



Configuring Performance Monitoring, RMON, OTN, and Port Provisioning

This chapter describes performance monitoring, RMON, and OTN, port provisioning and the configuration procedures.

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Understanding Performance Monitoring

Performance monitoring (PM) parameters are used by service providers to gather, store, set thresholds, and report performance data for early detection of problems. In this chapter, PM parameters and concepts are defined for the fabric card, line card, and CPT 50 panel.



Note

For additional information regarding PM parameters, see the ITU G.826, ITU-T G.8021, ITU G.709, Telcordia documents GR-1230-CORE, GR-820-CORE, GR-499-CORE, and GR-253-CORE, and the ANSI T1.231 document entitled *Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring*.



Note

In CPT IOS, performance monitoring statistics are provided only for 15 minute and 1 day intervals. Historical counts are not maintained in CPT IOS.

Understanding Threshold Performance Monitoring

Thresholds are used to set error levels for each PM parameter. You can set individual PM threshold values from the card view in the Provisioning tab in CTC.

Each monitored performance parameter has corresponding threshold values for the current time period. If the value of the counter exceeds the threshold value for a particular 15-minute interval, a threshold crossing alert (TCA) is raised. The number represents the counter value for each specific PM parameter.

TCAs provide early detection of performance degradation. When a threshold is crossed, the node continues to count the errors during a given accumulation period. If zero is entered as the threshold value, generation of TCAs is disabled but performance monitoring continues.

Change the threshold value if the default value does not meet your error monitoring needs. For example, customers with a critical OC192/STM64 transponder installed for 911 calls must guarantee the best quality of service on the line; therefore, they lower all thresholds on the client side so that the slightest error raises a TCA.

Performance Monitoring, RMON, OTN, and Port Provisioning Procedures

The following procedures can be performed using Cisco IOS commands to configure performance monitoring, RMON, OTN, and port provisioning:

- [DLP-J72 Display Performance Monitoring Parameters Using Cisco IOS Commands](#), on page 12
- [DLP-J74 Configure RMON Settings Using Cisco IOS Commands](#), on page 19
- [Display RMON Status Using Cisco IOS Commands](#), on page 21

The following procedures can be performed using CTC to configure performance monitoring, RMON, OTN, and port provisioning:

- [NTP-J23 Change the PM Display Using CTC](#), on page 2
- [NTP-J24 Monitor Performance Using CTC](#), on page 11
- [DLP-J73 Change the RMON Thresholds Using CTC](#), on page 21
- [DLP-J75 Change the Optical Transport Network Settings Using CTC](#), on page 25
- [DLP-J77 Provision Alarm and TCA Thresholds Using CTC](#), on page 33
- [DLP-J78 Change the Port and Ethernet Settings Using CTC](#), on page 34

NTP-J23 Change the PM Display Using CTC

Purpose	This procedure enables you to change the appearance of PM counts using CTC.
Tools/Equipment	None

Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the appearance of PM counts.
- Step 2** As needed, use the following procedures to change the display of PM counts:
- [DLP-J61 Refresh PM Counts at 15–Minute Intervals Using CTC](#), on page 3
 - [DLP-J62 Refresh PM Counts at One–Day Intervals Using CTC](#), on page 4
 - [DLP-J63 View Near–End PM Counts Using CTC](#), on page 5
 - [DLP-J64 View Far–End PM Counts Using CTC](#), on page 6
 - [DLP-J65 Reset Current PM Counts Using CTC](#), on page 7
 - [DLP-J66 Clear Selected PM Counts Using CTC](#), on page 8
 - [DLP-J67 Clear All PM Thresholds Using CTC](#), on page 9
 - [DLP-J68 Set the Auto–Refresh Interval for Displayed PM Counts Using CTC](#), on page 10

Stop. You have completed this procedure.

DLP-J61 Refresh PM Counts at 15–Minute Intervals Using CTC

Purpose	This procedure changes the window view to display PM counts in 15–minute intervals using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the window view to display PM counts in 15-minute intervals.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To change the PM interval to 15 minutes for a subtab, click the relevant subtabs.
Note Performance subtabs vary depending on the card.
- Step 6** To change the PM interval to 15 minutes for a specific port, select the port from the Ports drop-down list (when available).
- Step 7** Click the **15 min** radio button.
- Step 8** Click **Refresh**. PM parameters appear in 15-minute intervals synchronized with the time of day.
- Step 9** View the Curr column to find PM counts for the current 15-minute interval.
 Each monitored performance parameter has corresponding threshold values for the current time period. If the value of the counter exceeds the threshold value for a particular 15-minute interval, a TCA is raised. The number represents the counter value for each specific PM parameter.
- Step 10** View the Prev-n columns to find PM counts for the previous 15-minute intervals.
Note If a complete 15-minute interval count is not possible, the value appears with a yellow background. An incomplete or incorrect count can be caused by monitoring for less than 15 minutes after the counter started, changing the node timing settings, changing the time zone settings, replacing a card, resetting a card, or changing port service states. When the problem is corrected, the subsequent 15-minute interval appears with a white background.
- Step 11** Return to your originating procedure (NTP).
-

DLP-J62 Refresh PM Counts at One-Day Intervals Using CTC

Purpose	This procedure changes the window view to display PM counts in one day intervals using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the PM count display interval.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To change the PM interval to one day for a subtab, click the relevant subtabs.
Note Performance subtabs vary depending on the card.
- Step 6** To change the PM interval to one day for a specific port, select the port from the Ports drop-down list (when available).
- Step 7** Click the **1 day** radio button.
- Step 8** Click **Refresh**. PM parameters appear in one day intervals synchronized with the time of day.
- Step 9** View the Curr column to find PM counts for the current one day interval.
 Each monitored performance parameter has corresponding threshold values for the current time period. If the value of the counter exceeds the threshold value for a particular one day interval, a TCA is raised. The number represents the counter value for each specific PM parameter.
- Step 10** View the Prev-n columns to find PM counts for the previous one day intervals.
Note If a complete count over a one day interval is not possible, the value appears with a yellow background. An incomplete or incorrect count can be caused by monitoring for less than 24 hours after the counter started, changing the node timing settings, changing the time zone settings, replacing a card, resetting a card, or changing port service states. When the problem is corrected, the subsequent one day interval appears with a white background.
- Step 11** Return to your originating procedure (NTP).
-

DLP-J63 View Near-End PM Counts Using CTC

Purpose	This procedure displays the near-end PM counts for the selected card and port using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note Near-end PM parameters are available only for OTN.

