IPSLA Y1731 On-Demand and Concurrent Operations

This module describes how to configure the IPSLA Y1731 SLM Feature Enhancements feature for enabling real-time Ethernet service troubleshooting for users without configuration privileges. This feature supports on-demand Synthetic Loss Measurement (SLM) operations that can be run by issuing a single command in privileged EXEC mode.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for ITU-T Y.1731 Operations

IEEE-compliant Connectivity Fault Management (CFM) must be configured and enabled for Y.1731 performance monitoring to function.
Restrictions for IP SLAs Y.1731 On-Demand Operations

- SNMP is not supported for reporting threshold events or collecting performance statistics for on-demand operations.
- On-demand operation statistics are not stored and are not supported by the statistic history and aggregation functions.

Information About IP SLAs Y.1731 On-Demand and Concurrent Operations

IPSLA Y1731 SLM Feature Enhancements

On-demand IP SLAs Synthetic Loss Measurement (SLM) operations, in the IPSLA Y1731 SLM Feature Enhancements feature, enable users without configuration access to perform real-time troubleshooting of Ethernet services. There are two operational modes for on-demand operations: direct mode that creates and runs an operation immediately and referenced mode that starts and runs a previously configured operation.

- In the direct mode, a single command can be used to create multiple pseudo operations for a range of class of service (CoS) values to be run, in the background, immediately. A single command in privileged EXEC mode can be used to specify frame size, interval, frequency, and duration for the direct on-demand operation. Direct on-demand operations start and run immediately after the command is issued.
- In the referenced mode, you can start one or more already-configured operations for different destinations, or for the same destination, with different CoS values. Issuing the privileged EXEC command creates a pseudo version of a proactive operation that starts and runs in the background, even while the proactive operation is running.
- Once an on-demand operation is completed, statistical output is displayed on the console. On-demand operation statistics are not stored and are not supported by the statistic history and aggregation functions.
- After an on-demand operation is completed, and the statistics handled, the direct and referenced on-demand operation is deleted. The proactive operations are not deleted and continue to be available to be run in referenced mode, again.

A concurrent operation consists of a group of operations, all configured with the same operation ID number, that run concurrently. Concurrent operations are supported for a given Ethernet Virtual Circuit (EVC), CoS, and remote Maintenance End Point (MEP) combination, or for multiple MEPs for a given multipoint EVC, for delay or loss measurements. A new keyword was added to the appropriate commands to specify that concurrent Ethernet frame Delay Measurement (ETH-DM) synthetic frames are sent during the operation.

The IPSLA Y.1731 SLM Feature Enhancements feature also supports burst mode for concurrent operations, one-way dual-ended, and single-ended delay and delay variation operations, as well as for single-ended loss operations. A new keyword was added to the appropriate commands to support bursts of PDU transmission.
during an aggregation interval. The maximum number of services monitored is 50 every 30 minutes, with an average of 25 services every 2 hours.

How to Configure IP SLAs Y.1731 On-Demand and Concurrent Operations

Configuring a Direct On-Demand Operation on a Sender MEP

Before You Begin

Class of Service (CoS)-level monitoring must be enabled on MEPs associated to the Ethernet frame loss operation by using the `monitor loss counter` command on the devices at both ends of the operation. See the Cisco IOS Carrier Ethernet Command Reference for command information. See the "Configuration Examples for IP SLAs Metro-Ethernet 3.0 (ITU-T Y.1731) Operations" section for configuration information.

