CHAPTER

22

Using Ethernet Operations, Administration and Maintenance Operations Commands

Ethernet Operations, Administration, and Maintenance (E-OAM) consists of three main feature sets:

- IEEE 802.1ag and ITU-T Y.1731 Connectivity Fault Management (CFM).
- IEEE 802.3ah Ethernet OAM discovery, link monitoring, remote fault detection, and remote loopback.
- Ethernet Local Management Interface (Ethernet LMI), which allows a customer edge (CE) network element to obtain user network interface (UNI) and Ethernet virtual connection (EVC) status and service attribute information from the service provider edge.

The IOS OAM manager streamlines interaction between OAM protocols, and handles the interaction between CFM and Ethernet LMI. Ethernet LMI interaction with the OAM manager is unidirectional, running only from the OAM manager to Ethernet LMI on the U-PE side of the switch. Information is exchanged either as a result of a request from Ethernet LMI or triggered by the OAM manager when it receives notification of a change from the OAM protocol. The following type of information is relayed:

- EVC name and availability status
- Remote UNI name and status
- Remote UNI counts

Ethernet LMI is typically disabled by default.

Link (802.3AH) OAM (L-OAM) can be implemented on any full-duplex point-to-point or emulated point-to-point Ethernet link. The frames (OAM Protocol Data Units [OAMPDUs]) cannot propagate beyond a single hop within an Ethernet network and have modest bandwidth requirements (frame transmission rate is limited to a maximum of 10 frames per second). The major features covered by the E-OAM protocol are discovery, link monitoring, remote fault detection, and remote loopback.

Supported Network Elements

You can run the E-OAM commands on the following network elements:

- Cisco 7600 Series Routers
- Cisco Catalyst 3750 Metro Series Switches
- Cisco Catalyst 6500 Series (IOS) Switches
- Cisco ME 3400 Series Ethernet Access Switches
- Cisco MWR 2941 Mobile Wireless Routers
Configuring L-OAM Components

The following sections explain how to configure L-OAM components:

- Applying Template on an Interface, page 22-2
- Create Template, page 22-3
- Disabling OAM on an Interface, page 22-4
- Enabling OAM on an Interface, page 22-5
- Configuring OAM Parameters on an Interface, page 22-5
- Starting the Remote Loopback, page 22-6
- Stopping the Remote Loopback, page 22-6

Note

In the GUI, parameters that are displayed in bold text are mandatory.

Applying Template on an Interface

Use the Applying Template on Interface command to create and apply a template to an interface.

Step 1

In the inventory window, expand the Logical Inventory tree.

Step 2

Right-click the OAM node and choose Commands > Assign Template on Interface. The Assign Template on interface dialog box opens.

Step 3

By default, the General tab is selected. Enter values for the following parameters.

<table>
<thead>
<tr>
<th>Input Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface Name</td>
<td>Name of the interface.</td>
</tr>
<tr>
<td>Template Name</td>
<td>Name of the template.</td>
</tr>
</tbody>
</table>
Step 4 To see the commands that will be applied on the device, click Preview.
You can view the commands in the Result tab. You can go back and make any required changes to the input parameters.

Step 5 To schedule the command, click the Scheduling tab. For more details on scheduling, see Scheduling a Command.

Step 6 To run the commands, click Execute Now.
Any errors are displayed in the Result tab.

Step 7 To close the dialog box, click Close.

Create Template

Use the Create Template command to create and apply a template to an interface.

Step 1 In the inventory window, expand the Logical Inventory tree.

Step 2 Right-click the OAM node and choose Commands > Create Template. The Create Template dialog box opens.

Step 3 By default, the General tab is selected. Enter values for the following parameters.

<table>
<thead>
<tr>
<th>Input Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Template Name</td>
<td>Name of the template.</td>
</tr>
<tr>
<td>Symbol-Period Threshold Low</td>
<td>The range is from 1 to 65535. The low threshold value must be lower than the high threshold.</td>
</tr>
<tr>
<td>Symbol-Period Threshold High</td>
<td>The range is from 1 to 65535. The low threshold value must be lower than the high threshold.</td>
</tr>
<tr>
<td>Frame Window</td>
<td>The range is from 10 to 600, which represents milliseconds in multiples of 100. The default is 100.</td>
</tr>
<tr>
<td>Frame Threshold Low</td>
<td>The range is from 1 to 900. The default value is 1.</td>
</tr>
<tr>
<td>Frame Threshold High</td>
<td>The range is from 1 to 900. The default value is 1.</td>
</tr>
<tr>
<td>Frame-Period Window</td>
<td>The range is from 100 to 65535, which represents multiples of 10000 frames. The default is 1000.</td>
</tr>
<tr>
<td>Frame-Period Threshold Low</td>
<td>The range is from 0 to 65535. The default is 1.</td>
</tr>
<tr>
<td>Frame-Period Threshold High</td>
<td>The range is from 0 to 65535.</td>
</tr>
<tr>
<td>Frame-Seconds Window</td>
<td>The range is from 100 to 9000, which represents a multiple of 100 milliseconds. The default is 1000.</td>
</tr>
<tr>
<td>Frame-Seconds Threshold Low</td>
<td>The range is from 1 to 900. The default is 1.</td>
</tr>
<tr>
<td>Frame-Seconds Threshold High</td>
<td>The range is from 1 to 900.</td>
</tr>
<tr>
<td>Receive-Crc Window</td>
<td>The range is 10 to 1800 and represents the number of milliseconds in multiples of 100. The default is 100.</td>
</tr>
<tr>
<td>Receive-Crc Threshold High</td>
<td>The range is 1 to 65535.</td>
</tr>
</tbody>
</table>
### Configuring L-OAM Components

#### Step 4
To see the commands that will be applied on the device, click **Preview**.
You can view the commands in the Result tab. You can go back and make any required changes to the input parameters.

