Name and path of the file to be downloaded

The agent download is accomplished using FTP protocol as follows:

1. The agent receives the start download message COPY-RFILE.

2. The agent acts as an FTP client opening a connection toward the specified FTP server.

3. The agent returns a DENY notification with an error message if the connection fails. The error messages in Table 12-1 are provided to clarify the fail problem.

Table 12-1   Download Failure Messages

Message	Description
SROF	Connection to Server Failed
SROF	User Login Failed
SROF	File Not Found

Table 12-1 Download Failure Messages (continued)

Message	Description
SROF	File Exists
SROF	FFS Full

4. The agent sends the following messages to all connected element managers (EMs), signaling that a download procedure is started:

    a. `REPT EVT FXFR - START`: The file transfer process is started.

    b. `REPT ALM EQPT - SOFTDOWN`: The software download is in progress.

5. The TL1 agent posts the **get** command to the FTP server (`REPT EVT FXFR - IP`).

6. Upon successful file transfer completion, the agent issues a `REPT EVT FXFR - COMPLD - SUCCESS` message to indicate the success of the operation. In case of transfer failure or checksum failure, the agent issues an event `FXFR - COMPLD - FAILURE` message to notify the EM that the download attempt failed.

The agent will not process any other download command (`COPY-RFILE` and `APPLY`) during an active download. The following error message is issued during the download:

`SROF - "Software Download In Progress"`

7. The download replaces the software file contained in the secondary boot entry (standby) and the SOFTDOWN alarm is cleared.

To activate the new software, issue the APPLY command to apply the software cutover in memory and to reset the EDFA3. An event is generated to communicate the software cutover and the EDFA3 reset to the EM (CUTOVERRESET). The APPLY command immediately resets the ONS 15216 EDFA3.

12.1.1 Software Upgrade Using the TL1 Shell

The following procedure is used to upgrade the software image from the most recent release to the new release using TL1 commands. To upgrade using FTP, see the . A firmware image upgrade is not required. This procedure is not service affecting as the ONS 15216 EDFA3 reboots.

> **Note** For correct operation of your ONS 15216 EDFA3, you must have already upgraded to the most recent software release before performing this procedure.

Step 1 If the ONS 15216 EDFA3 has already been assigned an IP address, subnet mask, gateway address, and sid/tid name, proceed to Step 9.

Step 2 Connect to the EIA/TIA-232 (RS-232) port on the ONS 15216 EDFA3.

Step 3 Open a Terminal application. (In Microsoft Windows, HyperTerminal can be used. HyperTerminal is found in the **Accessories > Communications** menu.) The port settings should be:

- 9600 bps
- 8 data bits, no parity
- 1 stop bit
- No flow control

Step 4 Verify that the ONS 15216 EDFA3 TL1 login prompt appears (you might need to press **Enter** one or more times for the system to respond), as shown below:

```
>
```

Step 5 At the command prompt, log in as a user with administrative (RWA) privileges (the default is CISCO15 with no password).

Step 6 Issue the ACT-USER command according to the syntax in the following example:

```
> ACT-USER::CISCO15:100;
```

where 100 is the ctag for this command. A semicolon ends each TL1 command. You should receive the following response:

```
EDFA3 2003-09-30 11:29:49
M 100 COMPLD
/* ACT-USER */
;
>
```

Step 7 At the command prompt, set the IP address using the ED-NE-GEN command according to the syntax in the following example:

```
>
ED-NE-GEN:::101:::NAME=Amp01,IPADDR=192.167.3.4,IPMASK=255.255.255.0,DEFRTR=192.167.3.20;
```

Step 8 If any changes were made, the system must be rebooted to make the IP address active. Enter the INIT-SYS command according to the syntax in the following example:

```
> INIT-SYS::ALL:102::1;
```

Step 9 Put the software image file for the new release on a PC or server that has an FTP server and is on the same LAN as the ONS 15216 EDFA3.

Step 10 Verify that the ONS 15216 EDFA3 is connected to the LAN using the module LAN port.

If not connected, use a straight-through or crossover CAT-5 Ethernet cable with RJ-45 connectors to connect from the LAN port to a LAN switch or hub.

Step 11 Open a Telnet session to the 3083 port of the ONS 15216 EDFA3. In Microsoft Windows, click **Start > Run**, and type the following in the Open field:

```
telnet <ONS-15216-EDFA3-IP-address> 3083
```

Step 12 Verify that the ONS 15216 EDFA3 TL1 login prompt appears:

```
WARNING
This system is restricted to authorized users for business purposes. Unauthorized access
is a violation of the law. This service may be monitored for administrative and security
reasons. By proceeding, you consent to this monitoring.
```

Step 13 Log into the ONS 15216 EDFA3 as a user with administrative privileges.

