



IP SLAs for Metro-Ethernet

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The IP Service Level Agreements (SLAs) for Metro-Ethernet feature provides the capability to gather Ethernet-layer network performance metrics. This feature integrates Cisco IOS IP SLAs with the Ethernet Connectivity Fault Management (CFM) feature. Ethernet CFM is an end-to-end per-service-instance Ethernet-layer operation, administration, and management (OAM) protocol. Available statistical measurements for the IP SLAs Ethernet operation include round-trip time, jitter (interpacket delay variance), and packet loss.

The IP SLAs for Metro-Ethernet feature also allows you to perform multioperation scheduling of IP SLAs operations and supports proactive threshold violation monitoring through Simple Network Management Protocol (SNMP) trap notifications and syslog messages.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see 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 for the IP SLAs Ethernet Operation”](#) section on page 14.

Use Cisco Feature Navigator to find information about platform support and Cisco IOS, Catalyst OS, and Cisco IOS XE software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

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Prerequisites for the IP SLAs Ethernet Operation

It is recommended that the IEEE 802.1ag standard is supported on the destination devices in order to obtain complete error reporting and diagnostics information.



Note

The destination devices do not require the IP SLAs Responder to be enabled.

Restrictions for the IP SLAs Ethernet Operation

Memory and performance may be impacted for a given Ethernet CFM maintenance domain and Ethernet Virtual Circuit (EVC) or VLAN that has a large number of maintenance endpoints (MEPs).

Information About the IP SLAs Ethernet Operation

To configure an IP SLAs Ethernet operation, you should understand the following concepts:

- [Benefits of the IP SLAs Ethernet Operation, page 2](#)
- [Ethernet CFM, page 3](#)
- [IP SLAs Ethernet Operation Basics, page 3](#)

Benefits of the IP SLAs Ethernet Operation

- End-to-end connectivity measurements for determining network availability or testing network connectivity in service provider Ethernet networks
- Proactive threshold violation monitoring through SNMP trap notifications and syslog messages
- Reduced network troubleshooting time for service provider Ethernet networks
- Creation of IP SLAs Ethernet ping and Ethernet jitter operations based on network topology
- Discovery of existing maintenance endpoints (MEPs) in a given Ethernet CFM maintenance domain and EVC or VLAN based on the Ethernet CFM database
- Multioperation scheduling of IP SLAs operations

Ethernet CFM

Ethernet CFM is an end-to-end per-service-instance Ethernet-layer operation, administration, and management (OAM) protocol. For more information about this feature, see the documentation for the Ethernet CFM feature. (See the [“Related Documents” section on page 11](#) for the location of this document.)

IP SLAs Ethernet Operation Basics

The IP SLAs for Metro-Ethernet feature integrates the IP SLAs software subsystem with the Ethernet CFM software subsystem to provide the capability to gather Ethernet-layer statistical measurements by sending and receiving Ethernet data frames between Ethernet CFM maintenance endpoints (MEPs). The performance metrics for IP SLAs Ethernet operations are measured between a source MEP and a destination MEP. Unlike existing IP SLAs operations that provide performance metrics for the IP layer, the IP SLAs Ethernet operation provides performance metrics for Layer 2.

IP SLAs Ethernet operations may be configured using the command-line interface (CLI) or Simple Network Management Protocol (SNMP). You can manually configure individual Ethernet ping or Ethernet jitter operations by specifying the destination MEP identification number, name of the maintenance domain, and EVC or VLAN identifier. You also have the option to configure an IP SLAs auto Ethernet operation that will query the Ethernet CFM database for all maintenance endpoints in a given maintenance domain and EVC or VLAN. When an IP SLAs auto Ethernet operation is configured, individual Ethernet ping or Ethernet jitter operations are automatically created based on the MEPs that were discovered. A notification mechanism exists between the IP SLAs and Ethernet CFM subsystems to facilitate the automatic creation of Ethernet ping or Ethernet jitter operations for applicable MEPs that are added to a given maintenance domain and EVC or VLAN while an auto Ethernet operation is running.

