CHAPTER 17

Monitoring Y.1731 IPSLA Configuration

The following topics provide an overview of the Y.1731 technology and describe how to view and monitor Y.1731 configurations in Prime Network Vision:

Y.1731 Technology - An Overview

Y.1731 is an ITU-T recommendation that provides mechanisms for service-level Operation, Administration, and Maintenance (OAM) functionality in Ethernet networks. It covers mechanisms for Fault and Performance Management. Performance Management is the most sought-after functionality in this standard.

In Prime Network, devices that are configured using Y.1731 are detected, scanned for configurations, and monitored. A device configured using Y.1731 has probes, which are root objects or containers that hold single or multiple instances of Service Level Agreement (SLA) probes configured by the user.

In Prime Network, the Y.1731 technology is supported on the Cisco Aggregation Service Router (ASR) 9000 and Cisco Carrier Packet Transport (CPT) network elements.

Y.1731 Performance Management Mechanisms

The OAM functions for performance monitoring according to Y.1731 allow measurement of the following performance parameters.

- Frame Loss Ratio—Expressed as a percentage. This ratio is defined as the number of frames not delivered divided by the total number of frames during a time interval.
- Frame Delay—A one-way delay for a frame, where one-way frame delay is defined as the time elapsed since the start of transmission of the first bit of the frame by a source node until the reception of the last bit of the same frame by the destination node.
- Frame Delay Variation—The measure of the variations in the frame delay between a pair of service frames. The service frames belong to the same CoS (Class of Service) instance on a point-to-point Ethernet (ETH) connection or multipoint ETH connectivity.
- Throughput—The average rate of successful traffic delivery over a communication channel. Typically used under test conditions, such as out-of service tests, when there is no traffic for the tested Ethernet connection.

User Roles Required to Work with Y.1731 Probes

This topic identifies the roles that are required to work with Y.1731 probes. Prime Network determines whether you are authorized to perform a task as follows:

- For GUI-based tasks (tasks that do not affect elements), authorization is based on the default permission that is assigned to your user account.
- For element-based tasks (tasks that do affect elements), authorization is based on the default permission that is assigned to your account. That is, whether the element is in one of your assigned scopes and whether you meet the minimum security level for that scope.

For more information on user authorization, see the topic on device scopes in the *Cisco Prime Network 3.10 Administrator Guide*.

Table 17-1 Default Permission/Security Level Required for Y.1731 Probes

Task	Viewer	Operator	OperatorPlus	Configurator	Administrator
View the Y.1731 probe properties	X	X	X	X	X
Configure Y.1731 probes	—	—	—	X	X

Working with Y.1731 IPSLA Configurations

This topic contains the following sections:

Viewing the Y.1731 Probe Properties

To view the Y.1731 probes and their properties for a device:

Step 1 Right-click on the device and choose **Inventory**.

Step 2 In the **Inventory** window, choose **Logical Inventory > Probes > Y1731 Probes**. A list of Y.1731 probes is displayed in the Y.1731 Probes content pane as shown in Figure 17-1.