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to view the near-end PM counts.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To view the near-end PM counts for a subtab, click the relevant subtabs.
Note Performance subtabs vary depending on the card.
- Step 6** To view near-end PM counts for a specific port, select the port from the Ports drop-down list (when available).
- Step 7** Click the **Near End** radio button (when available). Viewing near-end PM counts is not available on some tabs.
- Step 8** Click **Refresh**. All the current PM parameters for the selected card on the incoming signal appear.
- Step 9** View the Curr column to find PM counts for the current time interval.
- Step 10** View the Prev-n columns to find PM counts for the previous time intervals.
- Step 11** Return to your originating procedure (NTP).
-

DLP-J64 View Far-End PM Counts Using CTC

Purpose	This procedure displays the far-end PM parameters for the selected card and port using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note Far-end PM parameters are available only for OTN.

Procedure

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- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to view the far-end PM counts.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To view the far-end PM counts for a subtab, click the relevant subtabs.
Note Performance subtabs vary depending on the card.
- Step 6** To view the far-end PM counts for a specific port, select the port from the Ports drop-down list (when available).
- Step 7** Click the **Far End** radio button (when available). Viewing far-end PM counts is not available on some tabs.
- Step 8** Click **Refresh**. All the PM parameters recorded by the far-end node for the selected card on the outgoing signal appear.
- Step 9** View the Curr column to find PM counts for the current time interval.
- Step 10** View the Prev-n columns to find PM counts for the previous time intervals.
- Step 11** Return to your originating procedure (NTP).
-

DLP-J65 Reset Current PM Counts Using CTC

Purpose	This procedure resets the current PM counts using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to reset the current PM counts.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To reset the PM counts for a subtab, click the relevant subtabs.

Note Performance subtabs vary depending on the card.

Step 6 To reset the PM counts for a specific port, select the port from the Ports drop-down list (when available).

Step 7 Click **Baseline**.

Note The Baseline button clears the PM counts that appear in the current time interval but does not clear the PM counts on the card. When the current time interval expires or the window view changes, the total number of PM counts on the card and in the window appears in the appropriate column. The baseline values are discarded if you change views to a different window and then return to the Performance window.

Step 8 In the Baseline Statistics dialog box, click one of the following radio buttons:

- **All statistics for port x**—Resets all the PM counts associated with all the combinations of the statistics on the selected port from the card and the window. This means that all time intervals, directions, and signal type counts are reset from the card and the window.
- **All statistics for card**—Resets all the PM counts for all the ports from the card and the window.

Step 9 In the Baseline Statistics dialog box, click **Set Baseline** to reset the selected statistics.

Step 10 View the current statistics columns to observe changes to PM counts for the current time interval.

Step 11 Return to your originating procedure (NTP).

DLP-J66 Clear Selected PM Counts Using CTC

Purpose	This procedure clears the selected PM counts using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Caution

Clicking the Clear button can mask problems if used incorrectly. This button is commonly used for testing purposes. After clicking this button, the current count is marked invalid. Also note that the unavailable seconds (UAS) count is not cleared if you were counting UAS; therefore, this count could be unreliable when you click Clear.



Note The CTC and IOS interface counters are mutually exclusive. When you clear the counters through CTC (Card view -> Performance or Card view -> Performance -> Payload PM), the IOS counters are not cleared. When you clear the counters through IOS using the **clear count** command, the CTC counters are not cleared. The baseline is maintained separately for both the CTC and IOS counters. The user must not view the IOS counters if the configuration mode is in CTC mode and vice versa.

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to clear the selected PM counts.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To clear the selected PM counts for a subtab, click the relevant subtabs and click **Clear**.
 - Note** Performance subtabs vary depending on the card.
- Step 6** To clear the selected PM counts for a specific port, select the OTN subtab or port from the Ports drop-down list (when available).
- Step 7** Click **Clear**.
- Step 8** In the Clear Statistics dialog box, click one of the following radio buttons:
 - **All statistics for port x**—Clears all the statistics for port x by erasing all the PM counts associated with all the combinations of the statistics on the selected port from the card and the window. This means that all time intervals, directions, and signal type counts are erased from the card and the window.
 - **All statistics for card**—Clears all the statistics for the card by erasing all the PM counts for all the ports from the card and the window.
- Step 9** In the Clear Statistics dialog box, click **OK** to clear the selected statistics. Click **Yes** to confirm the change.
- Step 10** Verify that the selected PM counts have been cleared.
- Step 11** Return to your originating procedure (NTP).

DLP-J67 Clear All PM Thresholds Using CTC

Purpose	This procedure clears all the PM thresholds using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed

Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

**Caution**

Clicking the Reset button can mask problems if used incorrectly. This button is commonly used for testing purposes.

Procedure

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- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to clear all the PM thresholds.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Provisioning** tab.
- Step 5** Click the **Thresholds** subtabs. The subtab names vary depending on the selected card.
- Step 6** Click **Reset to Default**.
- Step 7** Click **Yes** in the Reset to Default dialog box.
- Step 8** Verify that the PM thresholds have been reset.
- Step 9** Return to your originating procedure (NTP).
-

DLP-J68 Set the Auto-Refresh Interval for Displayed PM Counts Using CTC

Purpose	This procedure sets the auto-refresh interval for displayed PM counts using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to set the auto-refresh interval for displayed PM counts.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance** tab.
- Step 5** To set the PM auto-refresh interval for a subtab, click the relevant subtabs.
Note Performance subtabs vary depending on the card.
- Step 6** To set the PM auto-refresh interval for a specific port, select the port from the Ports drop-down list (when available).
- Step 7** From the Auto-refresh drop-down list, choose one of the following options:
- **None**: Disables the auto-refresh feature.
 - **15 Seconds**—This option sets the window auto-refresh at 15-seconds time interval.
 - **30 Seconds**—Sets the window auto-refresh at 30-seconds time interval.
 - **1 Minute**—Sets the window auto-refresh at one minute time interval.
 - **3 Minutes**—Sets the window auto-refresh at three minutes time interval.
 - **5 Minutes**—Sets the window auto-refresh at five minutes time interval.
- Note** System refreshes the PM statistics with minimum time interval of 60 seconds. It is recommended to set the auto-refresh time interval minimum to 60 seconds.
- Step 8** Click **Refresh**. The PM counts for the newly selected auto-refresh time interval appear. Depending on the selected auto-refresh interval, the displayed PM counts automatically update when each refresh interval completes. If the auto-refresh interval is set to None, the PM counts that appear are not updated unless you click Refresh.
- Step 9** Return to your originating procedure (NTP).
-

