



# Troubleshooting 10-Gbps ITU Trunk Card Problems

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This chapter describes how to troubleshoot 10-Gbps ITU trunk card problems. This chapter includes the following sections:

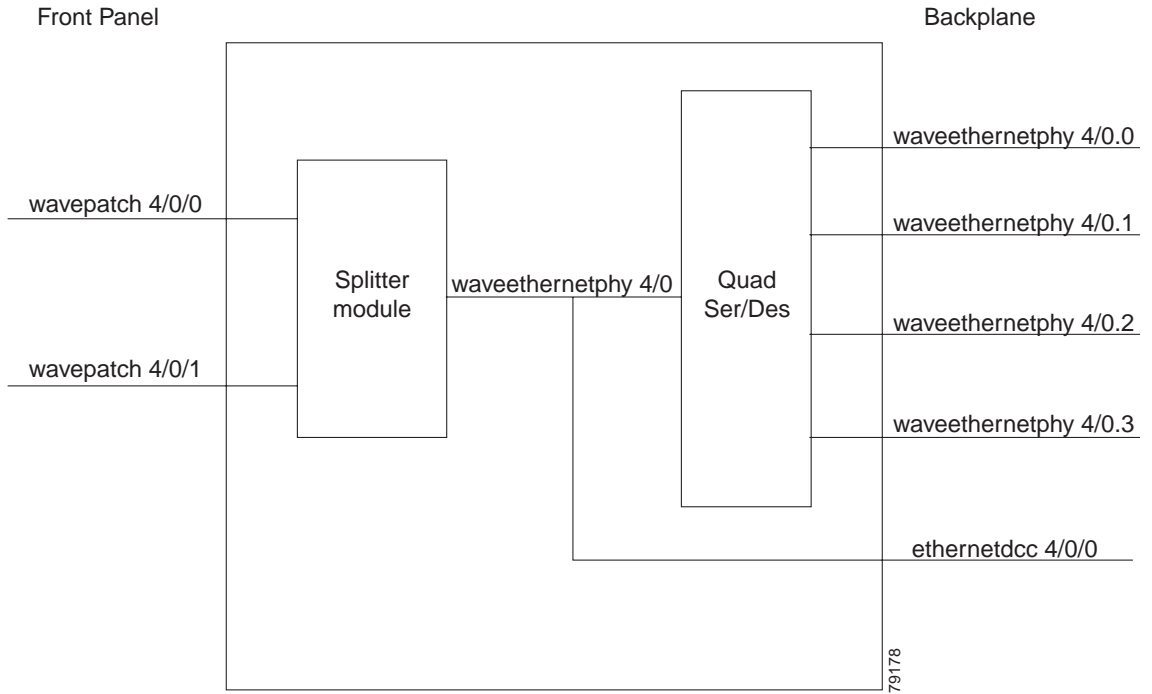
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## 9.1 Overview

