



Configuring IP SLAs HTTP Operations

This module describes how to configure an IP Service Level Agreements (SLAs) HTTP operation to monitor the response time between a Cisco device and an HTTP server to retrieve a web page. The IP SLAs HTTP operation supports both the normal GET requests and customer RAW requests. This module also demonstrates how the results of the HTTP operation can be displayed and analyzed to determine how an HTTP server is performing.

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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.

Restrictions for IP SLAs HTTP Operations

- IP SLAs HTTP operations support only HTTP/1.0.
- HTTP/1.1 is not supported for any IP SLAs HTTP operation, including HTTP RAW requests.

Information About IP SLAs HTTP Operations

HTTP Operation

The HTTP operation measures the round-trip time (RTT) between a Cisco device and an HTTP server to retrieve a web page. The HTTP server response time measurements consist of three types:

- DNS lookupRTT taken to perform domain name lookup.
- TCP Connect--RTT taken to perform a TCP connection to the HTTP server.
- HTTP transaction time--RTT taken to send a request and get a response from the HTTP server. The operation retrieves only the home HTML page.

The DNS operation is performed first and the DNS RTT is measured. Once the domain name is found, a TCP Connect operation to the appropriate HTTP server is performed and the RTT for this operation is measured. The final operation is an HTTP request and the RTT to retrieve the home HTML page from the HTTP server is measured. One other measurement is made and called the time to first byte which measures the time from the start of the TCP Connect operation to the first HTML byte retrieved by the HTTP operation. The total HTTP RTT is a sum of the DNS RTT, the TCP Connect RTT, and the HTTP RTT.

For GET requests, IP SLAs will format the request based on the specified URL. For RAW requests, IP SLAs requires the entire content of the HTTP request. When a RAW request is configured, the raw commands are specified in HTTP RAW configuration mode. A RAW request is flexible and allows you to control fields such as authentication. An HTTP request can be made through a proxy server.

The results of an HTTP operation can be useful in monitoring your web server performance levels by determining the RTT taken to retrieve a web page.

Regardless of the HTTP errors, the IP SLA works fine. Currently, the error codes are determined, and the IP SLA HTTP operation goes down only if the return code is not 200.



Note The only time the SLA probe goes down is when the SLA is unable to establish a TCP connection or is unable to receive an answer from the Remote server to its HTTP request.

How to Configure IP SLAs HTTP Operations

Configuring an HTTP GET Operation on the Source Device



Note This operation does not require an IP SLAs Responder on the destination device.

Perform only one of the following tasks:

Configuring a Basic HTTP GET Operation on the Source Device

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip sla** *operation-number*
4. **http** {get | raw} url [name-server ip-address] [version version-number] [source-ip {ip-address | hostname}] [source-port port-number] [cache {enable | disable}] [proxy proxy-url]
5. **frequency** *seconds*
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	ip sla <i>operation-number</i> Example: Device(config)# ip sla 10	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
Step 4	http {get raw} url [name-server ip-address] [version version-number] [source-ip {ip-address hostname}] [source-port port-number] [cache {enable disable}] [proxy proxy-url] Example: Device(config-ip-sla)# http get http://198.133.219.25	Defines an HTTP operation and enters IP SLA configuration mode.
Step 5	frequency <i>seconds</i> Example: Device(config-ip-sla-http)# frequency 90	(Optional) Sets the rate at which a specified IP SLAs HTTP operation repeats. The default and minimum frequency value for an IP SLAs HTTP operation is 60 seconds.
Step 6	end Example: Device(config-ip-sla-http)# end	Exits to privileged EXEC mode.