NTP-J24 Monitor Performance Using CTC

Purpose	This procedure monitors the near-end or far-end performance of the node for selected time intervals on the fabric and line cards.
Tools/Equipment	None
Prerequisite Procedures	Ensure you have created the appropriate circuits and provisioned the card according to your specifications.
Required/As Needed	As needed

Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at the node that you want to monitor the performance.
- Step 2** Complete the following procedures as needed to view the PM parameters for the fabric, line card, or CPT 50 shelf:
- [DLP-J69 Provision PPM and Port Using CTC](#), on page 13
 - [DLP-J70 View Optics PM Parameters Using CTC](#), on page 14
 - [DLP-J71 View Payload PM Parameters Using CTC](#), on page 16
 - [DLP-J72 Display Performance Monitoring Parameters Using Cisco IOS Commands](#), on page 12

Note To refresh, reset, or clear PM counts, see the [NTP-J23 Change the PM Display Using CTC](#), on page 2 procedure.

Stop. You have completed this procedure.

DLP-J72 Display Performance Monitoring Parameters Using Cisco IOS Commands

Purpose	This procedure displays the performance monitoring parameters using Cisco IOS commands.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note In CPT IOS, performance monitoring statistics are provided only for 15 minute and 1 day intervals. Historical counts are not maintained in CPT IOS. FEC, optical transport network (OTN), alarm, and TCA thresholds are not provided through CPT IOS.

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router# enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	show controllers dwdm slot/port pm interval {15-min 24-hour} Example: Router# show controllers dwdm 4/3 pm interval 15-min	Need confirmation on whether this command is supported. Displays the performance parameters for 15 minute or 1 day intervals.
Step 4	Return to your originating procedure (NTP).	—

DLP-J69 Provision PPM and Port Using CTC

Purpose	This procedure provisions a PPM and port in a fabric card, line card, or CPT50 panel using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

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- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to provision a PPM and port.
- Step 2** In the node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** In the Packet Transport System View dialog box, double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Provisioning > Pluggable Port Modules** tabs.
- Step 5** In the Pluggable Port Modules area, click **Create**. The Create PPM dialog box appears.
- Step 6** In the Create PPM dialog box, complete the following:
- PPM—Choose 1 or 2 from the PPM drop-down list.
 - PPM Type—Displays the PPM associated with the chosen PPM.
- Step 7** Click **OK**. The newly created PPM appears in the Pluggable Port Modules area. The row in the Pluggable Port Modules area becomes white when the PPM is inserted and the Actual Equipment Type column lists the name of the PPM.
- Step 8** In the Pluggable Ports area, click **Create**. The Create Port dialog box appears.
- Step 9** In the Create Port dialog box, complete the following:
- Port—Choose the port you want to configure from the Port drop-down list.
 - Port Type—(for fabric and line cards) Choose the port type, such as TEN-GE from the Port Type drop-down list.
 - Port Type—(for CPT 50 panel) Choose the port type, such as ONE-GE, FE, or TEN-GE from the Port Type drop-down list.
- Note** CPT 50 panel supports ONE-GE and FE for ports 1 to 44. CPT 50 panel supports TEN-GE for ports 45 to 48.
- Step 10** Click **OK**. The newly created port appears in the Pluggable Ports area. The port type you provisioned is listed in the Rate column.
- In case of PROV-MISMATCH alarm, user needs to provide acceptable reach value for the PPM. Change the value to **. This can be done without making shut.
- In case of WVLMISMATCH alarm, user needs to change the wavelength of PPM based on its type. This can be made only when port is admin down. Changing wavelength without making port as admin down will be available in later release.
- Step 11** Repeat Steps [DLP-J69 Provision PPM and Port Using CTC](#), on page 13 through [DLP-J69 Provision PPM and Port Using CTC](#), on page 13 to provision another PPM and port.
- Step 12** Return to your originating procedure (NTP).
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DLP-J70 View Optics PM Parameters Using CTC

Purpose	This procedure displays the optics PM parameters using CTC.
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Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to view the optics PM parameters.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance > Optics PM > Current Values** tabs.
- Step 5** View the current PM parameter names that appear in the Param column.
- Step 6** Click the **Historical PM** tab.
- Step 7** View the PM parameter names that appear in the Param column. The PM parameter values appear in the Curr (current) and Prev-n (previous) columns.

[Table 1: Optics PM Parameters](#), on page 15 describes the settings for the optics PM parameters.

Table 1: Optics PM Parameters

Optics PM Parameters	Definition
Laser Bias (Min,%)	Minimum laser bias current (Laser Bias Min) is the minimum percentage of laser bias current during the PM time interval.
Laser Bias (Avg,%)	Average laser bias current (Laser Bias Avg) is the average percentage of laser bias current during the PM time interval.
Laser Bias (Max,%)	Maximum laser bias current (Laser Bias Max) is the maximum percentage of laser bias current during the PM time interval.
Rx Optical Pwr (Min,dBm)	Minimum receive optical power (Rx Optical Pwr Min, dBm) is the minimum optical power received during the PM time interval.
Rx Optical Pwr (Avg,dBm)	Average receive optical power (Rx Optical Pwr Avg, dBm) is the average optical power received during the PM time interval.
Rx Optical Pwr (Max,dBm)	Maximum receive optical power (Rx Optical Pwr Max, dBm) is the maximum optical power received during the PM time interval.
Tx Optical Pwr (Min,dBm)	Minimum transmit optical power (Tx Optical Pwr Min, dBm) is the minimum optical power transmitted during the PM time interval.
Tx Optical Pwr (Avg,dBm)	Average transmit optical power (Tx Optical Pwr Avg, dBm) is the average optical power transmitted during the PM time interval.

Optics PM Parameters	Definition
Tx Optical Pwr (Max,dBm)	Maximum transmit optical power (Tx Optical Pwr Max, dBm) is the maximum optical power transmitted during the PM time interval.

Step 8 Return to your originating procedure (NTP).