The IP SLAs for Metro-Ethernet feature also allows you to perform multioperation scheduling of IP SLAs operations and supports proactive threshold violation monitoring through SNMP trap notifications and syslog messages. For more information on these topics, see the [“Related Documents” section on page 11](#).

Statistics Measured by the IP SLAs Ethernet Operation

The network performance metrics supported by the IP SLAs Ethernet operation is similar to the metrics supported by existing IP SLAs operations. The statistical measurements supported by the IP SLAs Ethernet jitter operation include the following:

- Jitter (source-to-destination and destination-to-source)
- Round-trip time latency
- Unprocessed packets
- Packet loss (source-to-destination and destination-to-source)
- Out-of-sequence, tail-dropped, and late packets

How to Configure the IP SLAs Ethernet Operation

This section contains the following tasks:

- [Configuring an IP SLAs Ethernet Operation with Endpoint Discovery, page 4](#)
- [Manually Configuring an Individual IP SLAs Ethernet Operation, page 7](#)

Configuring an IP SLAs Ethernet Operation with Endpoint Discovery

Perform this task to configure and schedule an IP SLAs auto Ethernet operation.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip sla ethernet-monitor** *operation-number*
4. **type echo domain** *domain-name* {**evc** *evc-id* | **vlan** *vlan-id*} [**exclude-mpids** *mp-ids*]
or
type jitter domain *domain-name* {**evc** *evc-id* | **vlan** *vlan-id*} [**exclude-mpids** *mp-ids*] [**interval** *interframe-interval*] [**num-frames** *frames-number*]
5. **cos** *cos-value*
6. **owner** *owner-id*
7. **request-data-size** *bytes*
8. **tag** *text*
9. **threshold** *milliseconds*
10. **timeout** *milliseconds*
11. **exit**
12. **ip sla ethernet-monitor reaction-configuration** *operation-number* **react** *monitored-element* [**action-type** {**none** | **trapOnly**}] [**threshold-type** {**average** [*number-of-measurements*] | **consecutive** [*occurrences*] | **immediate** | **never** | **xofy** [*x-value* *y-value*]}] [**threshold-value** *upper-threshold* *lower-threshold*]
13. **ip sla ethernet-monitor schedule** *operation-number* **schedule-period** *seconds* [**frequency** [*seconds*]] [**start-time** {**after** *hh:mm:ss* | *hh:mm[:ss]* [*month* *day* | *day* *month*] | **now** | **pending**}]
14. **exit**
15. **show ip sla ethernet-monitor configuration** [*operation-number*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	ip sla ethernet-monitor <i>operation-number</i> Example: Router(config)# ip sla ethernet-monitor 1	Begins configuration for an IP SLAs auto Ethernet operation and enters IP SLA Ethernet monitor configuration mode.