Figure 17-1 Y.1731 Probes Content Pane

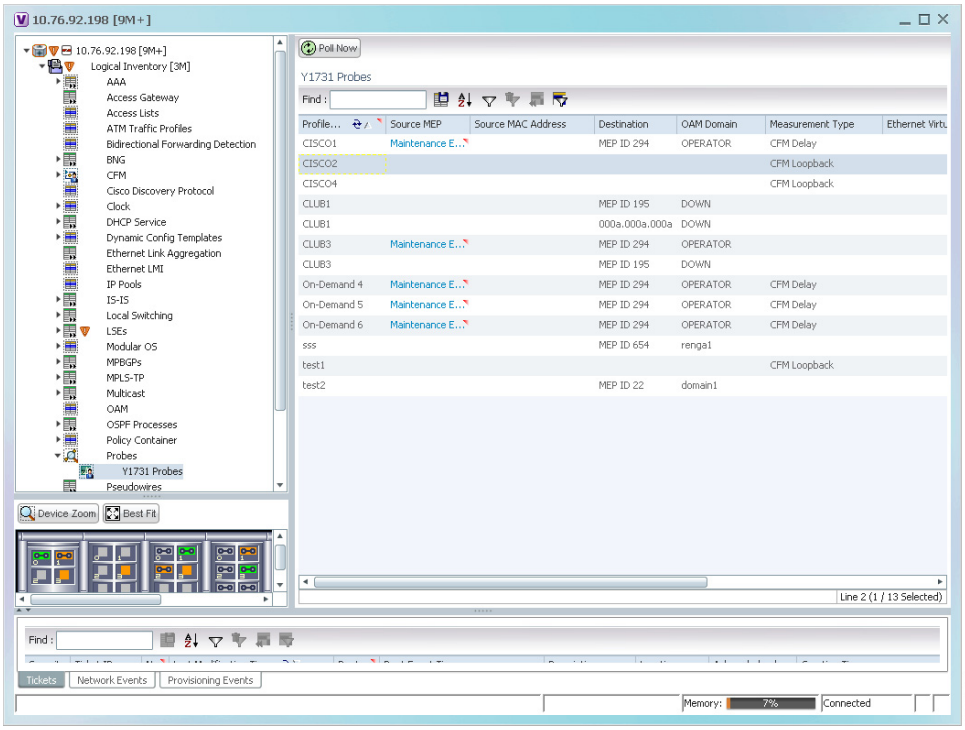

Table 17-2 describes the fields that are displayed in the content pane.

Table 17-2 Y.1731 Content Pane

Field Name	Description
Profile Name	The name of the profile created for performance monitoring of the SLA configuration.
Source MEP	The maintenance endpoint (MEP) interface ID where the probe is getting initiated.
Source MAC Address	The source interface MAC address where the probe is getting initiated.
Destination	The interface ID or MAC address, which will help the probe to reach its destination.
OAM Domain	The name of the OAM domain.
Measurement Type	The type of performance operation, which could be cfm-delay-measurement or cfm-loopback.
Ethernet Virtual Connection	The name or identifier of the ethernet virtual connection, which connects two User-Network Interfaces (UNI). This is applicable only for the Cisco CPT devices.
Packet Size	The size of the service packet. This includes padding size when required.
Packets Per Burst	The number of packets transmitted per burst.
Burst Period	The time taken to send the packets from the source to their destination. This period is usually specified in terms of seconds or milliseconds.

Step 3 Right-click on a probe and choose **Properties** to view its properties. Additionally, the following information is displayed in the Probe Properties window for a Cisco CPT device.

Table 17-3 describes the additional fields that are displayed for a Cisco CPT device in the **Probe Properties** window.

Table 17-3 Probe Properties Window

Field Name	Description
Measurements	
Statistics Type	The statistics type, which is Round Trip Delay or Round Trip Jitter.
Aggregate Bin Count	The aggregate count of bins to store the counter values of the result of each performance parameter. **Note** The counter value refers to the counter of number of results that fall within a particular range specified for each performance attribute.
Aggregate Bin Boundaries	The bin boundary for the bins. For Cisco CPT devices, bin boundary is specified as comma separated intervals; whereas for ASR9K devices, it is an integer. Bin boundaries are specified in terms of milliseconds.
Bucket Size	The number of buckets required to store the performance attribute results gathered during a specified period. By default, a separate bucket is created for each probe, which will contain the results relating to measurements made by the probe.

Configuring Y.1731 Probes

You can configure Y.1731 probes using a certain set of commands. The following commands can be launched from the inventory by right-clicking the appropriate node and selecting **Commands.** Before executing any commands, you can preview them and view the results. If desired, you can also schedule the commands. To find out if a device supports these commands, see the *Cisco Prime Network 3.10 Supported Cisco VNEs*.

