



## Configuring an IP SLAs HTTP Operations

This chapter describes how to configure an HTTP IP Service Level Agreements (IP SLAs) operation.

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## Configuring an IP SLAs HTTP Operation

This chapter 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 only supports the normal GET requests.

## About IP SLAs HTTP Operations

An HTTP request can be made through a proxy server.

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 lookup - RTT taken to perform a 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 HTTP operation first performs the DNS operation and measures the DNS RTT. Once the domain name is found, the HTTP operation performs a TCP Connect operation to the appropriate HTTP server. The HTTP operation then measures the TCP connect RTT. Finally, the HTTP operation sends a HTTP request to retrieve the home HTML page from the HTTP server. The HTTP operation then measures the RTT to retrieve the home HTML page. The HTTP operation makes another last measurement called "the time to first byte". This 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. You

can use the total HTTP RTT to monitor Web server performance levels by determining the RTT taken to retrieve a web page.

For GET requests, IP SLAs will format the request based on the specified URL.

## Restrictions for IP SLAs HTTP Operations

IP SLAs HTTP operations have the following restrictions:

- IP SLAs HTTP operations only support the HTTP GET probe on the Cisco Nexus 9300 and 9500 Series switches beginning with Cisco NX-OS Release 7.0(3)I6(1).
- Setting the frequency to less than 60 seconds increases the number of packets sent. However, this might impact the performance of IP SLA operations when a scheduled operation has the same start time.

## Configuring a Basic HTTP GET Operation

The HTTP GET method retrieves information (in the form of an entity) as identified by the Request-URL.

### SUMMARY STEPS

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

### DETAILED STEPS

#### Procedure

|               | Command or Action                                                                                                                                                                  | Purpose                                                                             |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>configure terminal</b><br><br><b>Example:</b><br><pre>switch# configure terminal switch(config)#</pre>                                                                          | Enters global configuration mode.                                                   |
| <b>Step 2</b> | <b>ip sla operation-number</b><br><br><b>Example:</b><br><pre>switch(config)# ip sla 10</pre>                                                                                      | Begins configuration for an IP SLAs operation and enters IP SLA configuration mode. |
| <b>Step 3</b> | <b>http {get   url [version version-number] [source-ip {ip-address   hostname}] [source-port port-number] [cache {enable   disable}] [proxy proxy-url]}</b><br><br><b>Example:</b> | Defines an HTTP operation and enters IP SLA configuration mode.                     |

|               | Command or Action                                                                                           | Purpose                                                                                                                                                      |
|---------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <code>switch(config-ip-sla-http)# http get http://198.133.219.25</code>                                     |                                                                                                                                                              |
| <b>Step 4</b> | <b>frequency</b> <i>seconds</i><br><b>Example:</b><br><code>switch(config-ip-sla-http)# frequency 90</code> | (Optional) Sets the repeat rate for a specified IP SLAs HTTP operation. The default and minimum frequency value for an IP SLAs HTTP operation is 60 seconds. |
| <b>Step 5</b> | <b>end</b><br><b>Example:</b><br><code>switch(config-ip-sla-http)# end</code>                               | Exits IP SLA config mode.                                                                                                                                    |

## Configuring a HTTP GET Operation with Optional Parameters

### SUMMARY STEPS

1. **configure terminal**
2. **ip sla operation-number**
3. **http {get | url [version *version-number*] [source-ip {ip-address | hostname}] [source-port *port-number*] [cache {enable | disable}] [proxy *proxy-url*]}**
4. **history buckets-kept *size***
5. **history distributions-of-statistics-kept *size***
6. **history enhanced [interval *seconds*] [buckets *number-of-buckets*]**
7. **history filter { none | all | overThreshold | failures}**
8. **frequency *seconds***
9. **history hours-of-statistics-kept *hours***
10. **history live-kept *lives***
11. **owner *owner-id***
12. **history statistics-distribution-interval *milliseconds***
13. **tag *text***
14. **threshold *milliseconds***
15. **timeout *milliseconds***
16. **tos *number***
17. **end**