	Command or Action	Purpose
Step 4	<p>type echo domain <i>domain-name</i> {evc <i>evc-id</i> vlan <i>vlan-id</i>} [exclude-mpids <i>mp-ids</i>]</p> <p>or</p> <p>type jitter domain <i>domain-name</i> {evc <i>evc-id</i> vlan <i>vlan-id</i>} [exclude-mpids <i>mp-ids</i>] [interval <i>interframe-interval</i>] [num-frames <i>frames-number</i>]</p> <p>Example: Router(config-ip-sla-ethernet-monitor)# type echo domain testdomain vlan 34</p> <p>or</p> <p>Example: Router(config-ip-sla-ethernet-monitor)# type jitter domain testdomain evc testevc interval 20 num-frames 30</p>	<p>Configures an auto Ethernet operation to create Ethernet ping operations.</p> <p>or</p> <p>Configures an auto Ethernet operation to create Ethernet jitter operations.</p>
Step 5	<p>cos <i>cos-value</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# cos 2</p>	(Optional) Sets the class of service for an IP SLAs Ethernet operation.
Step 6	<p>owner <i>owner-id</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# owner admin</p>	(Optional) Configures the Simple Network Management Protocol (SNMP) owner of an IP SLAs operation.
Step 7	<p>request-data-size <i>bytes</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# request-data-size 64</p>	<p>(Optional) Sets the padding size for the data frame of an IP SLAs Ethernet operation.</p> <p>The default value for IP SLAs Ethernet ping operations is 66 bytes. The default value for IP SLAs Ethernet jitter operations is 51 bytes.</p>
Step 8	<p>tag <i>text</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# tag TelnetPollSever1</p>	(Optional) Creates a user-specified identifier for an IP SLAs operation.
Step 9	<p>threshold <i>milliseconds</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# threshold 10000</p>	(Optional) Sets the upper threshold value for calculating network monitoring statistics created by an IP SLAs operation.
Step 10	<p>timeout <i>milliseconds</i></p> <p>Example: Router(config-ip-sla-ethernet-params)# timeout 10000</p>	(Optional) Sets the amount of time an IP SLAs operation waits for a response from its request packet.

	Command or Action	Purpose
Step 11	<p>exit</p> <p>Example: Router(config-ip-sla-ethernet-params)# exit</p>	Exits IP SLAs auto Ethernet parameters configuration submode and returns to global configuration mode.
Step 12	<p>ip sla ethernet-monitor reaction-configuration <i>operation-number react monitored-element</i> [action-type {none trapOnly}] [threshold-type {average [number-of-measurements] consecutive [occurrences] immediate never xofy [x-value y-value]}] [threshold-value <i>upper-threshold lower-threshold</i>]</p> <p>Example: Router(config)# ip sla ethernet-monitor reaction-configuration 10 react connectionLoss threshold-type consecutive 3 action-type trapOnly</p>	Configures proactive threshold monitoring parameters for an IP SLAs auto Ethernet operation.
Step 13	<p>ip sla ethernet-monitor schedule <i>operation-number schedule-period seconds</i> [frequency [seconds]] [start-time {after <i>hh:mm:ss hh:mm[:ss] [month day day month] </i> now pending}]</p> <p>Example: Router(config)# ip sla ethernet-monitor schedule 10 schedule-period 60 start-time now</p>	Configures scheduling parameters for an IP SLAs auto Ethernet operation.
Step 14	<p>exit</p> <p>Example: Router(config)# exit</p>	(Optional) Exits global configuration mode and returns to privileged EXEC mode.
Step 15	<p>show ip sla ethernet-monitor configuration <i>[operation-number]</i></p> <p>Example: Router# show ip sla ethernet-monitor configuration 1</p>	(Optional) Displays configuration settings for all IP SLAs auto Ethernet operations or a specified auto Ethernet operation.

Troubleshooting Tips

Use the **debug ip sla trace** and **debug ip sla error** commands to help troubleshoot issues with an individual IP SLAs Ethernet ping or Ethernet jitter operation. Use the **debug ip sla ethernet-monitor** command to help troubleshoot issues with an IP SLAs auto Ethernet operation.

What to Do Next

To display the results of an IP SLAs operation, use the **show ip sla statistics** and **show ip sla statistics aggregated** commands. Checking the output for fields that correspond to criteria in your service level agreement will help you determine whether the service metrics are acceptable.