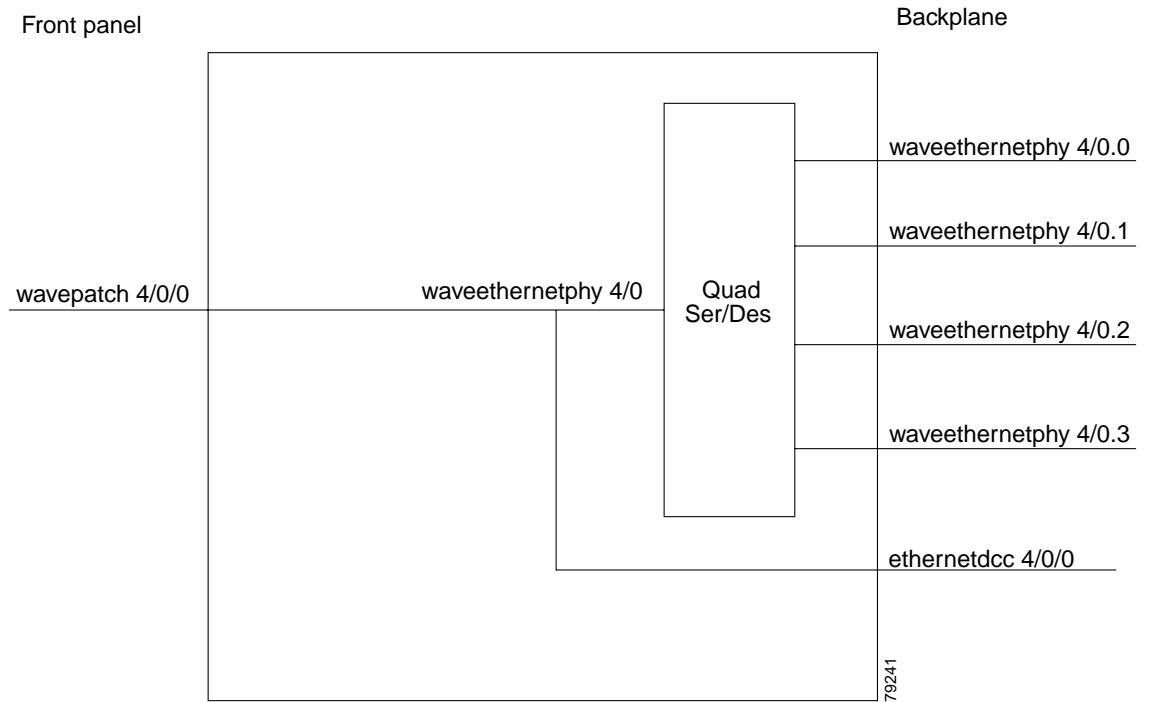
The 10-Gbps ITU trunk card converts up to four aggregated signals to an ITU-compliant wavelength, or channel.

[Figure 9-1](#) shows the interfaces for the splitter 10-Gbps ITU trunk card. [Figure 9-2](#) shows the interfaces for the nonsplitter 10-Gbps ITU trunk card.

**Figure 9-1** Splitter 10-Gbps ITU Trunk Card Interfaces



**Figure 9-2** Nonsplitter 10-Gbps ITU Trunk Card Interfaces



## 9.2 Initial Troubleshooting Checklist

Follow this initial checklist before proceeding with the troubleshooting procedures:

- Check that the receive signal power level is between  $-22$  dBm and  $-6$  dBm.
- Issue **show interfaces** commands to ensure that the waveethernetphy and wavepatch interfaces are administratively up, that there are no errors on the interfaces, and that the ITU laser is up.
- Issue a **show connect** command to verify the status of the cross connections to the aggregation cards.
- Check that the LEDs on the cards show the proper state.
- Issue a **show facility-alarm status** command to display the alarms on the interfaces.
- Issue the **show hardware linecard** command to verify the 10-Gbps ITU trunk card functional image.
- Check that the 10-Gbps ITU trunk cards are patched to the correct OADM ports. Issue a **show patch** command to verify that there are no frequency mismatches.
- Ensure that all optical connectors are clean. Refer to the [Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections](#) document.

## 9.3 Troubleshooting 10-Gbps ITU Trunk Card Interface Problems

This section contains troubleshooting procedures for 10-Gbps ITU trunk card interface problems.

### 9.3.1 Waveethernetphy Interface Down and Shows Loss of Lock

**Symptom** A waveethernetphy interface is down and signal quality status shows Loss of Lock.

**Table 9-1** describes the potential causes of the symptom and the solutions.

**Table 9-1** *Waveethernetphy Interface Down and Shows Loss of Lock*

Possible Problem	Solution
The patch cables are incorrectly connected to the OADM module.	Check the patch error status in the <b>show patch</b> command output. If it shows a mismatch, correct the patch the 10-Gbps ITU trunk card to the correct filter ports on the OADM module.
The laser frequency is not correctly configured.	Check the configured laser frequency in the <b>show interfaces waveethernetphy</b> command output. If it is incorrect, issue the <b>laser frequency</b> command to configure the correct frequency.
The optical connectors are dirty.	Refer to the <a href="#">Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections</a> document.
The ITU signal power is too low or too high.	Check the signal power received from the OADM module. Ensure that it is between $-22$ dBm and $-6$ dBm. If not, adjust the attenuation.
The trunk fiber is broken.	Check the signal power received from the trunk. If below $-22$ dBm, check for trunk fiber breaks.