Configuring an HTTP GET Operation with Optional Parameters on the Source Device

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip sla** *operation-number*
4. **http** {**get** | **raw**} *url* [**name-server** *ip-address*] [**version** *version-number*] [**source-ip** {*ip-address* | *hostname*}] [**source-port** *port-number*] [**cache** {**enable** | **disable**}] [**proxy** *proxy-url*]
5. **history distributions-of-statistics-kept** *size*
6. **frequency** *seconds*
7. **history hours-of-statistics-kept** *hours*
8. **http-raw-request**
9. **owner** *owner-id*
10. **history statistics-distribution-interval** *milliseconds*
11. **tag** *text*
12. **threshold** *milliseconds*
13. **timeout** *milliseconds*
14. **tos** *number*
15. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	ip sla <i>operation-number</i> Example: Device(config)# ip sla 10	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
Step 4	http { get raw } <i>url</i> [name-server <i>ip-address</i>] [version <i>version-number</i>] [source-ip { <i>ip-address</i> <i>hostname</i> }] [source-port <i>port-number</i>] [cache { enable disable }] [proxy <i>proxy-url</i>] Example: Device(config-ip-sla)# http get http://198.133.219.25	Defines an HTTP operation and enters IP SLA configuration mode.
Step 5	history distributions-of-statistics-kept <i>size</i> Example:	(Optional) Sets the number of statistics distributions kept per hop during an IP SLAs operation.

	Command or Action	Purpose
	Device(config-ip-sla-http)# history distributions-of-statistics-kept 5	
Step 6	frequency <i>seconds</i> Example: Device(config-ip-sla-http)# frequency 90	(Optional) Sets the rate at which a specified IP SLAs HTTP operation repeats. The default and minimum frequency value for an IP SLAs HTTP operation is 60 seconds.
Step 7	history hours-of-statistics-kept <i>hours</i> Example: Device(config-ip-sla-http)# history hours-of-statistics-kept 4	(Optional) Sets the number of hours for which statistics are maintained for an IP SLAs operation.
Step 8	http-raw-request Example: Device(config-ip-sla-http)# http-raw-request	(Optional) Explicitly specifies the options for a GET request for an IP SLAs HTTP operation.
Step 9	owner <i>owner-id</i> Example: Device(config-ip-sla-http)# owner admin	(Optional) Configures the Simple Network Management Protocol (SNMP) owner of an IP SLAs operation.
Step 10	history statistics-distribution-interval <i>milliseconds</i> Example: Device(config-ip-sla-http)# history statistics-distribution-interval 10	(Optional) Sets the time interval for each statistics distribution kept for an IP SLAs operation.
Step 11	tag <i>text</i> Example: Device(config-ip-sla-http)# tag TelnetPollServer1	(Optional) Creates a user-specified identifier for an IP SLAs operation.
Step 12	threshold <i>milliseconds</i> Example: Device(config-ip-sla-http)# threshold 10000	(Optional) Sets the upper threshold value for calculating network monitoring statistics created by an IP SLAs operation.
Step 13	timeout <i>milliseconds</i> Example: Device(config-ip-sla-http)# timeout 10000	(Optional) Sets the amount of time an IP SLAs operation waits for a response from its request packet.
Step 14	tos <i>number</i> Example: Device(config-ip-sla-http)# tos 160	(Optional) Defines a type of service (ToS) byte in the IP header of an IP SLAs operation.
Step 15	end Example: Device(config-ip-sla-http)# end	Exits to privileged EXEC mode.

Configuring an HTTP RAW Operation on the Source Device



Note This operation does not require an IP SLAs Responder on the destination device.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip sla** *operation-number*
4. **http** {get | raw} url [name-server ip-address] [version version-number] [source-ip {ip-address | hostname}] [source-port port-number] [cache {enable | disable}] [proxy proxy-url]
5. **http-raw-request**
6. Enter the required HTTP 1.0 command syntax.
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	ip sla <i>operation-number</i> Example: Device(config)# ip sla 10	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
Step 4	http {get raw} url [name-server ip-address] [version version-number] [source-ip {ip-address hostname}] [source-port port-number] [cache {enable disable}] [proxy proxy-url] Example: Device(config-ip-sla)# http raw http://198.133.219.25	Defines an HTTP operation.
Step 5	http-raw-request Example: Device(config-ip-sla)# http-raw-request	Enters HTTP RAW configuration mode.