### DETAILED STEPS

#### Procedure

|               | Command or Action                                                                                                       | Purpose                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Step 1</b> | <b>configure terminal</b><br><b>Example:</b><br><code>switch# configure terminal</code><br><code>switch(config)#</code> | Enters global configuration mode. |

|                | Command or Action                                                                                                                                                                                                                          | Purpose                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 2</b>  | <b>ip sla operation-number</b><br><b>Example:</b><br>switch(config)# ip sla 10                                                                                                                                                             | Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.                                                                        |
| <b>Step 3</b>  | <b>http {get   url [version version-number] [source-ip {ip-address   hostname}] [source-port port-number] [cache {enable   disable}] [proxy proxy-url]}</b><br><b>Example:</b><br>switch(config-ip-sla)# http get<br>http://198.133.219.25 | Defines an HTTP operation and enters IP SLA configuration mode.                                                                                            |
| <b>Step 4</b>  | <b>history buckets-kept size</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history buckets-kept 25                                                                                                                                 | (Optional) Sets the number of history buckets kept during the lifetime of an IP SLAs operation.                                                            |
| <b>Step 5</b>  | <b>history distributions-of-statistics-kept size</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history distribution-of-statistics-kept 5                                                                                           | (Optional) Sets the number of statistics distributions kept per hop during an IP SLAs operation.                                                           |
| <b>Step 6</b>  | <b>history enhanced [interval seconds] [buckets number-of-buckets]</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history enhanced interval 900 buckets 100                                                                         | (Optional) Enables enhanced history gathering for an IP SLAs operation.                                                                                    |
| <b>Step 7</b>  | <b>history filter { none   all   overThreshold   failures}</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history filter failures                                                                                                   | (Optional) Defines the type of information kept in the history tables for an IP SLAs operation.                                                            |
| <b>Step 8</b>  | <b>frequency seconds</b><br><b>Example:</b><br>switch(config-ip-sla-http)# frequency 90                                                                                                                                                    | (Optional) Sets the repeat rate for specified IP SLAs HTTP operation. The default and minimum frequency value for an IP SLAs HTTP operation is 60 seconds. |
| <b>Step 9</b>  | <b>history hours-of-statistics-kept hours</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history hours-of-statistics-kept 4                                                                                                         | (Optional) Defines the number of hours to maintain for an IP SLAs operation.                                                                               |
| <b>Step 10</b> | <b>history live-kept lives</b><br><b>Example:</b><br>switch(config-ip-sla-http)# history lives-kept 5                                                                                                                                      | (Optional) Defines the number of lives to maintain for an IP SLAs operation.                                                                               |

|                | Command or Action                                                                                                                                                     | Purpose                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Step 11</b> | <b>owner owner-id</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# owner admin</pre>                                                                        | (Optional) Configures the simple Management Network Protocol (SNMP) for an IP SLAs operation.                 |
| <b>Step 12</b> | <b>history statistics-distribution-interval milliseconds</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# history statistics-distribution-interval 10</pre> | (Optional) Sets the time interval for each statistics distribution kept for an IP SLAs operation.             |
| <b>Step 13</b> | <b>tag text</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# tag TelnetPollServer1</pre>                                                                    | (Optional) Creates a user-specified identifier for an IP SLAs operation.                                      |
| <b>Step 14</b> | <b>threshold milliseconds</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# threshold 10000</pre>                                                            | (Optional) Sets the upper threshold value to calculate network monitoring statistics of an IP SLAs operation. |
| <b>Step 15</b> | <b>timeout milliseconds</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# timeout 10000</pre>                                                                | (Optional) Set the maximum response time from a request packet for an IP SLAs operation.                      |
| <b>Step 16</b> | <b>tos number</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# tos 160</pre>                                                                                | (Optional) Defines a type of service (ToS) byte in the IP header of an IP SLAs operation.                     |
| <b>Step 17</b> | <b>end</b><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# end</pre>                                                                                           | Exits IP SLA config mode.                                                                                     |

## Scheduling IP SLAs Operations

### Before you begin

- Configure all the IP Service Level Agreements (SLAs) operations before you schedule them.
- Check that the frequency of all operations in a multioperation group are the same.
- Limit the maximum number of operation ID numbers, including commas (,), in a multioperation group to 125 characters.
- Confirm the following before scheduling operations:
  - Configure any IP SLA operation before scheduling.
  - Configure the frequency of all the scheduled operations in a multioperation group to be the same.