## 9.3.2 Waveethernetphy Interface Down and Shows Loss of Sync

**Symptom** A waveethernetphy interface is down and signal quality status shows Loss of Sync.

[Table 9-1](#) describes the potential causes of the symptom and the solution.

*Table 9-2 Waveethernetphy Interface Down and Shows Loss of Sync*

Possible Problem	Solution
The optical connectors are dirty.	Refer to the <a href="#">Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections</a> document.
The ITU signal power is too low.	Check the signal power received from the OADM module. Ensure that it is between $-22$ dBm and $-6$ dBm. If not, adjust the attenuation.
The remote client interface reported errors.	Verify that the client interface on the remote system do not report errors. Resolve any error conditions.
An interface in the signal path has errors.	Issue the <b>show interfaces</b> commands for the interfaces in the signal path to determine if errors occur.
The trunk fiber is broken.	Check the signal power received from the trunk. If below $-22$ dBm, check for trunk fiber breaks.

## 9.3.3 CVRD Errors on the Waveethernetphy Interface

**Symptom** The waveethernetphy interface is in a down state and in the **show interfaces** command output the Code violation and running disparity error count (64b66b CVRD) field are increasing and the Signal Condition field shows “Signal Fail Threshold exceeded.”

[Table 9-3](#) describes the potential causes of the symptom and the solutions.

*Table 9-3 CVRD Errors on the Waveethernetphy Interface*

Possible Problem	Solution
The ITU signal power is too high or too low.	Check the signal power from the OADM module. Ensure that it is between $-22$ dBm and $-6$ dBm. If not, adjust the attenuation.
The optical connectors are dirty.	Refer to the <a href="#">Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections</a> document.
The trunk cables are faulty.	Check the trunk fiber for pinches or breaks. Correct any problems with the fiber.
The patch cables are faulty.	Check the local patch cables between the 10-Gbps ITU trunk card and the OADM module for pinches or breaks. Correct any problems with the fiber.

## 9.3.4 CRC and CDL HEC Errors on the Waveethernetphy Interface

**Symptom** The waveethernetphy interface is in a down state, the CRC error count and the CDL HEC error counts in the **show interfaces** command output is increasing, and the Signal Condition field shows “Signal Fail Threshold exceeded” or “Signal Degrade Threshold exceeded.”

[Table 9-4](#) describes the potential causes of the symptom and the solutions.

*Table 9-4 CRC and CDL HEC Errors on the Waveethernetphy Interface*

Possible Problem	Solution
The data is corrupted somewhere in the data path.	<ol style="list-style-type: none"> <li>1. Perform a loopback on the signal path to isolate the area where the data is corrupted. For information on performing loopbacks, see the <a href="#">“9.4 Troubleshooting 10-Gbps ITU Trunk Card Problems Using Loopbacks”</a> section on page 9-5.</li> <li>2. Issue <b>show interfaces</b> commands for all the interfaces in the signal path. Resolve any error conditions or configuration problems encountered.</li> </ol>

## 9.3.5 Ethernetdcc Interface Down

**Symptom** The ethernetdcc interface is down and pings across the interface fail.

[Table 9-5](#) describes the potential cause of the symptom and the solution.

*Table 9-5 Ethernetdcc Interface Down*

Possible Problem	Solution
The ethernetdcc interface is administratively shut down.	Issue the <b>show interfaces</b> command to determine the administrative status of the ethernetdcc interface. If it is administratively shut down, issue the <b>no shutdown</b> command to bring it up.