The following commands facilitate the configuration of Y.1731 probes for a Cisco ASR9000 device:

- Configure Probe Endpoint Association, page 17-5
- Configure Profile, page 17-5
- Create On Demand Probe Configuration, page 17-7
- Deassociate Profile, page 17-10
- Delete Profile, page 17-10

The following commands facilitate the configuration of Y.1731 probes for a Cisco CPT device:

- Configure IP SLA Parameters, page 17-11
- Delete IP SLA, page 17-12

Configure Probe Endpoint Association

To configure endpoint association of a probe:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Configure Probe EndPoint Association**. The **Configure Probe EndPoint Association** dialog box opens.

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

Input Parameter	Description
Interface	The interface ID, which is either a MEPID or a MAC Address.
OAM Domain	The OAM domain.
Service Name	The name of the service.
Source Maintenance Endpoint ID	The identification of the source maintenance endpoint.
Profile Name	The name of the profile created for performance monitoring for Service Level Agreements configuration.
Destination Type	The destination type, which is either a MEPID or a MAC Address.
Destination	The destination MEPID or the MAC Address.

Step 4 Preview, schedule, or execute the command.

Configure Profile

To configure a profile for the probe.

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Configure Profile**. The **Configure Profile** dialog box opens.

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

Input Parameter	Description
Profile Name	The name of the profile that must be configured.
Operation Type	The operation type as **cfm-delay-measurement** or **cfm-loopback**.
Probe Type	The probe type as **burst** or **packet**.
Probe Schedule Type	The schedule type for probes as **every** or **once**.
Probe Schedule Value	The value for the schedule type selected in the previous field.

Input Parameter	Description
Probe Scheduled Units	The units for the schedule type and value selected in the previous fields. Values are: • milliseconds • seconds • minutes • hours • none
Number of Packets	The number of packets transmitted from the source to the destination.
Interval Period	The time taken to send the packets from the source to their destination.
Interval Period Units	The unit of the interval period. Values are: • Milliseconds • Seconds • None
Packet Size	The size of the service packet (including padding size when required).
Test Pattern	The test pattern. Values are: • hex • pseudo-random • None
Test Pattern Value	The value for the selected test pattern.
Priority Value	The priority value.

Step 4 Select the **SLA Statistics** tab. Provide values for the following parameters:

Input Parameter	Description
Statistics Type	The statistics type. Values are: • one-way-delay-ds • one-way-delay-sd • one-way-jitter-ds • one-way-jitter-sd • round-trip-delay • round-trip-jitter
Aggregate Period	The aggregate period, which can be **configure** or **none**.
Aggregate Bins	The aggregate count of bins to store the counter values of the result of each performance parameter.
Aggregate Width	The aggregate width of each bin.
Bucket Size	The number of buckets required to store the performance attribute results gathered during a specified period.

Input Parameter	Description
Bucket Size Units	The units for the bucket size, which can be **per-probe** or **probes**.
Bucket Archive	The number of buckets archived.

Step 5 Select the **SLA Schedule** tab. Provide values for the following parameters:

Input Parameter	Description
Schedule Time or Day	The time or day for the SLA schedule.
Schedule Time Units	The units for the schedule. Values are: • hours • minutes • none
Schedule At	The time at which the SLA must be scheduled.
Schedule for Duration	The duration for which the SLA must be scheduled.
Schedule for Units	The units for the schedule. Values are: • seconds • minutes • hours • days • week • None

Step 6 Preview, schedule, or execute the command.

Create On Demand Probe Configuration

To create on demand probe configuration:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Create On Demand Probe Configuration**. The **Create On Demand Probe Configuration** dialog box opens.

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

Input Parameter	Description
Operation Type	The type of operation, which can be **cfm-delay-measurement** or **cfm-loopback**.
OAM Domain	The OAM domain.