Note


SUMMARY STEPS

1. enable
2. `ip sla on-demand ethernet {DMMv1 | SLM} domain domain-name {evc evc-id | vlan vlan-id} {mpid target-mp-id | mac-address target-address} cos cos {source {mpid source-mp-id | mac-address source-address}} {continuous [interval milliseconds] | burst [interval milliseconds] [number number-of-frames] [frequency seconds]} [size bytes] aggregation seconds {duration seconds | max number-of-packets}`

DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1** enable | Enables privileged EXEC mode.  
• Enter your password if prompted. |
| **Example:** Device> enable |
| **Step 2** `ip sla on-demand ethernet {DMMv1 | SLM} domain domain-name {evc evc-id | vlan vlan-id} {mpid target-mp-id | mac-address target-address} cos cos {source {mpid source-mp-id | mac-address source-address}} {continuous [interval milliseconds] | burst [interval milliseconds] [number number-of-frames] [frequency seconds]} [size bytes] aggregation seconds {duration seconds | max number-of-packets}` | Creates and runs an on-demand operation in direct mode.  
• To create and run concurrent on-demand operations, configure this command using the DMMv1 keyword.  
• Statistical output is posted on the console after the operation is finished. |
Configuring a Referenced On-Demand Operation on a Sender MEP

**Note**

After an on-demand operation is finished and the statistics handled, the on-demand version of the operation is deleted.

**Before You Begin**

- Single-ended and concurrent Ethernet delay, or delay variation, and frame loss operations to be referenced must be configured. See the “Configuring IP SLAs Metro-Ethernet 3.0 (ITU-T Y.1731) Operations” module of the IP SLAs Configuration Guide.

**SUMMARY STEPS**

1. enable
2. ip sla on-demand ethernet [dmmv1 | slm] operation-number {duration seconds | max number-of-packets}

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
</tbody>
</table>
| Example:

  Device> enable | |
|                  | • Enter your password if prompted. |

| **Step 2**

<table>
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<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ip sla on-demand ethernet [dmmv1</td>
<td>slm] operation-number {duration seconds</td>
</tr>
</tbody>
</table>
| Example:

  Device# ip sla on-demand ethernet slm 11 duration 38 | • Statistical output is posted on the console after the operation is finished. |
|                  | • Repeat this step for each on-demand operation to be run. |
Configuring an IP SLAs Y.1731 Concurrent Operation on a Sender MEP

To configure concurrent Ethernet delay, delay variation, and frame loss operations, see the "Configuring IP SLAs Metro-Ethernet 3.0 (ITU-T Y.1731) Operations" module of the IP SLAs Configuration Guide.

Configuration Examples for IP SLAs Y.1731 On-Demand and Concurrent Operations

Example: On-Demand Operation in Direct Mode

```
Device# ip sla on-demand ethernet s1m domain xxx vlan 10 mpid 3 cos 1 source mpid 1 continuous aggregation 35 duration 38
```

Loss Statistics for Y1731 Operation 2984884426
Type of operation: Y1731 Loss Measurement
Latest operation start time: *20:17:41.535 PST Wed May 16 2012
Latest operation return code: OK
Distribution Statistics:

Interval 1
Start time: *20:17:41.535 PST Wed May 16 2012
Number of measurements initiated: 35
Number of measurements completed: 35
Flag: OK

Forward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps forward:

Backward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps backward:

Loss Statistics for Y1731 Operation 2984884426
Type of operation: Y1731 Loss Measurement
Latest operation start time: *20:17:41.535 PST Wed May 16 2012
Latest operation return code: OK
Distribution Statistics:
Example: On-Demand Operation in Referenced Mode

Device(config)# ip sla 11
Device(config-ip-sla)# ethernet y1731 loss SLM domain xxx vlan 10 mpid 3 cos 1 source mpid 1
Device(config-sla-y1731-loss)# end
Device# ip sla on-demand ethernet slm 11 duration 30

Loss Statistics for Y1731 Operation 2984884426
Type of operation: Y1731 Loss Measurement
Latest operation start time: *20:17:41.535 PST Wed May 16 2012
Latest operation return code: OK
Distribution Statistics:

Interval 1
Start time: *20:17:41.535 PST Wed May 16 2012
Number of measurements initiated: 35
Number of measurements completed: 35
Flag: OK
Forward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps forward:
Backward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps backward:
Loss Statistics for Y1731 Operation 2984884426
Type of operation: Y1731 Loss Measurement
Latest operation start time: *20:17:41.535 PST Wed May 16 2012
Latest operation return code: OK
Distribution Statistics:

Interval 1
Start time: *20:17:41.535 PST Wed May 16 2012
Number of measurements initiated: 35
Number of measurements completed: 35
Flag: OK
Forward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps forward:
Backward
Number of Observations 3
Available indicators: 0
Unavailable indicators: 3
Tx frame count: 30
Rx frame count: 30
Min/Avg/Max - (FLR % ): 0:9/000.00%/0:9
Cumulative - (FLR % ): 000.00%
Timestamps backward:

IP SLA Reconfiguration Scenarios

IP SLA Reconfiguration Scenarios
IP SLA must be reconfigured in the following scenarios:

• When an Ethernet service instance is disabled on the interface using the service instance ethernet command.
• When the local MEP is removed using the no cfm mep domain domain-name mpid mpid command.
• When the configuration of an interface is reset to its default values, using the default interface command.
• When an interface configuration is removed using the no interface command.
• When the Ethernet Connectivity Fault Management (CFM) distribution is disabled using the no ethernet cfm global and no ethernet cfm ieee commands.
Additional References for IP SLAs Y.1731 On-Demand and Concurrent Operations

Related Documents

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco IOS commands</td>
<td>Cisco IOS Master Commands List, All Releases</td>
</tr>
<tr>
<td>Cisco IOS Carrier Ethernet commands</td>
<td>Cisco IOS Carrier Ethernet Command Reference</td>
</tr>
<tr>
<td>Cisco IOS IP SLAs commands</td>
<td>Cisco IOS IP SLAs Command Reference</td>
</tr>
<tr>
<td>Ethernet CFM for ITU-T Y.1731</td>
<td>“ITU-T Y.1731 Performance Monitoring in a Service Provider Network” module of the Carrier Ethernet Configuration Guide</td>
</tr>
<tr>
<td>Ethernet operations</td>
<td>“Configuring IP SLAs Metro-Ethernet 3.0 (ITU-T Y.1731) Operations” module of the IP SLAs Configuration Guide</td>
</tr>
<tr>
<td>Network Time Protocol (NTP)</td>
<td>“Configuring NTP” module of the Network Management Configuration Guide</td>
</tr>
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Standards and RFCs

<table>
<thead>
<tr>
<th>Standard/RFC</th>
<th>Title</th>
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<tbody>
<tr>
<td>ITU-T Y.1731</td>
<td>OAM functions and mechanisms for Ethernet-based networks</td>
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MIBs

<table>
<thead>
<tr>
<th>MIB</th>
<th>MIBs Link</th>
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<tr>
<td>• CISCO-IPSLA-ETHERNET-MIB</td>
<td>To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a></td>
</tr>
<tr>
<td>• CISCO-RTTMON-MIB</td>
<td></td>
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Technical Assistance

<table>
<thead>
<tr>
<th>Description</th>
<th>Link</th>
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<tbody>
<tr>
<td>The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.</td>
<td><a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a></td>
</tr>
</tbody>
</table>

Feature Information for IP SLAs Y.1731 On-Demand and Concurrent Operations

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for IP SLAs Y.1731 On-Demand and Concurrent Operations**

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Feature Information</th>
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<tbody>
<tr>
<td>IPSLA Y1731 SLM Feature Enhancements</td>
<td>Cisco IOS XE Release 3.8S</td>
<td>This feature enhancement allows you to run on-demand Synthetic Loss Measurement (SLM) operations, independent from previously scheduled operations, for the purpose of troubleshooting Ethernet services in your network. The following commands were introduced or modified: <code>ethernet y1731 delay</code>, <code>ethernet y1737 loss</code>, <code>ip sla on-demand ethernet</code>.</td>
</tr>
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</table>