Manually Configuring an Individual IP SLAs Ethernet Operation

Perform this task to manually configure and schedule an individual IP SLAs Ethernet ping or Ethernet jitter operation.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip sla** *operation-number*
4. **ethernet echo mpid** *mp-id* **domain** *domain-name* {**evc** *evc-id* | **vlan** *vlan-id*}
or
ethernet jitter mpid *mp-id* **domain** *domain-name* {**evc** *evc-id* | **vlan** *vlan-id*} [**interval** *interframe-interval*] [**num-frames** *frames-number*]
5. **cos** *cos-value*
6. **frequency** *seconds*
7. **history** *history-parameter*
8. **owner** *owner-id*
9. **request-data-size** *bytes*
10. **tag** *text*
11. **threshold** *milliseconds*
12. **timeout** *milliseconds*
13. **exit**
14. **ip sla reaction-configuration** *operation-number* **react** *monitored-element* [**action-type** *option*] [**threshold-type** {**average** [*number-of-measurements*] | **consecutive** [*occurrences*] | **immediate** | **never** | **xofy** [*x-value* *y-value*]}] [**threshold-value** *upper-threshold* *lower-threshold*]
15. **ip sla schedule** *operation-number* [**life** {**forever** | *seconds*}] [**start-time** {*hh:mm[:ss]* [*month* *day* | *day* *month*] | **pending** | **now** | **after** *hh:mm:ss*}] [**ageout** *seconds*] [**recurring**]
16. **exit**
17. **show ip sla configuration** [*operation-number*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
Step 3	<code>ip sla operation-number</code> Example: Router(config)# ip sla 1	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
Step 4	<code>ethernet echo mpid mp-id domain domain-name</code> <code>{evc evc-id vlan vlan-id}</code> or <code>ethernet jitter mpid mp-id domain domain-name</code> <code>{evc evc-id vlan vlan-id} [interval</code> <code>interframe-interval] [num-frames frames-number]</code> Example: Router(config-ip-sla)# ethernet echo mpid 23 domain testdomain vlan 34 or Example: Router(config-ip-sla)# ethernet jitter mpid 23 domain testdomain evc testevc interval 20 num-frames 30	Configures the IP SLAs operation as an Ethernet ping operation and enters Ethernet echo configuration mode. or Configures the IP SLAs operation as an Ethernet jitter operation and enters Ethernet jitter configuration mode.
Step 5	<code>cos cos-value</code> Example: Router(config-ip-sla-ethernet-echo)# cos 2	(Optional) Sets the class of service for an IP SLAs Ethernet operation.
Step 6	<code>frequency seconds</code> Example: Router(config-ip-sla-ethernet-echo)# frequency 30	(Optional) Sets the rate at which a specified IP SLAs operation repeats.
Step 7	<code>history history-parameter</code> Example: Router(config-ip-sla-ethernet-echo)# history hours-of-statistics-kept 3	(Optional) Specifies the parameters used for gathering statistical history information for an IP SLAs operation.
Step 8	<code>owner owner-id</code> Example: Router(config-ip-sla-ethernet-echo)# owner admin	(Optional) Configures the Simple Network Management Protocol (SNMP) owner of an IP SLAs operation.
Step 9	<code>request-data-size bytes</code> Example: Router(config-ip-sla-ethernet-echo)# request-data-size 64	(Optional) Sets the padding size for the data frame of an IP SLAs Ethernet operation. The default value for IP SLAs Ethernet ping operations is 66 bytes. The default value for IP SLAs Ethernet jitter operations is 51 bytes.