## 9.4 Troubleshooting 10-Gbps ITU Trunk Card Problems Using Loopbacks

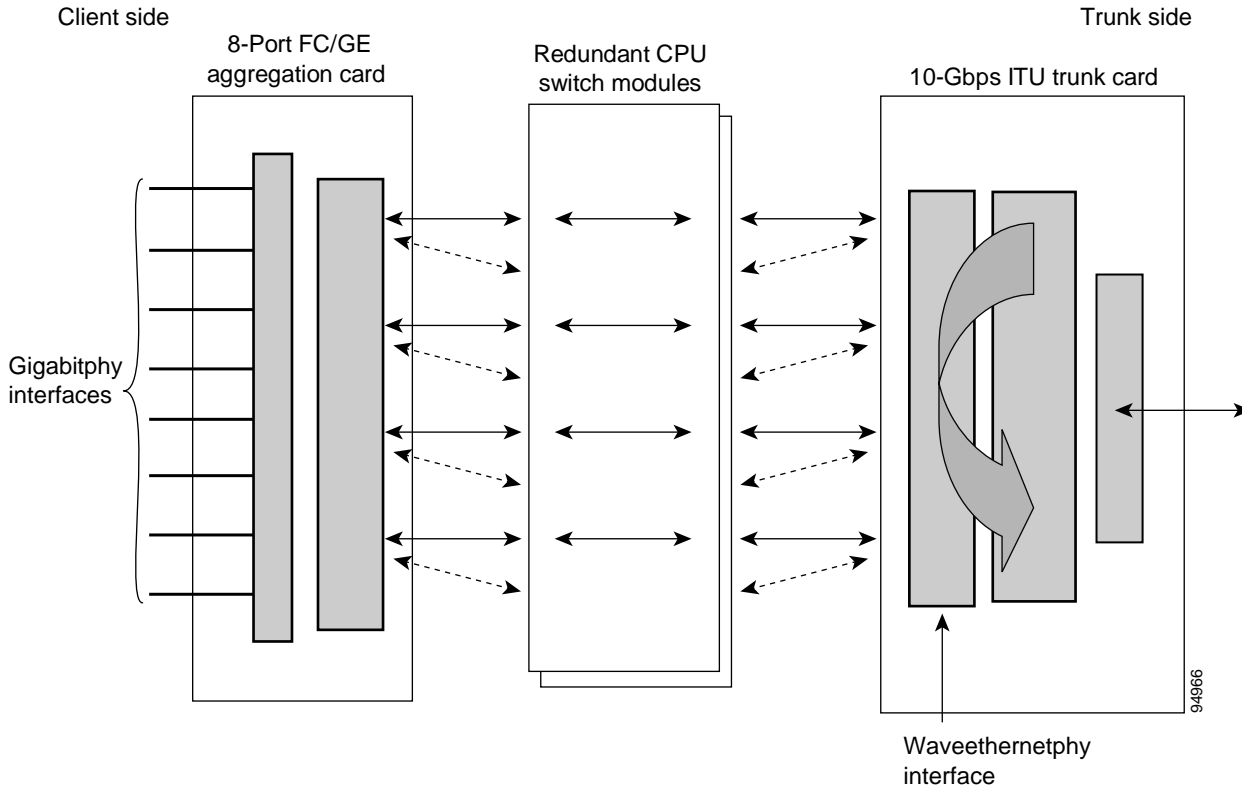
This section describes how to use software loopbacks to perform fault isolation for signals on 10-Gbps ITU trunk cards. The 10-Gbps ITU trunk card supports two types of software loopbacks:

- Facility loopbacks
- Terminal loopbacks

### 9.4.1 Facility Loopbacks

A facility loopback verifies the functioning of the 10-Gbps ITU trunk card from the trunk side (see [Figure 9-3](#)).

