



Troubleshooting Mux/Demux Module Problems

This chapter describes how to troubleshoot mux/demux module problems. This chapter contains the following sections:

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- [3.2 Initial Troubleshooting Checklist, page 3-2](#)
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3.1 Overview

The optical mux/demux motherboards occupy slots 0 and 1 of the Cisco ONS 15540 ESPx chassis. The chassis uses one optical mux/demux motherboard for unprotected operation or two per system for protected operation. The chassis supports the following mux/demux motherboards:

- Cisco ONS 15540 ESPx mux/demux motherboard with OSC
- Cisco ONS 15540 ESPx mux/demux motherboard without OSC

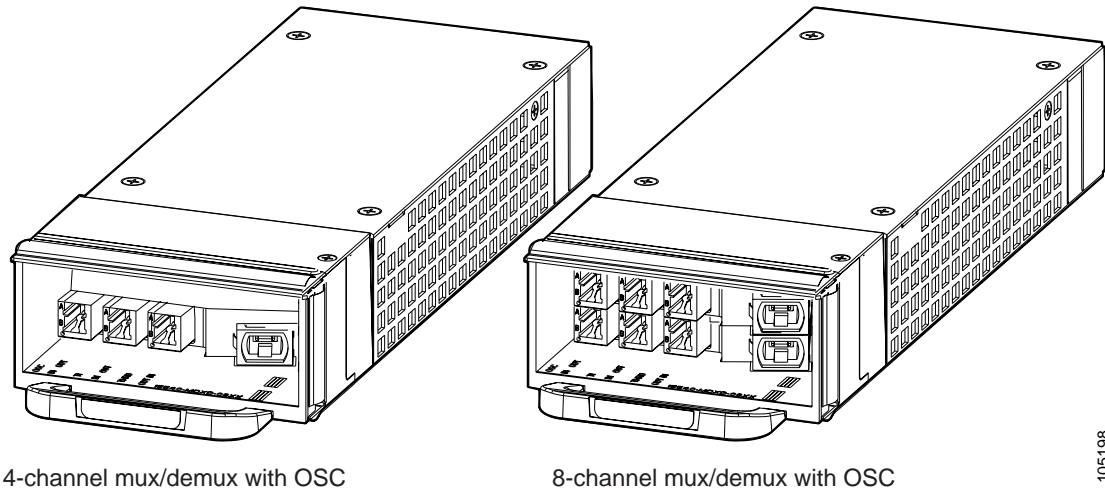
Each Cisco ONS 15540 ESPx mux/demux motherboard can accept up to four 4-channel or 8-channel mux/demux modules or one 32-channel mux/demux module. The modular mux/demux motherboards are available with or without OSC (optical supervisory channel) and can be populated according to user needs.

There are three types of mux/demux modules available:

- 4 channels
- 8 channels
- 32 channels

Channels not filtered are passed on to the next mux/demux module. (See [Figure 3-1](#).)

Figure 3-1 4- and 8-Channel Mux/Demux Modules with OSC



4-channel mux/demux with OSC

8-channel mux/demux with OSC

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One 32-channel terminal mux/demux module can be installed in slot 0 or 1 of the Cisco ONS 15540 ESPx chassis. The 32-channel terminal mux/demux module is equipped with OSC, input/output, and monitoring ports that use MU connectors. The remaining 8 ports that connect to the transponder modules use MTP connectors. The OSC is a dedicated, full duplex communication ITU-T DWDM channel for in-band management traffic. The input/output ports are trunk connections used to connect to the external fiber trunks. Monitoring ports use a one percent tap coupler (20 dB) for both the mux and demux sides and also allow you to non-obtrusively connect an OSA (optical spectrum analyzer) to monitor the incoming or outgoing DWDM signals.

3.2 Initial Troubleshooting Checklist

Follow this initial checklist before proceeding with the troubleshooting procedures:

- Check that the LEDs on the mux/demux motherboard show the proper state.
- Verify patch configuration.
- Ensure that all optical connectors are clean. Refer to the [Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections](#) document.

3.3 Troubleshooting Mux/Demux Module Interface Problems

This section contains troubleshooting procedures for mux/demux module interface problems.

3.3.1 OSC Wave Interface Down

Symptom The OSC wave interface is down.

[Table 3-1](#) describes the potential causes of the symptom and the solutions.

Table 3-1 OSC Wave Interface Is Down

Possible Problem	Solution
Interface is administratively down.	Issue the show interfaces wave command to verify the OSC wave interface status. If it is administratively down, issue the no shutdown command.
Receive power level is low.	Check the receive power level from the mux/demux module. Ensure that it is between -19 dBm and -1.5 dBm.
The optical connectors are dirty.	Refer to the Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections document .
The patch cables are faulty.	Check the patch cables between the OSC module and the mux/demux module for pinches or breaks. Correct any problems with the fiber.

3.3.2 Mux/Demux Module Is Not Recognized

Symptom The mux/demux module does not appear in the **show interfaces** or the **show running-config** command output.

Table 3-2 describes the potential cause of the symptom and the solution.

Table 3-2 Mux/Demux Module Not Recognized

Possible Problem	Solution
Mux/demux module is not inserted properly.	Remove and carefully reinsert the mux/demux module. Issue the show interfaces command, the show hardware command, or the show running-config command to ensure the mux/demux channel interfaces are up.

3.3.3 Mux/Demux Filter Interfaces Are Not Recognized After a Processor Card Switchover

Symptom Mux/demux filter interfaces are not recognized after a processor card switchover.

Table 3-3 describes the potential cause of the symptom and the solution.

Table 3-3 Mux/Demux Channel Interfaces Not Recognized After Switchover

Possible Problem	Solution
Mux/demux module IDPROM not programmed correctly.	Issue the show running-config command to verify mux/demux filter interfaces are present. Repeat on the standby side. If the interfaces are not present, call Cisco customer support.

3.3.4 Mux/Demux Traffic Degrades or Fails

Symptom Mux/demux traffic degrades or fails.

[Table 3-4](#) describes the potential cause of the symptom and the solution.

Table 3-4 Mux/Demux Traffic Degrades or Fails

Possible Problem	Solution
CPU power loss. Both CPUs are down. A power failure significantly reduces the power at the receiver because the passband of the arrayed wavelength grating (AWG) filter is temperature sensitive.	Investigate the CPU power failure. For more information on CPU troubleshooting, see Chapter 2, “Troubleshooting Processor Card Problems.”