Step 14 Issue the RTRV-NE-GEN command to identify the standby software as shown in the following example:

```
> RTRV-NE-GEN:EDFA3::123;
```

You will receive a response similar to the following:

```
    EDFA3 1970-01-12 05:58:18
M   12 COMPLD
   "EQPT:NAME=EDFA3,DESCR=ONS15216EDFA3,LONGITUDE=,LATITUDE=,IPADDR=172.16.30.85,
IPMASK=255.255.255.0,DEFRTR=0.0.0.0,MACADDRESS=00059A3DEB28,
ACTIVESW=ONS15216Edfa3-00.04.15-003L-23.23,STANDBYSW=NS15216Edfa3-00.4.14-003L-12.09,
SNMPSETREQQ=ENABLE"
```

;

Step 15 Issue the DLT-RFILE command to delete the standby software file unless it is identical to ACTIVESW. This ensures that there will be enough space for the next step.

Step 16 At the command prompt, enter the COPY-RFILE command, specifying TYPE=SWDL, the FTP parameters (user identifier, password, and IP address of the FTP server), and the filename. Use the syntax in the following example to transfer the file:

```
> COPY-RFILE:::123::TYPE=SWDL,SRC="ftp://user1:passwd@192.168.85.10:21/bin/
15216EdfaSw_x.x.x",DEST="file://fd1/15216EdfaSw_x.x.x",OVERWRITE=YES;
```

where 15216EdfaSw-x.x.x is the new filename.

An FTP URL has the following format:

```
ftp:[//[<userid>[:<password>]@]<ftphost>[:<port>]]/<urlpath>
```

A file URL (referring to the local system) has the following format:

```
file://localhost/<urlpath>
```

Table 12-2 describes the parameters in the FTP and file URLs.

Table 12-2   *FTP URL and File URL Parameters*

Parameter	Description
<userid>	FTP user identifier
<password>	FTP password for the user
<ftphost>	IP address of the FTP server
<port>	Port number to connect to
<urlpath>	Path in the following format: `<cwd1>/<cwd2>//<cwdn>/<filename>` where <cwd1> and <cwdn> are directory levels and <filename> is the file name.

The ONS 15216 EDFA3 should respond with autonomous messages using syntax similar to the following examples:

```
EDFA3 2003-09-30 11:34:05
M 123 COMPLD
/* COPY-RFILE */
;
EDFA3 2003-09-30 11:34:05
A 7 REPT EVT FXFR
EQPT:bin/15216EdfaSw_2.2.1,START,,
;
EDFA3 2003-09-30 11:35:24
A 8 REPT EVT FXFR
EQPT:bin/15216EdfaSw_2.2.1,COMPLD,SUCCESS,1963195
;
```

When the SUCCESS message appears, the file transfer is complete.

Step 17 Ensure that the entire new software image file was downloaded. The number after SUCCESS in the final REPT EVT FXFR - COMPLD message indicates the number of bytes transferred.

Step 18 Check that the correct software was downloaded by issuing RTRV-NE-GEN command and verify that the STANDBYSW is now the new upgraded software.

Step 19   At the command prompt, enter the APPLY command to make the new image current, using the syntax in the following example:

> `> APPLY:::123;`

The ONS 15216 EDFA3 logs you off and reboots with the new software version. The software upgrade procedure is complete. Press **Enter** to get out of the present console. You can now Telnet again to open a session with the new console.

12.1.2 Software Upgrade Using FTP

The following procedure is used to upgrade the software image using FTP. To upgrade using TL1 commands, see the "12.1.1 Software Upgrade Using the TL1 Shell" section on page 12-2. A firmware image upgrade is not required. This procedure is not service affecting, as the ONS 15216 EDFA3 processor reboots.

> **Note**   For correct operation of your ONS 15216 EDFA3, you must have already upgraded to the most recent software release before performing this procedure.

Step 1   If the ONS 15216 EDFA3 already has been assigned and IP address, subnet mask, gateway address, and host name, skip to Step 4.

Step 2   Connect to the EIA/TIA-232 (RS-232) port on the ONS 15216 EDFA3.

Step 3   Open a Terminal application. (In Microsoft Windows, HyperTerminal can be used. HyperTerminal is found in the **Accessories > Communications** menu.) The port settings should be:

- 9600 bps
- 8 data bits, no parity
- 1 stop bit
- No flow control

Step 4   Put the new software image file on a PC or server that has an FTP server and is on the same LAN as the ONS 15216 EDFA3.

Step 5   Verify that the ONS 15216 EDFA3 is connected to the LAN via the module LAN port.

If not connected, use a straight-through CAT-5 Ethernet cable with RJ-45 connectors to connect from the LAN port to a LAN switch or hub.

Step 6   Open an FTP session to the IP address of the ONS 15216 EDFA3. Provide the administrator user name and password. At the ftp> prompt, enter the following command to complete the FTP logon:

`ftp> login FTP_username`

Step 7   When prompted, enter the FTP user password as follows:

`Password: ********`

The password that you enter is masked by asterisks (*). The ONS 15216 EDFA3 should respond as follows:

`230 User FTP_username logged in`

Step 8   At the FTP prompt, enter the following command:

```
ftp> cd /Directory_of_FTP_site
```

Step 9   At the command prompt, log in as a user with administrative (RWA) privileges (the default is CISCO15 with no password) by issuing the ACT-USER command according to the syntax in the following example:

```
> ACT-USER::CISCO15:100;
```

where 100 is the ctag for this command. A semicolon ends each TL1 command. You should receive the following response:

```
EDFA3 2003-09-30 11:29:49
M 100 COMPLD
/* ACT-USER */
;
>
```

Step 10   Issue the RTRV-NE-GEN command and identify the standby software name.