Figure 9-3 Facility Loopback Example on a 10-Gbps ITU Trunk Card



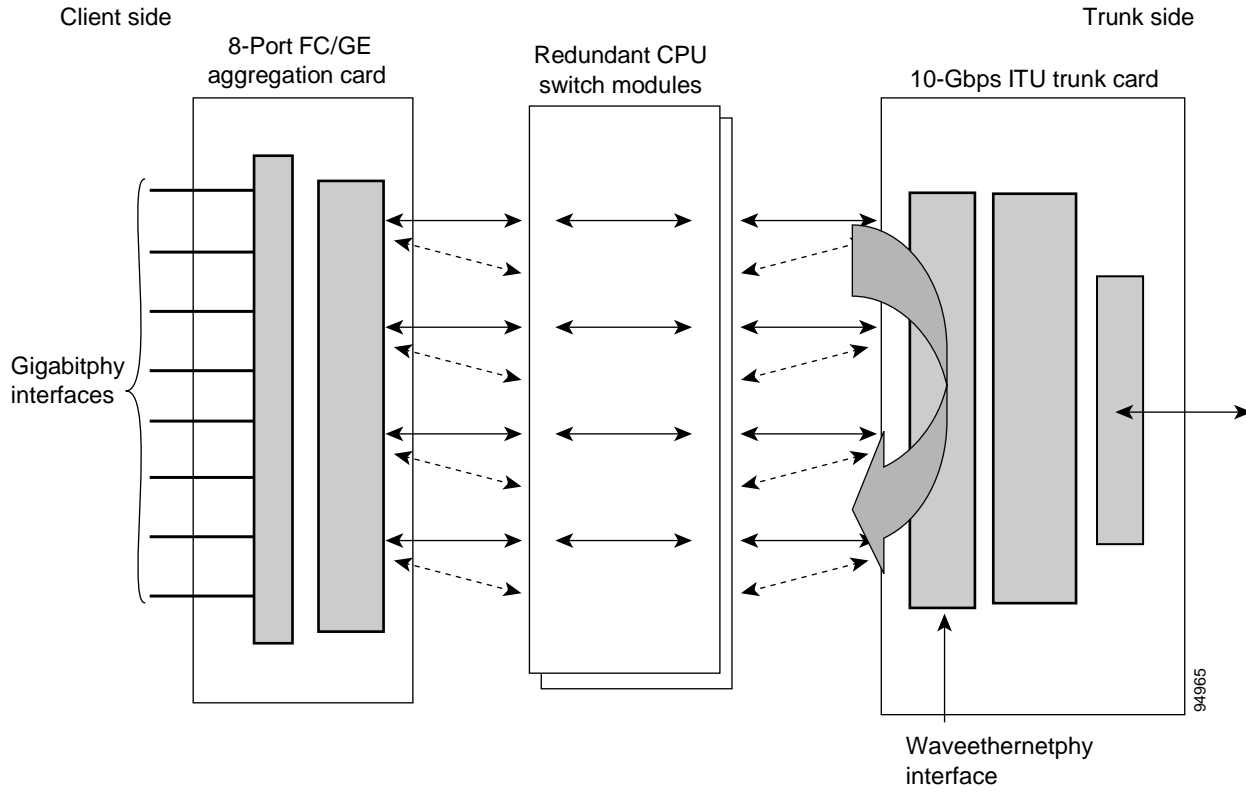
To create a facility loopback

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- Step 1** Issue a **loopback facility** command on the waveethernetphy interface.
  - Step 2** Check that the signal reaches the system at the far end.
  - Step 3** If the signal does not reach the far end, check the trunk fiber and the interfaces along the signal path. If the fiber is intact, replace the card.
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## 9.4.2 Terminal Loopbacks

A terminal loopback verifies the functioning of the 10-Gbps ITU trunk card from the switch fabric side (see [Figure 9-4](#)).

Figure 9-4 Terminal Loopback Example on a 10-Gbps ITU Trunk Card



To create a terminal loopback:

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- Step 1** Issue a **loopback terminal** command on the waveethernetphy interface.
  - Step 2** Check that the traffic is reaching the client equipment.
  - Step 3** If the signal does not reach the client equipment, replace the card.
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