	Command or Action	Purpose
Step 6	Enter the required HTTP 1.0 command syntax. Example: Device(config-ip-sla-http)# GET /en/US/hmpgs/index.html HTTP/1.0\r\n\r\n	Specifies all the required HTTP 1.0 commands.
Step 7	end Example: Device(config-ip-sla-http)# end	Exits to privileged EXEC mode.

Scheduling IP SLAs Operations

Before you begin

- All IP Service Level Agreements (SLAs) operations to be scheduled must be already configured.
- The frequency of all operations scheduled in a multioperation group must be the same.
- The list of one or more operation ID numbers to be added to a multioperation group must be limited to a maximum of 125 characters in length, including commas (,).

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. Enter one of the following commands:
 - **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**]
 - **ip sla group schedule** *group-operation-number* *operation-id-numbers* {**schedule-period** *schedule-period-range* | **schedule-together**} [**ageout** *seconds*] **frequency** *group-operation-frequency* [**life** {**forever** | *seconds*}] [**start-time** {*hh:mm* [*:ss*] [*month day* | *day month*] | **pending** | **now** | **after** *hh:mm* [*:ss*]}]
4. **end**
5. **show ip sla group schedule**
6. **show ip sla configuration**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.

	Command or Action	Purpose
Step 2	<p>configure terminal</p> <p>Example:</p> <pre>Device# configure terminal</pre>	Enters global configuration mode.
Step 3	<p>Enter one of the following commands:</p> <ul style="list-style-type: none"> • 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] • ip sla group schedule <i>group-operation-number</i> <i>operation-id-numbers</i> {schedule-period <i>schedule-period-range</i> schedule-together} [ageout <i>seconds</i>] frequency <i>group-operation-frequency</i> [life {forever <i>seconds</i>}] [start-time {<i>hh:mm</i> [:<i>ss</i>] [<i>month day</i> <i>day month</i>] pending now after <i>hh:mm</i> [:<i>ss</i>]}] <p>Example:</p> <pre>Device(config)# ip sla schedule 10 life forever start-time now Device(config)# ip sla group schedule 10 schedule-period frequency Device(config)# ip sla group schedule 1 3,4,6-9 life forever start-time now Device(config)# ip sla schedule 1 3,4,6-9 schedule-period 50 frequency range 80-100</pre>	<ul style="list-style-type: none"> • Configures the scheduling parameters for an individual IP SLAs operation. • Specifies an IP SLAs operation group number and the range of operation numbers for a multioperation scheduler.
Step 4	<p>end</p> <p>Example:</p> <pre>Device(config)# end</pre>	Exits global configuration mode and returns to privileged EXEC mode.
Step 5	<p>show ip sla group schedule</p> <p>Example:</p> <pre>Device# show ip sla group schedule</pre>	(Optional) Displays IP SLAs group schedule details.
Step 6	<p>show ip sla configuration</p> <p>Example:</p> <pre>Device# show ip sla configuration</pre>	(Optional) Displays IP SLAs configuration details.

Troubleshooting Tips

- If the IP Service Level Agreements (SLAs) operation is not running and not generating statistics, add the **verify-data** command to the configuration (while configuring in IP SLA configuration mode) to enable data verification. When data verification is enabled, each operation response is checked for corruption. Use the **verify-data** command with caution during normal operations because it generates unnecessary overhead.
- Use the **debug ip sla trace** and **debug ip sla error** commands to help troubleshoot issues with an IP SLAs operation.