Step 11   If the standby SW is not the same as the ACTIVESW then issue DLT-RFILE command to delete the standby software file. Alternatively, in the FTP window, issue the following command to delete that file:

```
> del <STANDBYSW>
```

This ensures that there will be enough space for the next step.

Step 12   At the ftp> prompt, enter the following command to set the file transfer type to binary:

```
ftp> bin
```

The ONS 15216 EDFA3 responds as follows:

```
200 Type set to I,binary mode
```

Step 13   At the FTP prompt, enter the following command:

```
ftp> put <new-software-version>
```

Step 14   Press **Enter** to begin the file transfer. When the file transfer is complete, the following information should be displayed:

```
226 Transfer complete
ftp: 4266558 bytes sent in 59.58 seconds 71.62Kbytes/sec.
```

Step 15   At the FTP prompt, enter the following command:

```
ftp> quit
```

The FTP session is terminated and the following response displays:

```
221 Bye...see you later
```

The ONS 15216 EDFA3 then returns to the hostname prompt.

Step 16   In the TL1 window, issue the ED-NE-GEN command. Include the following parameter:

```
STANDBYSW=<new-software-file-name>
```

Step 17   Issue the APPLY command to apply the software cutover in memory and to reset the ONS 15216 EDFA3.

The ONS 15216 EDFA3 logs you off and reboots with the new software version. The software upgrade procedure is complete.

12.1.3 Software Upgrade Using SNMP

The following procedure is used to upgrade the software image using Simple Network Management Protocol (SNMP).

Step 1 Set the outside FTP server information by using SNMP to set the cerent15216EdfaGenericOprnsSrcFileLoc. Any of the following formats are supported:

- ftp://username:passwd@IPaddress/subdirectory/../filename
- ftp://username:passwd@IPaddress/Filename
- ftp://Ipaddress/subdirectory/../filename
- ftp://Ipaddress/filename
- ftp://username@IPaddress/subdirectory/../filename

Use the command format shown in the following example:

```
snmpset -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsSrcFileLoc.0=
"ftp://ctmsvt:ctm456%@144.254.170.95/ONS15216Edfa3-0.4.5-003J-13.18"
```

Step 2 Set the inside EDFA3 file current only if the /fd1 subdirectory is open. For FTP using cerent15216EdfaGenericOprnsDestFileLoc, the EDFA3 side should be /fd1/filename or file://fd1/filename. Use the command format shown in the following example:

```
snmpset -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsDestFileLoc.0=
"/fd1/ONS15216Edfa3-0.4.7-003J-27.18"
```

Step 3 Set the cerent15216EdfaGenericOprnsOwner with your personal name so that the system know who is using it. Use the command format shown in the following example:

```
snmpset -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsOwner.0="<yourname>"
```

Step 4 Set the operation mode in cerent15216EdfaGenericOprnsMode to download the image software program, update the SNMP FTP client, and automatically put the download file on the /fd1. The destination name variable is not necessary for SNMP operation mode 4 (for software download), mode 5 (for file upload), or mode 6 (to restore files). After setting values 4 through 6, the load will process as defined. Use the command format shown in the following example:

```
snmpset -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsMode.0=4
```

Step 5 Using the SNMP get command to get the status by checking cerent15216EdfaGenericOprnsResult. Use the command format shown in the following example:

```
snmpget -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsResult.0=success (10)
```

Step 6 Go back to cerent15216EdfaGenericOprnsMode and set the variable to 3 (CutOver) to reset the system to use the new software. Use the command format shown in the following example:

```
snmpset -v 2c 10.51.100.233 cerent15216EdfaGenericOprnsMode.0=3
```

12.2 Uninstalling the Software Using TL1

The following procedure is used to change the software image from a new release back to the previous release using TL1 commands. This procedure is not service affecting.

Step 1 Log into the TL1 shell as a user with administrative privileges. (If using a Telnet session, specify port 3083 to be sure to log into the TL1 shell.)

Step 2 At the command prompt, enter the RTRV-NE-GEN command to check the active and standby software images. Use the syntax shown in the following example:

```
> RTRV-NE-GEN:Amp01::101;
```

Step 3 From the response, check that ACTIVESW is the new filename and STANDBYSW is the old filename.:

Step 4 At the command prompt, enter the APPLY command to make the old image. Use the command format shown in the following example:

```
> APPLY:Amp01::102;
```

Note The APPLY command automatically resets the ONS 15216 EDFA3. After this command, the system will self-restart in a few seconds. The user must log in again after the restart.

The software uninstall procedure is complete.