Input Parameter	Description
Source Interface [B/G/T/P Location]	The source interface ID for a probe.
Destination Type	The destination type, which can be **mac-address** or **mep-id**.
Destination Value	The interface ID of the destination, which is either a MAC Address id or a MEPID.
Packet Size	The size of the service packet. This also includes padding size when required.
Test Pattern	The test pattern. Values are: • hex • pseudo-random • None
Test pattern value	The value of the selected test pattern.
Priority Value	The priority value.
Probe Type	The type of probe. Values are: • burst • packet • none
Probe Schedule Type	The schedule type for probes, which can be **every** or **once**.
Probe Schedule Value	The value for the schedule type selected in the previous field.
Probe Scheduled Units	The units for the schedule type and value selected in the previous fields. Values are: • minutes • hours • none
Number of Packets	The number of packets transmitted from the source to the destination.
Interval Period	The time taken to send the packets from the source to their destination.

Step 4 Choose the **Probe Statistics** tab. Provide values for the following parameters:

Input Parameter	Description
Statistics Type	The statistics type. Values are: • one-way-delay-ds • one-way-delay-sd • one-way-jitter-ds • one-way-jitter-sd • round-trip-delay • round-trip-jitter
Aggregate Period	The aggregate period, which can be **configure** or **none**.

Input Parameter	Description
Aggregate Bins	The aggregate count of bins to store the counter values of the result of each performance parameter.
Aggregate Width	The aggregate width of each bin.
Bucket Properties	The bucket type. Values are: • archive • size • none
Archive/Bucket Size	The number of buckets required to store the performance attribute results gathered during a specified period.

Step 5 Choose the **Probe Schedule** tab. Provide values for the following parameters:

Input Parameter	Description
Schedule Config	The schedule to be used for the configuration. Values are: • now • at • in • None
Schedule At	The time at which the probe must be scheduled.
Schedule At Date	The date on which the probe must be scheduled.
Schedule In	The time period for which the probe must be scheduled.
Schedule In Units	The units to be used for the schedule. Values are: • seconds • minutes • None
Schedule for Duration	The duration for which the probe must be scheduled.
Schedule for Units	The units for the schedule duration. Values are: • seconds • minutes • None
Repeat Probe Interval	The interval during which the schedule must be repeated.
Repeat Probe Units	The units for the repeat schedule. Values are: • seconds • minutes • None

Input Parameter	Description
Number of probes	The number of probes that must be configured.
Asynchronous	Indicates whether the schedule is asynchronous. Values are: • enable • disable • None

Step 6 Preview, schedule, or execute the command.

Deassociate Profile

To deassociate a profile:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Deassociate Profile**. The **Deassociate Profile** dialog box opens.

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

Input Parameter	Description
Profile Name	The name of the profile created for performance monitoring of the SLA configuration.
Interface Name	The interface ID.
Domain Name	The name of the OAM domain.
Service Name	The name of the service.
Source MEPID	The source interface ID for a probe where the probe is getting initiated.
Destination Type	The destination type, which can be **mac-address** or **mep-id**.
Destination Value	The interface ID of the destination, which is either a MAC Address ID or a MEPID.

Step 4 Preview, schedule, or execute the command.

Delete Profile

To delete a profile:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Delete Profile**. The **Delete Profile** dialog box opens.

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

Input Parameter	Description
Profile Name	The name of the profile created for performance monitoring of SLA configuration.
Measurement Type	The measurement type, which can be **cfm-delay-measurement** or **cfm-loopback**.

Step 4 Preview, schedule, or execute the command.

Configure IP SLA Parameters

To configure an IP SLA profile for the probe.

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Configure IP SLA Parameters**. The **Configure Profile** dialog box opens.

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

Input Parameter	Description
SLA ID	The unique SLA ID.
Measurement Type	The measurement type, which can be **cfm-delay-measurement** or **cfm-loopback**.
OAM Domain Name	The name of the OAM domain.
Ethernet Virtual Connection	The name or identifier of the ethernet virtual connection, which connects two User-Network Interfaces (UNI).
Target Maintenance End point id or Mac Address Type	The target type, which can be Maintenance endpoint or Mac Address.
Target Maintenance End point id or Mac Address	The target maintenance endpoint ID or the Mac address, based on the type selected.
Class of Service	The class of service, which can be any value between 0 and 7.
Source Maintenance End point id or Mac Address Type	The source type, which can be Maintenance endpoint or Mac Address.
Source Maintenance End point id or Mac Address	The source maintenance endpoint ID or the Mac address, based on the type selected.
Y1731 Frame Type	The Y1731 frame type, which can be interval, offset, or size.