DLP-J71 View Payload PM Parameters Using CTC

Purpose	This procedure displays the payload PM parameters using CTC.
Tools/Equipment	None
Prerequisite Procedures	DLP-J69 Provision PPM and Port Using CTC, on page 13
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to view the payload PM parameters.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Performance > Payload PM > Statistics** tabs.
- Step 5** Click **Refresh**. PM statistics appear for each port on the card.
- Note** System refreshes the PM statistics with minimum time interval of 60 seconds so if user presses the Refresh button with less than 60 seconds interval, it will not display the updated statistics. It is also applicable for PM statistics retrieved using SNMP.
- Step 6** View the PM parameter names that appear in the Param column. The current PM parameter values appear in the Port # columns.
Payload PM parameters are as follows:
- IfInOctets
 - rxTotalPkts
 - ifInUcastPkts
 - ifInMulticastPkts

- ifInDiscards
- ifInErrors
- ifOutOctets
- txTotalPkts
- ifOutUcastPkts
- ifOutMulticastPkts
- ifOutDiscards
- ifOutErrors

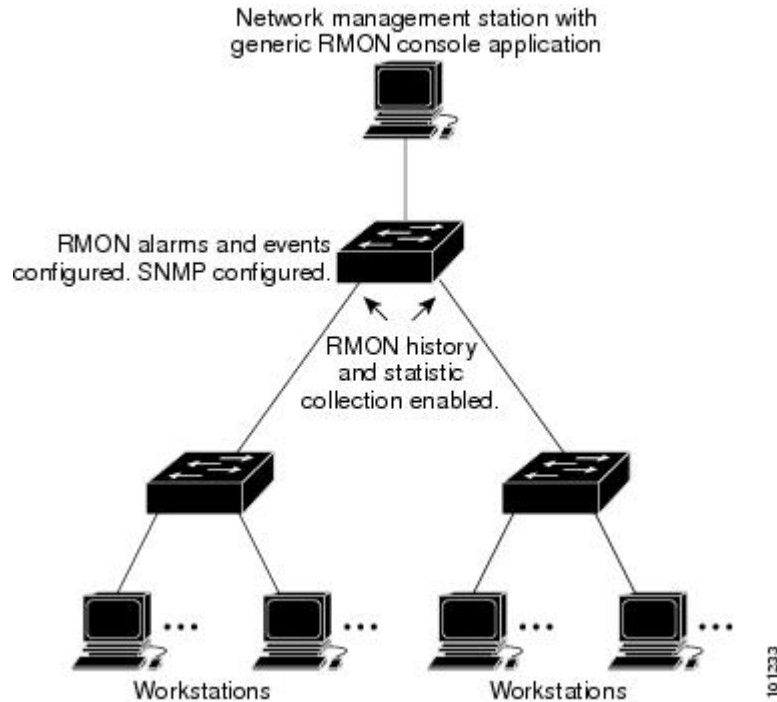
- Step 7** Click the **Performance > Payload PM > Utilization** tabs.
- Step 8** Click **Refresh**. PM utilization values appear for each port on the card.
- Step 9** View the appropriate row for the port you want to monitor. The transmit (Tx) and receive (Rx) bandwidth utilization values for the previous time intervals appear in the Prev-n columns.
- Step 10** Click the **Performance > Payload PM > History** tabs.
- Step 11** From the Port drop-down list, choose the desired port.
- Step 12** Click **Refresh**. PM statistics appear for the selected port.
- Step 13** View the PM parameter names that appear in the Param column. The PM parameter values appear in the Prev-n columns.
- Step 14** Return to your originating procedure (NTP).
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Understanding RMON

Remote Network Monitoring (RMON) is a standard monitoring feature that allows various network agents and console systems to exchange network monitoring data. RMON provides you with comprehensive network-fault diagnosis, planning, and performance-tuning information. You can use the RMON feature with the Simple Network Management Protocol (SNMP) agent in the switch to monitor all the traffic flowing

among switches on all connected LAN segments as shown in [Figure 1: Remote Monitoring Example](#), on page 18.

Figure 1: Remote Monitoring Example



Default RMON Configuration

RMON is disabled by default; no alarms or events are configured.

NTP-J25 Configure RMON Settings

Purpose	This procedure configures RMON settings.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Perform any of the following procedures as needed:

- [DLP-J74 Configure RMON Settings Using Cisco IOS Commands](#), on page 19
- [DLP-J73 Change the RMON Thresholds Using CTC](#), on page 21

Stop. You have completed this procedure.

DLP-J74 Configure RMON Settings Using Cisco IOS Commands

Purpose	This procedure configures the RMON settings using Cisco IOS commands.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router# enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface type slot/port Example: Router(config)# interface TenGigabitEthernet4/1	Specifies the interface and enters interface configuration mode.
Step 4	rmon {native promiscuous} Example: Router(config-if)# rmon native	Enables RMON on an Ethernet interface. native—Enables the router to process only packets destined for this interface. promiscuous—Enables the router to examine every packet. This example enables RMON in native mode.

	Command or Action	Purpose
Step 5	<p>rmon collection history controlEntry <i>integer</i> [buckets <i>bucket-number</i>] [interval <i>seconds</i>] [owner <i>ownername</i>]</p> <p>Example: Router(config-if)# rmon collection history controlEntry 5 buckets 5 interval 10 owner user1</p>	<p>Enables RMON history collection for the specified number of buckets and time period.</p> <p>This example enables RMON history collection with an ID number of 5 and an owner of <i>user1</i>.</p>
Step 6	<p>rmon collection host controlEntry <i>integer</i> [owner <i>ownername</i>]</p> <p>Example: Router(config-if)# rmon collection host controlEntry 10 owner user1</p>	<p>Enables RMON statistic collection on the interface.</p>
Step 7	<p>rmon alarm <i>number variable interval</i> {delta absolute} rising-threshold <i>value</i> [<i>event-number</i>] falling-threshold <i>value</i> [<i>event-number</i>] [owner <i>string</i>]</p> <p>Example: Router(config-if)# rmon alarm 10 ifEntry.20.1 20 delta rising-threshold 15 1 falling-threshold 0 owner user1</p>	<p>Sets a RMON alarm on a MIB object.</p> <p>This example configures RMON alarm number 10. The alarm monitors the MIB variable <i>ifEntry.20.1</i> once every 20 seconds until the alarm is disabled, and checks the change in the rise or fall of the variable. If the <i>ifEntry.20.1</i> value shows a MIB counter increase of 15 or more, such as from 100000 to 100015, the alarm is triggered. The alarm in turn triggers event number 1, which is configured with the rmon event command. The possible events include a log entry or an SNMP trap. If the <i>ifEntry.20.1</i> value changes by 0, the alarm is reset and can be triggered again.</p>
Step 8	<p>rmon event <i>number</i> [log] [trap <i>community</i>] [description <i>string</i>] [owner <i>string</i>]</p> <p>Example: Router(config-if)# rmon event 1 log trap eventtrap description "High ifOutErrors" owner user</p>	<p>Adds or removes an event in the RMON event table that is associated with an RMON event number.</p> <p>This example creates RMON event number 1, which is defined as <i>High ifOutErrors</i>, and generates a log entry when the event is triggered by an alarm. The user <i>user</i> owns the row that is created in the event table by this command. This example also generates a Simple Network Management Protocol (SNMP) trap when the event is triggered.</p>
Step 9	<p>exit</p> <p>Example: Router(config-if)# exit</p>	<p>Exits interface configuration mode.</p>
Step 10	<p>Return to your originating procedure (NTP).</p>	—