	Command or Action	Purpose
Step 10	<p>tag <i>text</i></p> <p>Example: Router(config-ip-sla-ethernet-echo)# tag TelnetPollSever1</p>	(Optional) Creates a user-specified identifier for an IP SLAs operation.
Step 11	<p>threshold <i>milliseconds</i></p> <p>Example: Router(config-ip-sla-ethernet-echo)# threshold 10000</p>	(Optional) Sets the upper threshold value for calculating network monitoring statistics created by an IP SLAs operation.
Step 12	<p>timeout <i>milliseconds</i></p> <p>Example: Router(config-ip-sla-ethernet-echo)# timeout 10000</p>	(Optional) Sets the amount of time an IP SLAs operation waits for a response from its request packet.
Step 13	<p>exit</p> <p>Example: Router(config-ip-sla-ethernet-echo)# exit</p>	Exits IP SLAs Ethernet monitor configuration submode and returns to global configuration mode.
Step 14	<p>ip sla reaction-configuration <i>operation-number</i> react <i>monitored-element</i> [action-type <i>option</i>] [threshold-type {average [<i>number-of-measurements</i>] consecutive [<i>occurrences</i>] immediate never xofy [<i>x-value y-value</i>]}] [threshold-value <i>upper-threshold lower-threshold</i>]</p> <p>Example: Router(config)# ip sla reaction-configuration 1 react jitterAvg threshold-value 5 2 action-type trap threshold-type immediate</p>	Configures proactive threshold monitoring parameters for an IP SLAs operation.
Step 15	<p>ip sla schedule <i>operation-number</i> [life {forever <i>seconds</i>}] [start-time {<i>hh:mm[:ss]</i> [<i>month day</i> <i>day month</i>] pending now after <i>hh:mm:ss</i>}] [ageout <i>seconds</i>] [recurring]</p> <p>Example: Router(config)# ip sla schedule 1 start-time now life forever</p>	Configures the scheduling parameters for an individual IP SLAs operation.
Step 16	<p>exit</p> <p>Example: Router(config)# exit</p>	(Optional) Exits global configuration mode and returns to privileged EXEC mode.
Step 17	<p>show ip sla configuration [<i>operation-number</i>]</p> <p>Example: Router# show ip sla configuration 1</p>	(Optional) Displays configuration values including all defaults for all IP SLAs operations or a specified operation.

Troubleshooting Tips

Use the **debug ip sla trace** and **debug ip sla error** commands to help troubleshoot issues with an individual IP SLAs Ethernet ping or Ethernet jitter operation.

What to Do Next

To display the results of an IP SLAs operation use the **show ip sla statistics** and **show ip sla statistics aggregated** commands. Checking the output for fields that correspond to criteria in your service level agreement will help you determine whether the service metrics are acceptable.

Configuration Examples for the IP SLAs Ethernet Operation

This section provides the following configuration examples:

- [Configuring an IP SLAs Ethernet Operation with Endpoint Discovery: Examples, page 10](#)
- [Manually Configuring an Individual IP SLAs Ethernet Operation: Examples, page 11](#)

Configuring an IP SLAs Ethernet Operation with Endpoint Discovery: Examples

The following examples show how to configure operation parameters, proactive threshold monitoring, and scheduling options using an IP SLAs auto Ethernet operation. In Configuration A, operation 10 is configured to automatically create IP SLAs Ethernet ping operations for all the discovered maintenance endpoints in the domain named testdomain and VLAN identification number 34. In Configuration B, operation 20 is configured to automatically create IP SLAs Ethernet ping operations for all the discovered maintenance endpoints in the domain named testdomain and EVC identified as testevc. In both configurations, the proactive threshold monitoring configuration specifies that when three consecutive connection loss events occur, an SNMP trap notification should be sent. The schedule period for operation 10 and operation 20 is 60 seconds, and both operations are scheduled to start immediately.

Configuration A

```
ip sla ethernet-monitor 10
  type echo domain testdomain vlan 34
!
ip sla ethernet-monitor reaction-configuration 10 react connectionLoss threshold-type
consecutive 3 action-type trapOnly
!
ip sla ethernet-monitor schedule 10 schedule-period 60 start-time now
```

Configuration B

```
ip sla ethernet-monitor 20
  type echo domain testdomain evc testevc
!
ip sla ethernet-monitor reaction-configuration 20 react connectionLoss threshold-type
consecutive 3 action-type trapOnly
!
ip sla ethernet-monitor schedule 20 schedule-period 60 start-time now
```

Manually Configuring an Individual IP SLAs Ethernet Operation: Examples

The following examples show how to configure an IP SLAs Ethernet ping operation. In Configuration C, the maintenance endpoint identification number is 23, the maintenance domain name is testdomain, and the VLAN identification number is 34. In Configuration D, the maintenance endpoint identification number is 23, the maintenance domain name is testdomain, and the EVC is identified as testevc. In both configurations, the proactive threshold monitoring configuration specifies that when three consecutive connection loss events occur, an SNMP trap notification should be sent. Operation 1 and operation 5 are scheduled to start immediately.