What to Do Next

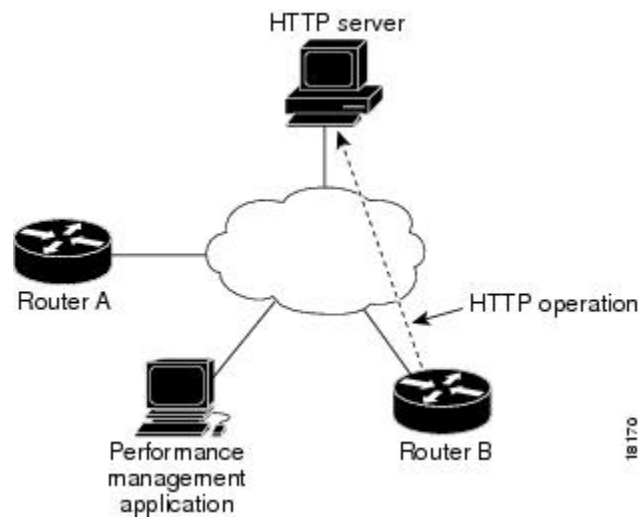
To add proactive threshold conditions and reactive triggering for generating traps (or for starting another operation) to an IP Service Level Agreements (SLAs) operation, see the “Configuring Proactive Threshold Monitoring” section.

Configuration Examples for IP SLAs HTTP Operations

Example Configuring an HTTP GET Operation

The following example show how to create and configure operation number 8 as an HTTP GET operation. The destination URL IP address represents the www.cisco.com website. The following figure depicts the HTTP GET operation.

Figure 1: HTTP Operation



Device B Configuration

```
ip sla 8
  http get url http://198.133.219.25
!
ip sla schedule 8 start-time now
```

Example Configuring an HTTP RAW Operation

The following example shows how to configure an HTTP RAW operation. To use the RAW commands, enter HTTP RAW configuration mode by using the **http-raw-request** command in IP SLA configuration mode. The IP SLA HTTP RAW configuration mode is indicated by the (config-ip-sla-http) router prompt.

```
ip sla 8
  http raw url http://198.133.219.25
  http-raw-request
  GET /en/US/hmpgs/index.html HTTP/1.0\r\n
  \r\n
  end
ip sla schedule 8 life forever start-time now
```

Example Configuring an HTTP RAW Operation Through a Proxy Server

The following example shows how to configure an HTTP RAW operation through a proxy server. The proxy server is www.proxy.cisco.com and the HTTP server is www.yahoo.com.

```
ip sla 8
  http raw url http://www.proxy.cisco.com
  http-raw-request
  GET http://www.yahoo.com HTTP/1.0\r\n
  \r\n
  end
ip sla schedule 8 life forever start-time now
```

Example Configuring an HTTP RAW Operation with Authentication

The following example shows how to configure an HTTP RAW operation with authentication.

```
ip sla 8
  http raw url http://site-test.cisco.com
  http-raw-request
  GET /lab/index.html HTTP/1.0\r\n
  Authorization: Basic btNpdGT4biNvoZe=\r\n
  \r\n
  end
ip sla schedule 8 life forever start-time now
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
Cisco IOS IP SLAs commands	Cisco IOS IP SLAs Command Reference

Standards and RFCs

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

MIBs

MIBs	MIBs Link
CISCO-RTTMON-MIB	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
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.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for IP SLAs HTTP 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. An account on Cisco.com is not required.

Table 1: Feature Information for IP SLAs HTTP Operations

Feature Name	Releases	Feature Information
IP SLAs HTTP Operation	Cisco IOS XE Release 2.1	The Cisco IOS IP SLAs Hypertext Transfer Protocol (HTTP) operation allows you to measure the network response time between a Cisco device and an HTTP server to retrieve a web page.
IPSLA 4.0 - IP v6 phase2	Cisco IOS XE Release 3.7S	Support was added for operability in IPv6 networks. The following commands are introduced or modified: http (IP SLA) , show ip sla configuration , show ip sla summary .

Feature Name	Releases	Feature Information
IP SLAs VRF Aware 2.0	Cisco IOS XE Release 3.8S	Support was added for IP SLAs VRF-aware capabilities for TCP connect, FTP, HTTP and DNS client operation types.