Display RMON Status Using Cisco IOS Commands

To display the current RMON agent status on the router, use one or more of the privileged EXEC commands described in [Table 2: Commands for Displaying RMON Status](#), on page 21.

Table 2: Commands for Displaying RMON Status

Command	Purpose
show rmon or show rmon task	Displays general RMON statistics.
show rmon alarms	Displays the RMON alarm table.
show rmon capture	Displays the RMON buffer capture table and current configuration.
show rmon events	Displays the RMON event table.
show rmon filter	Displays the RMON filter table.
show rmon history	Displays the RMON history table.
show rmon hosts	Displays the RMON hosts table.
show rmon matrix	Displays the RMON matrix table and values associated with RMON variables.
show rmon statistics	Displays the RMON statistics table.
show rmon topn	Displays the RMON top-n hosts table.

For examples on **show rmon** command, see the *Cisco CPT Command Reference Guide*.

DLP-J73 Change the RMON Thresholds Using CTC

Purpose	This procedure changes the RMON threshold settings using CTC.
Tools/Equipment	None
Prerequisite Procedures	DLP-J69 Provision PPM and Port Using CTC , on page 13
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the RMON thresholds.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Provisioning > RMON Thresholds** tabs.
- Step 5** Click **Create**. The Create Threshold dialog box appears.
- Step 6** From the Port drop-down list, choose an individual port, or choose **All** to provision RMON thresholds for all the ports.
- Step 7** From the Variable drop-down list, choose an appropriate Ethernet variable. [Table 3: RMON Variables](#), on [page 22](#) lists the available Ethernet RMON variables.

Table 3: RMON Variables

Variable	Description
ifInOctets	Total number of octets received on the interface, including framing characters.
rxTotalPkts	Total number of received packets.
ifInUcastPkts	The number of packets, delivered by this sub-layer to a higher sub-layer, which were not addressed to a multicast or broadcast address at this sub-layer.
ifInMulticastPkts	The number of packets, delivered by this sub-layer to a higher sub-layer, which were addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both group and functional addresses.
ifInDiscards	The number of inbound packets that were chosen to be discarded even though no errors had been detected to prevent them from being delivered to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.
IfInErrors	Number of inbound packets that contained errors preventing them from being delivered to a higher-layer protocol.
ifOutOctets	Total number of octets transmitted out of the interface, including framing characters.
txTotalPkts	Total number of transmitted packets.
ifOutUcastPkts	The number of packets transmitted by a port that are addressed to a unicast address.
ifOutMulticastPkts	The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both group and functional addresses.

Variable	Description
ifOutDiscards	The number of outbound packets that were chosen to be discarded even though no errors had been detected to prevent them from being transmitted. One possible reason for discarding such a packet could be to free up buffer space.
IfOutErrors	Number of outbound packets or transmission units that could not be transmitted because of errors.

- Step 8** From the Alarm Type drop-down list, indicate whether the event will be triggered by the rising threshold, the falling threshold, or both the rising and falling thresholds.
- Step 9** From the Sample Type drop-down list, choose either **Relative** or **Absolute**. Relative restricts the threshold to use the number of occurrences in the user-set sample period. Absolute sets the threshold to use the total number of occurrences, regardless of time period.
- Step 10** Enter the appropriate number of seconds for the sample period in the Sample Period field.
- Step 11** Enter the appropriate number of occurrences for the rising threshold in the Rising Threshold field. For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a rising threshold of 1000 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
- Step 12** Enter the appropriate number of occurrences in the Falling Threshold field. In most cases a falling threshold is set lower than the rising threshold. A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 seconds subsides and creates only 799 collisions in 15 seconds, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if the network collisions again spike over a 1000 per 15-second period, an event triggers when the rising threshold is crossed. An event is triggered only for the first time when a rising threshold is exceeded (otherwise, a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
- Step 13** Click **OK**.
- Step 14** To view all the RMON thresholds, click **Show All RMON thresholds**.
- Step 15** Return to your originating procedure (NTP).

Understanding OTN

The Optical Transport Network (OTN) protocol is specified in ITU-T G.709. This standard combines the benefits of SONET/SDH technology with the multiwavelength networks of DWDM. It also provides forward error correction (FEC) that reduces network costs by reducing the number of regenerators used.

To enable multiservice transport, OTN uses the concept of a wrapped overhead (OH). To illustrate this structure:

- Optical channel payload unit (OPU) OH information is added to the information payload to form the OPU. The OPU OH includes information to support the adaptation of client signals.
- Optical channel data unit (ODU) OH is added to the OPU to create the ODU. The ODU OH includes information for maintenance and operational functions to support optical channels.

- Optical channel transport unit (OTU) OH together with the FEC is added to form the OTU. The OTU OH includes information for operational functions to support the transport by way of one or more optical channel connections.
- Optical channel (OCH) OH is added to form the OCH. The OCH provides the OTN management functionality and contains four subparts: the OPU, ODU, OTU, and frame alignment signal (FAS). See [Figure 2: OTN Optical Channel Structure](#), on page 24.

Figure 2: OTN Optical Channel Structure



OTN has the following advantages:

- Stronger forward error correction
- More levels of Tandem Connection Monitoring (TCM)
- Transparent transport of signals
- Switching scalability



Note The OTN parameters can be changed only through CTC.

NTP-J26 Configure OTN Settings

Purpose	This procedure configures OTN settings.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Perform any of the following procedures as needed:

- [DLP-J75 Change the Optical Transport Network Settings Using CTC](#), on page 25
- [DLP-J76 View OTN PM Parameters Using CTC](#), on page 30

Stop. You have completed this procedure.