Configuration C

```
ip sla 1
  ethernet echo mpid 23 domain testdomain vlan 34
  !
ip sla reaction-configuration 1 react connectionLoss threshold-type consecutive 3
action-type trapOnly
!
ip sla schedule 1 start-time now
```

Configuration D

```
ip sla 5
  ethernet echo mpid 23 domain testdomain evc testevc
  !
ip sla reaction-configuration 5 react connectionLoss threshold-type consecutive 3
action-type trapOnly
!
ip sla schedule 5 start-time now
```

Where to Go Next

For information about other types of IP SLAs operations and IP SLAs features, see the [Cisco IOS IP SLAs Features Roadmap](#).

Additional References

The following sections provide references related to the IP SLAs for Metro-Ethernet feature.

Related Documents

Related Topic	Document Title
Ethernet CFM	“Configuring Ethernet Connectivity Fault Management in a Service Provider Network” chapter of the <i>Cisco IOS Carrier Ethernet Configuration Guide</i>
Multioperation scheduling for Cisco IOS IP SLAs	“IP SLAs—Multiple Operation Scheduling” chapter of the <i>Cisco IOS IP SLAs Configuration Guide</i>
Proactive threshold monitoring for Cisco IOS IP SLAs	“IP SLAs—Proactive Threshold Monitoring” chapter of the <i>Cisco IOS IP SLAs Configuration Guide</i>

Related Topic	Document Title
Cisco IOS IP SLAs command-line interface enhancements	<i>Cisco IOS IP Service Level Agreements Command Line Interface</i> , Cisco white paper
Cisco IOS IP SLAs commands	<i>Cisco IOS IP SLAs Command Reference</i>

Standards

Standard	Title
IEEE 802.1ag	<i>Connectivity Fault Management</i>

MIBs

MIB	MIBs Link
<ul style="list-style-type: none"> CISCO-RTTMON-MIB CISCO-IPSLA-ETHERNET-MIB 	<p>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/techsupport</p>

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS IP SLA Command Reference* at http://www.cisco.com/en/US/docs/ios/ipsla/command/reference/sla_book.html. For information about all Cisco IOS commands, go to the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or to the *Cisco IOS Master Commands List* at http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html.

- **cos**
- **debug ip sla ethernet-monitor**
- **ethernet echo mpid**
- **ethernet jitter mpid**
- **ip sla ethernet-monitor**
- **ip sla ethernet-monitor reaction-configuration**
- **ip sla ethernet-monitor schedule**
- **request-data-size (Ethernet)**
- **show ip sla ethernet-monitor configuration**
- **type echo domain**
- **type jitter domain**

Feature Information for the IP SLAs Ethernet Operation

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS, Catalyst OS, and Cisco IOS XE software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.



Note

Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for the IP SLAs Ethernet Operation

Feature Name	Releases	Feature Information
IP SLAs for Metro-Ethernet	12.2(33)SRB, 12.2(33)SB, 12.4(20)T, Cisco IOS XE Release 2.1, 12.2(33)SXI	The IP Service Level Agreements (SLAs) for Metro-Ethernet feature provides the capability to gather Ethernet-layer network performance metrics. Available statistical measurements for the IP SLAs Ethernet operation include round-trip time, jitter (interpacket delay variance), and packet loss.
IP SLAs Metro-Ethernet 2.0 (EVC)	12.2(33)SRD	Support for Ethernet Virtual Circuits (EVCs) was added. The following sections provide information about this feature: <ul style="list-style-type: none"> IP SLAs Ethernet Operation Basics Configuring an IP SLAs Ethernet Operation with Endpoint Discovery Manually Configuring an Individual IP SLAs Ethernet Operation Configuring an IP SLAs Ethernet Operation with Endpoint Discovery: Examples Manually Configuring an Individual IP SLAs Ethernet Operation: Examples

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