Input Parameter	Description
Y1731 Frame Parameters	The frame parameter, based on the frame type selected.
History Period	The number of historical aggregated interval statistics to be retained, which can be any value between 0 and 10.
Aggregate Period	The duration for which individual delay measurements are aggregated into cumulative statistics.
Distribution Type	The distribution type, which can be delay or delay-variation.
Distribution Value	The distribution value, based on the distribution type selected.
Distribution Boundaries [comma separated]	The distribution boundaries separated by a comma.
Max Delay in milliseconds	The maximum delay that is allowed as a valid delay measurement.
Owner Name	The name of the operation owner.

Step 4 Choose the **SLA Schedule** tab. Provide values for the following parameters:

Input Parameter	Description
Life Type	The schedule type for the two-way delay measurement on the sender, which can be forever, seconds, or None.
Life Period	The schedule period, based on the life type selected.
Start Time Type	The start time type for the schedule, which can be now, hh:mm [:ss], after {hh:mm:ss}, or None.
Start Time	The time when the schedule must start, based on the type selected.
Month Day Format	The month day format to be used for the schedule, which can be month-day, day-month, or None.
Month Day Input	The month day input format.
Age out Period in seconds	The age out period for the schedule.
Recurring	The option to execute the schedule repeatedly, which can be Disable, Enable, or None.

Step 5 Preview, schedule, or execute the command.

Delete IP SLA

To delete IP SLA:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Configuration > Delete IP SLA**. The **Delete IP SLA** dialog box opens.

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

Input Parameter	Description
SLA ID	The SLA ID that must be deleted.

Step 4 Preview, schedule, or execute the command.

Diagnosing Y.1731 Probes

The following commands facilitate diagnosing the Y.1731 probes for a Cisco ASR 9000 device:

- Show SLA Operations Detail, page 17-13
- Show SLA Profiles, page 17-13

The following command facilitates diagnosing the Y.1731 probes for a Cisco CPT device:

- Show IP SLA, page 17-14

Show SLA Operations Detail

To view the details of the SLA operation:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Diagnostics > Show SLA Operations Detail**. The **Show SLA Operations Detail** dialog box opens.

The command checks the operational details and does not require any input parameters.

Step 3 To see the commands that will be applied on the device, click **Preview**.

Step 4 To schedule the command, click the **Scheduling** tab.

Step 5 To run the command, click **Execute Now**.

You can view errors in the **Result** tab, if there are any.

Step 6 To close the dialog box, click **Close**.

Show SLA Profiles

To view a list the SLA profiles:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Diagnostics > Show SLA Profiles**. The **Show SLAProfiles** dialog box opens.

The command checks the details and does not require any input parameters.

Step 3 To see the commands that will be applied on the device, click **Preview**.

Step 4 To schedule the command, click the **Scheduling** tab.

Step 5 To run the command, click **Execute Now**.

You can view errors in the **Result** tab, if there are any.

Step 6 To close the dialog box, click **Close**.

Show IP SLA

To view the IP SLA schedule details:

Step 1 In the inventory window, expand the **Logical Inventory** tree and choose the **Probes > Y1731 Probes** node.

Step 2 Right-click and choose **Commands > Diagnostics > Show IP SLA**. The **Show IP SLA** dialog box opens.

The command checks the details and does not require any input parameters.

Step 3 To see the commands that will be applied on the device, click **Preview**.

Step 4 To schedule the command, click the **Scheduling** tab.

Step 5 To run the command, click **Execute Now**.

You can view errors in the **Result** tab, if there are any.

Step 6 To close the dialog box, click **Close**.