DLP-J75 Change the Optical Transport Network Settings Using CTC

Purpose	This procedure changes the OTN settings for the fabric, line card, or CPT 50 shelf using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

This procedure applies only to the XFP ports of the fabric card (port 3 and port 4).

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the OTN settings.
 - Step 2** In node view, right-click the fabric card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
 - Step 3** Double-click a fabric card.
 - Step 4** Click the **Provisioning > OTN** tabs.
 - Step 5** Choose one of the following subtabs— **OTN Lines**, **ITU-T G.709 Thresholds**, **FEC Thresholds**, **Trail Trace Identifier**.
 - Step 6** Modify any of the settings described in [Table 4: OTN Line Settings](#), on page 25 to [Table 7: Trail Trace Identifier Settings](#), on page 29.
- Note** You must modify Near End and Far End; 15 Min and 1 Day; and SM and PM independently. To do so, choose the appropriate radio button and click **Refresh**.
- [Table 4: OTN Line Settings](#), on page 25 describes the values on the Provisioning > OTN > OTN Lines tab.

Table 4: OTN Line Settings

Parameter	Description	Options
Port	(Display only) Displays the port number and description.	3 (Trunk) and 4 (Trunk)
ITU-T G.709 OTN	Sets the OTN lines according to ITU-T G.709.	<ul style="list-style-type: none"> • Enable • Disable

Parameter	Description	Options
FEC	Sets the OTN lines to FEC. Enhanced FEC mode can be enabled to provide greater range and lower bit error rate.	<ul style="list-style-type: none"> • Disable • Standard • Enhanced1.4 • Enhanced1.7
SF BER	(Display only) Displays the signal fail bit error rate.	<ul style="list-style-type: none"> • 1E-5
SD BER	Sets the signal degrade bit error rate.	<ul style="list-style-type: none"> • 1E-5 • 1E-6 • 1E-7 • 1E-8 • 1E-9

Table 5: ITU-T G.709 Threshold Settings, on page 26 describes the values on the Provisioning > OTN > ITU-T G.709 Thresholds tab.

Table 5: ITU-T G.709 Threshold Settings

Parameter	Description	Options
Port	(Display only) Displays the port number and optional name.	3 (Trunk) and 4 (Trunk)

Parameter	Description	Options
ES	Errored seconds.	<p>Numeric. Threshold display options include:</p> <ul style="list-style-type: none"> • Direction—Near End or Far End • Interval—15 Min (minutes) or 1 day • Types—SM (OTUk) or PM (ODUk) <p>Choose an option in each category and click Refresh.</p> <p>Note SM (OTUk) is the ITU-T G.709 optical channel transport unit order of k overhead frame used for management and performance monitoring. PM (ODUk) is the ITU-T G.709 optical channel data unit order of k overhead frame unit used for path performance monitoring.</p>
SES	Severely errored seconds	<p>Numeric. Threshold display options include:</p> <ul style="list-style-type: none"> • Direction—Near End or Far End • Interval—15 Min (minutes) or 1 day • Types—SM (OTUk) or PM (ODUk) <p>Choose an option in each category and click Refresh.</p>

Parameter	Description	Options
UAS	Unavailable seconds	<p>Numeric. Threshold display options include:</p> <ul style="list-style-type: none"> • Direction—Near End or Far End • Interval—15 Min (minutes) or 1 day • Types—SM (OTUk) or PM (ODUk) <p>Choose an option in each category and click Refresh.</p>
BBE	Background block errors	<p>Numeric. Threshold display options include:</p> <ul style="list-style-type: none"> • Direction—Near End or Far End • Interval—15 Min (minutes) or 1 day • Types—SM (OTUk) or PM (ODUk) <p>Choose an option in each category and click Refresh.</p>
FC	Failure counter	<p>Numeric. Threshold display options include:</p> <ul style="list-style-type: none"> • Direction—Near End or Far End • Interval—15 Min (minutes) or 1 day • Types—SM (OTUk) or PM (ODUk) <p>Choose an option in each category and click Refresh.</p>

Table 6: FEC Threshold Settings, on page 29 describes the values on the Provisioning > OTN > FEC Thresholds tab.

Table 6: FEC Threshold Settings

Parameter	Description	Options
Port	(Display only) Displays the port number and optional name.	3 (Trunk) and 4 (Trunk)
Bit Errors Corrected	(Display only) Displays the number of bit errors corrected during the selected time period.	Numeric display. Can be set for 15-minute or one-day intervals.
Uncorrectable Words	(Display only) Displays the number of uncorrectable words in the selected time period.	Numeric display. Can be set for 15-minute or one-day intervals.

[Table 7: Trail Trace Identifier Settings, on page 29](#) describes the values on the Provisioning > OTN > Trail Trace Identifier tab.

Table 7: Trail Trace Identifier Settings

Parameter	Description	Options
Port	(Display only) Displays the port number.	3 (Trunk) and 4 (Trunk)
Level	Sets the level of monitoring.	<ul style="list-style-type: none"> • Section • Path
Received Trace Mode	Sets the trace mode.	<ul style="list-style-type: none"> • Off/None • Manual
Transmit	Displays and sets a transmit string. You can click the button on the right to change the display. Its title changes, based on the current display mode. Click Hex to change the display to hexadecimal (button changes to ASCII); click ASCII to change the display to ASCII (button changes to Hex).	String of trace string size
Disable FDI on TTIM	If a Trace Identifier Mismatch (TTIM) on Section overhead alarm arises because of a overhead string mismatch, no Forward Defect Indication (FDI) signal is sent to the downstream nodes if this box is checked.	<ul style="list-style-type: none"> • Checked (FDI on TTIM is disabled) • Unchecked (FDI on TTIM is enabled)
Expected	Displays and sets a expected string. You can click the button on the right to change the display. Its title changes, based on the current display mode. Click Hex to change the display to hexadecimal (button changes to ASCII); click ASCII to change the display to ASCII (button changes to Hex).	String of trace string size

Parameter	Description	Options
Received	(Display only) Displays the current received string. You can click Refresh to manually refresh this display, or check the Auto-refresh every 5 sec check box to keep this panel updated.	String of trace string size
Auto-refresh	If checked, automatically refreshes the display every 5 minutes.	<ul style="list-style-type: none"> • Checked • Unchecked (default)

Step 7 Return to your originating procedure (NTP).