- The list of one or more operation ID numbers added to a multioperation group is limited to a maximum number of 125 characters in length, including commas (,).

## SUMMARY STEPS

1. **configure terminal**
2. Select one of the following commands based on the number of IP SLAs operations you wish to schedule.
  - **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**} ] [ **start-time** {*hh:mm* [:*ss*] [**month day** | **day month**] **pending**|**now** |**after** *hh:mm* [:*ss*]} ]
3. **show ip sla group schedule**
4. **show ip sla group configuration**
5. **end**

## DETAILED STEPS

### Procedure

|               | Command or Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Purpose                                                                                                                                                                                                                               |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | <b>configure terminal</b><br><br><b>Example:</b><br><pre>switch# configure terminal switch(config)#</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Enters global configuration mode.                                                                                                                                                                                                     |
| <b>Step 2</b> | Select one of the following commands based on the number of IP SLAs operations you wish to schedule. <ul style="list-style-type: none"> <li>• <b>ip sla schedule operation number</b> [ <b>life</b>{<b>forever</b>   <b>seconds</b>} ] [ <b>start-time</b>{[<i>hh:mm:ss</i>] [<b>month day</b>   <b>day month</b>] <b>pending</b>   <b>now</b>   <b>after</b> [<i>hh:mm:ss</i>]   <b>ageout seconds</b>} ] [ <b>recurring</b>]</li> <li>• <b>ip sla group schedule group-operation-number operation-id-numbers</b> {<b>schedule-period</b> <i>schedule-period-range</i>   <b>schedule-together</b>} [ <b>ageout seconds</b>] [ <b>frequency group-operation-frequency</b>] [ <b>life</b> {<b>forever</b>} ] [ <b>start-time</b> {<i>hh:mm</i> [:<i>ss</i>] [<b>month day</b>   <b>day month</b>] <b>pending</b> <b>now</b>  <b>after</b> <i>hh:mm</i> [:<i>ss</i>]} ]</li> </ul> <b>Example:</b><br><pre>switch (config-ip-sla-http)# ip sla schedule 10 life forever start-time now  switch (config-ip-sla-http)# ip sla group schedule 10 life schedule-period frequency  switch (config-ip-sla-http)# ip sla group schedule 1.3.4.6-9 life forever start-time now</pre> | The first command configures the scheduling parameters for an individual IP SLAs operation.<br><br>The second command specifies the IP SLAs operation group number and the range of operation numbers for a multioperation scheduler. |

|               | Command or Action                                                                                                                       | Purpose                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
|               | <pre>switch (config-ip-sla-http)# ip sla group schedule   1.3.4.6-9 schedule-period 50 frequency range   80-100</pre>                   |                                                         |
| <b>Step 3</b> | <b>show ip sla group schedule</b><br><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# show ip sla group schedule</pre>           | (Optional) Displays the IP SLAs group schedule details. |
| <b>Step 4</b> | <b>show ip sla group configuration</b><br><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# show ip sla group configuration</pre> | (Optional) Displays the IP SLAs configuration details.  |
| <b>Step 5</b> | <b>end</b><br><br><b>Example:</b><br><pre>switch(config-ip-sla-http)# end</pre>                                                         | Exits IP SLA config mode.                               |

## Troubleshooting Tips

If the IP SLAs operation is not generating statistics, configure using the `verify-data` command. This enables a check for response corruption per operation. Make sure that the IP SLAs operation is not running, otherwise the `verify-data` command generates unnecessary overhead.

Use the `debug ip sla` and `debug ip sla error` commands to help troubleshoot issues with IP SLAs operation.