#### Step 5
To schedule the command, click the Scheduling tab. For more details on scheduling, see **Scheduling a Command**.

#### Step 6
To run the commands, click **Execute Now**.
Any errors are displayed in the Result tab.

#### Step 7
To close the dialog box, click **Close**.

### Disabling OAM on an Interface

Use the **Disable OAM on Interface** command to disable L-OAM on an interface.

#### Step 1
In the inventory window, expand the Logical Inventory tree.

#### Step 2
Right-click the OAM node and choose **Commands > Disable OAM on Interface**. The Disable OAM on Interface dialog box opens.

#### Step 3
By default, the General tab is selected. Enter a value for the following parameter.

<table>
<thead>
<tr>
<th>Input Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>Interface Name</td>
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#### Step 4
To see the commands that will be applied on the device, click **Preview**.
You can view the commands in the Result tab. You can go back and make any required changes to the input parameters.

#### Step 5
To schedule the command, click the Scheduling tab. For more details on scheduling, see **Scheduling a Command**.

#### Step 6
To run the commands, click **Execute Now**.
Any errors are displayed in the Result tab.

#### Step 7
To close the dialog box, click **Close**.
Enabling OAM on an Interface

Use the Enable OAM on Interface command to enable L-OAM on an interface.

**Step 1** In the inventory window, expand the Logical Inventory tree.

**Step 2** Right-click the OAM node and choose Commands > Enable OAM on Interface. The Enable OAM on Interface dialog box opens.

**Step 3** By default, the General tab is selected. Enter a value for the following parameter.

<table>
<thead>
<tr>
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**Step 4** To see the commands that will be applied on the device, click Preview.

You can view the commands in the Result tab. You can go back and make any required changes to the input parameters.

**Step 5** To schedule the command, click the Scheduling tab. For more details on scheduling, see Scheduling a Command.

**Step 6** To run the commands, click Execute Now.

Any errors are displayed in the Result tab.

**Step 7** To close the dialog box, click Close.

Configuring OAM Parameters on an Interface

Use the Configure OAM Parameter on Interface command to configure L-OAM parameters on an interface.

**Step 1** In the inventory window, expand the Logical Inventory tree.

**Step 2** Right-click the OAM node and choose Commands > Configure OAM Parameter on Interface. The Configure OAM Parameter on Interface dialog box opens.

**Step 3** By default, the General tab is selected. Enter values for the following parameters.

<table>
<thead>
<tr>
<th>Input Parameter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Interface Name</td>
<td>Name of the interface.</td>
</tr>
<tr>
<td>Max-Rate</td>
<td>Maximum number of OAM PDUs sent per second. The range is from 1 to 10.</td>
</tr>
<tr>
<td>Min-Rate</td>
<td>Minimum transmission rate, in seconds, when one OAM PDU is sent per second. The range is from 1 to 10.</td>
</tr>
<tr>
<td>Mode</td>
<td>Sets the OAM client mode to active or passive.</td>
</tr>
<tr>
<td>Remote Loopback</td>
<td>Supports or Unsupports Ethernet remote loopback on the interface.</td>
</tr>
<tr>
<td>Time Out</td>
<td>Timeout range, from 2 to 30.</td>
</tr>
</tbody>
</table>
Step 4  To see the commands that will be applied on the device, click **Preview**.
You can view the commands in the Result tab. You can go back and make any required changes to the input parameters.

Step 5  To schedule the command, click the Scheduling tab. For more details on scheduling, see Scheduling a Command.

Step 6  To run the commands, click **Execute Now**.
Any errors are displayed in the Result tab.

Step 7  To close the dialog box, click **Close**.

### Starting the Remote Loopback

Use the **Start Remote Loopback** command to turn on Link OAM remote loopback on an interface.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>In the inventory window, expand the Logical Inventory tree.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Right-click the OAM node and choose <strong>Commands &gt; Start Remote Loopback</strong>. The Start Remote Loopback dialog box opens.</td>
</tr>
<tr>
<td>Step 3</td>
<td>By default, the General tab is selected. Enter values for the following parameters.</td>
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Step 5  To schedule the command, click the Scheduling tab. For more details on scheduling, see Scheduling a Command.

Step 6  To run the commands, click **Execute Now**.
Any errors are displayed in the Result tab.

Step 7  To close the dialog box, click **Close**.

### Stopping the Remote Loopback

Use the **Stop Remote Loopback** command to turn off Link OAM remote loopback on an interface.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>In the inventory window, expand the Logical Inventory tree.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Right-click the OAM node and choose <strong>Commands &gt; Stop Remote Loopback</strong>. The Stop Remote Loopback dialog box opens.</td>
</tr>
<tr>
<td>Step 3</td>
<td>By default, the General tab is selected. Enter values for the following parameters.</td>
</tr>
</tbody>
</table>
Configuring L-OAM Components

Step 4  To see the commands that will be applied on the device, click **Preview**.
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Step 6  To run the commands, click **Execute Now**.
Any errors are displayed in the Result tab.

Step 7  To close the dialog box, click **Close**.

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