DLP-J76 View OTN PM Parameters Using CTC

Purpose	This procedure displays the OTN PM parameters using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to view the near-end or far-end OTN PM parameters for the selected time intervals.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card.
- Step 4** Click the **Performance > OTN PM > ITU-T G.709 PM** tabs.
- Step 5** View the PM parameter names that appear in the Param column. The PM parameter values appear in the Curr (current) and Prev-n (previous) columns.
[Table 8: ITU G.709 Section Monitoring and Path Monitoring PM Definitions, on page 31](#) describes the settings for ITU G.709 PM definitions.

Table 8: ITU G.709 Section Monitoring and Path Monitoring PM Definitions

Parameter	Definition
BBE-SM	Background Block Errors Section Monitoring (BBE-SM) shows the number of background block errors recorded in the OTN section during the PM time interval.
ES-SM	Errored Seconds Section Monitoring (ES-SM) shows the errored seconds recorded in the OTN section during the PM time interval.
SES-SM	Severely Errored Seconds Section Monitoring (SES-SM) shows the severely errored seconds recorded in the OTN section during the PM time interval.
UAS-SM	Unavailable Seconds Section Monitoring (UAS-SM) shows the unavailable seconds recorded in the OTN section during the PM time interval.
FC-SM	Failure Counts Section Monitoring (FC-SM) shows the failure counts recorded in the OTN section during the PM time interval.
ESR-SM	Errored Seconds Ratio Section Monitoring (ESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.
SESR-SM	Severely Errored Seconds Ratio Section Monitoring (SESR-SM) shows the severely errored seconds ratio recorded in the OTN section during the PM time interval.
BBER-PM	Background Block Errors Ratio Path Monitoring (BBER-PM) shows the background block errors ratio recorded in the OTN path during the PM time interval.
BBE-PM	Background Block Errors Path Monitoring (BBE-PM) shows the number of background block errors recorded in the OTN path during the PM time interval.
ES-PM	Errored Seconds Path Monitoring (ES-PM) shows the errored seconds recorded in the OTN path during the PM time interval.
SES-PM	Severely Errored Seconds Path Monitoring (SES-PM) shows the severely errored seconds recorded in the OTN path during the PM time interval.
UAS-PM	Unavailable Seconds Path Monitoring (UAS-PM) shows the unavailable seconds recorded in the OTN path during the PM time interval.
FC-PM	Failure Counts Path Monitoring (FC-PM) shows the failure counts recorded in the OTN path during the PM time interval.
ESR-PM	Errored Seconds Ratio Path Monitoring (ESR-PM) shows the severely errored seconds ratio recorded in the OTN path during the PM time interval.

Step 6 Click the **FEC PM** tab.

Step 7 View the PM parameter names that appear in the Param column. The PM parameter values appear in the Curr (current) and Prev-n (previous) columns.

[Table 9: FEC PM Definitions, on page 32](#) describes the settings for FEC PM definitions.

Table 9: FEC PM Definitions

Parameter	Definition
Bit Errors	Bit errors are the number of bit errors corrected.
Uncorrectable words	Uncorrectable words occur when FEC detects and corrects errors to deliver a 7 to 8 dB improvement in the signal-to-noise ratio (also called margin). For ITU G.709, the FEC code used is Reed-Solomon RS (255, 239).

Step 8 Return to your originating procedure (NTP).

NTP-J27 Modify the Ethernet Settings and Alarm Thresholds

Purpose	This procedure modifies the Ethernet settings and alarm thresholds.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Perform any of the following procedures as needed:

- [DLP-J77 Provision Alarm and TCA Thresholds Using CTC, on page 33](#)
- [DLP-J78 Change the Port and Ethernet Settings Using CTC, on page 34](#)

Stop. You have completed this procedure.

DLP-J77 Provision Alarm and TCA Thresholds Using CTC

Purpose	This procedure changes the alarm and TCA thresholds for the fabric, line card, or CPT 50 panel using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to provision alarm and TCA thresholds.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Provisioning > Optics Thresholds** tabs.
Note You must modify 15 Min and 1 Day independently. To do so, choose the appropriate radio button and click **Refresh**.
- Step 5** If TCA is not selected, click **TCA** and then click **Refresh**.
Note Do not modify the Laser Bias parameters.
- Step 6** Verify the provisioned TCA threshold values in the Warning Thresholds table. To provision new thresholds as needed, click the threshold value you want to change, delete it, enter a new value, and press **Enter**.
- Step 7** Under Types, click the **Alarm** radio button and click **Refresh**.
Note Do not modify the Laser Bias parameters.
- Step 8** Verify the provisioned alarm threshold values in the Alarm Thresholds table. To provision new thresholds as needed, click the threshold value you want to change, delete it, enter a new value, and press **Enter**.
- Step 9** Click **Apply**.
- Step 10** Return to your originating procedure (NTP).
-

Carrier Delay

Carrier delay is the soak period before link failure is communicated to higher protocols.

Default Carrier Delay Duration

This table lists the default duration for carrier delay.

Table 10: Default Carrier Delay Duration

Card/Port	Default Time
Ports on the fabric card	2 seconds
Ports on the line card	200 milliseconds
Ports on the CPT 50 panel	200 milliseconds

The range of carrier delay is from 0 to 60. The higher carrier delay affects the switch times for protocols such as LAG and REP. See [DLP-J78 Change the Port and Ethernet Settings Using CTC](#), on page 34 to change the carrier delay time.

Carrier Delay Limitations

When Ethernet services are configured, set the carrier delay time to greater than or equal to 2 seconds for fabric cards and CPT 50 panels attached to fabric cards. When MPLS services are configured, set the carrier delay time to less than 2 seconds, for fabric cards and CPT 50 panels attached to fabric cards. However, this time limit does not apply to line cards and CPT 50 panels attached to line cards. The carrier delay time of 2 seconds in fabric cards can cause traffic drops on SSO.

DLP-J78 Change the Port and Ethernet Settings Using CTC

Purpose	This procedure changes the port and Ethernet settings for the fabric, line card, or CPT 50 shelf using CTC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to change the port and Ethernet settings.
- Step 2** In node view, right-click the fabric or line card and choose **Open Packet Transport System View**. The Packet Transport System View dialog box appears.
- Step 3** Double-click a fabric card, line card, or CPT50 panel.
- Step 4** Click the **Provisioning > Ether Ports > Ethernet** tabs.
- Step 5** Modify any of the settings for the Ethernet tab as described in [Table 11: Ethernet Settings, on page 35](#).

Table 11: Ethernet Settings

Parameter	Description	Options
Port	(Display only) Displays the port number and rate.	—
MTU	The maximum size of the Ethernet frames accepted by the port. The port must be in OOS/locked state.	Numeric. Default: 9600 Range 64 to 9600
Link State	(Display only) Displays the state of the link. Note Link status shows up in CTC and IOS for TDM pluggables even when there is no physical connection.	<ul style="list-style-type: none"> • DOWN • UP
Expected Speed	The expected speed of the device that is or will be attached to the Ethernet port. The 10GE SFP+/XFP ports on the fabric or line card supports only 10000 Mbps. (For 1GE SFPs in the CPT 50 panel) If you know the speed, choose 1000 Mbps , 100 Mbps , or 10 Mbps to match the attached device. If you do not know the speed, choose Auto to enable autonegotiation for the speed of the port. In this case, the port attempts to negotiate a mutually acceptable speed with the attached device. If the expected speed is set to Auto , you cannot enable Selective Auto Negotiation.	For fabric and line card: 10000 Mbps For CPT 50 panel, the options are: <ul style="list-style-type: none"> • 10 Mbps • 100 Mbps • 1000 Mbps • Auto

Parameter	Description	Options
Expected Duplex	<p>The expected duplex of the device that is or will be attached to the Ethernet port. The 10GE SFP+/XFP ports on the fabric or line card supports only Full duplex.</p> <p>(For 1GE SFPs in the CPT 50 panel) If you know the duplex, choose Full or Half to match the attached device. If you do not know the duplex, choose Auto to enable autonegotiation for the duplex of the port. In this case, the port attempts to negotiate a mutually acceptable duplex with the attached device. If the expected duplex is set to Auto, you cannot enable Selective Auto Negotiation.</p>	<p>For fabric and line card: Full</p> <p>For CPT 50 panel, the options are:</p> <ul style="list-style-type: none"> • Full • Half • Auto
Flow Control	<p>Enables or disables flow control messaging with the external device.</p> <p>For example, consider you have a 1GE port on the CPT 50 panel. The external device is sending the traffic with higher rate. Hence, the 1GE port cannot handle all the incoming traffic. If flow control is enabled, the 1GE port will send a Pause frame to the external device and the external device will not transmit data for a specific period.</p>	<ul style="list-style-type: none"> • ON • OFF
Interconnect Mode	<p>(Display only) The SFP+ ports on the fabric or line card can serve as normal ports or InterConnect (IC) ports. When the SFP+ ports are used as normal ports, it can be used as 10000 Mbps ports. When the SFP+ ports are used as IC ports, these ports are used to connect with the SFP+ ports on the CPT 50 panel. When a Fan-Out Group is created on SFP+ ports, the SFP+ ports will be automatically converted to InterConnect ports.</p> <p>If checked, it indicates that the port is an InterConnect port.</p>	—
Operating Speed	<p>(Display only) Displays the speed at which the port is operating.</p>	<p>For fabric and line card: 10000 Mbps</p> <p>For CPT 50 panel, the options are:</p> <ul style="list-style-type: none"> • 10 Mbps • 100 Mbps • 1000 Mbps • Auto

Parameter	Description	Options
Operating Duplex	(Display only) Displays the duplex at which the port is operating.	For fabric and line card: Full For CPT 50 panel, the options are: <ul style="list-style-type: none"> • Full • Half • Auto
Operating Flow Control	(Display only) Displays the flow control mode at which the port is operating.	<ul style="list-style-type: none"> • ON • OFF
Carrier Delay (ms)	Sets the soak period before the link failure is communicated to higher protocols.	<ul style="list-style-type: none"> • Fabric card: 2000 ms • Line card: 200 ms • CPT 50 panel: 200 ms
Fan-Out	(Display only) Displays the name of the Fan-Out group created for the port.	—
L2PT Config	Configures Layer 2 protocol tunneling actions for each Layer 2 protocol.	<ul style="list-style-type: none"> • Drop • Forward • Peer
Channel Group	(Display only) Displays the name of the channel group associated with this port.	—
Selective Auto Negotiation	(Only for CPT 50 panel) Check this check box to enable selective auto negotiation on the port. If checked, the port attempts to auto negotiate only to the selected expected speed and duplex. The link will come up if both the expected speed and duplex of the attached auto negotiating device matches that of the port. You cannot enable Selective Auto Negotiation if either the expected speed or expected duplex is set to Auto .	—
Auto Negotiation State	(Only for CPT 50 panel) Displays the auto negotiation state of the port.	—

Parameter	Description	Options
Media Type	Sets the Media Type. Note In IOS mode, remove all the services configured on the port before changing media type for TDM interface.	<ul style="list-style-type: none"> • Ethernet • DS1 over Ethernet • DS3 over Ethernet • E1 Over Ethernet • E3 Over Ethernet

Step 6 Click the **Provisioning > Ether Ports > Port** tabs.

Step 7 Modify any of the settings for the Port tab as described in [Table 12: Port Settings, on page 38](#).

Table 12: Port Settings

Parameter	Description	Options
Port	(Display only) Displays the port number.	—
Port Name	Sets the port name for a port.	User-defined. Name can be up to 32 alphanumeric or special characters or both. Blank by default.
Admin State	Sets the port service state.	<ul style="list-style-type: none"> • IS • IS,AINS • OOS,DSBLD • OOS,MT
Service State	(Display only) Displays the autonomously generated state that gives the overall condition of the port. Service states appear in the format—Primary State-Primary State Qualifier, Secondary State.	<ul style="list-style-type: none"> • IS-NR • OOS-AU,AINS • OOS-MA,DSBLD • OOS-MA,MT
AINS Soak	Sets the automatic in-service soak period. Double-click the time and use the up and down arrows to change settings.	<ul style="list-style-type: none"> • Duration of valid input signal, in hh.mm format, after which the card becomes IS automatically. • 0 to 48 hours, 15-minute increments

Parameter	Description	Options
Reach	Sets the optical reach distance of the ports	The Reach options depend on the traffic type that has been selected.
Wavelength	Sets the wavelength of the ports.	<ul style="list-style-type: none">• First Tunable Wavelength• Further wavelengths: 850 nm through 1610 nm, 100-GHz ITU spacing; coarse wavelength division multiplexing (CWDM) spacing.

Step 8 Click **Apply**.

Step 9 Return to your originating procedure (NTP).
