D through H

data-pattern

To specify the data pattern in a Cisco IOS IP Service Level Agreements (SLAs) operation to test for data corruption, use the **datapattern** command in the appropriate submode of IP SLA configuration or IP SLA monitor configuration mode. To remove the data pattern specification, use the **no** form of this command.

data-pattern *hex-pattern*

no data-pattern *hex-pattern*

Syntax Description

hex-pattern	Hexadecimal string to use for monitoring the specified operation.

Command Default

The default *hex-pattern* is ABCD.

Command Modes

IP SLA Configuration

UDP echo configuration (config-ip-sla-udp)

IP SLA Monitor Configuration

UDP echo configuration (config-sla-monitor-udp)

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

The **data-pattern** command allows users to specify an alphanumeric character string to verify that operation payload does not get corrupted in either direction (source-to-destination [SD] or destination-to-source [DS]).

Note The **data-pattern** command is supported by the IP SLAs User Datagram Protocol (UDP) echo operation only.

This command is supported in IPv4 networks and in IPv6 networks.

IP SLAs Operation Configuration Dependence on Cisco IOS Release

The Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table below). You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation.

The configuration mode for the **data-pattern** command varies depending on the Cisco IOS release you are running (see the table below) and the operation type configured. For example, if you are running Cisco IOS Release 12.4 and the UDP echo operation type is configured, you would enter the **data-pattern** command in UDP echo configuration mode (config-sla-monitor-udp) within IP SLA monitor configuration mode.

Table 1: Command Used to Begin Configuration of an IP SLAs Operation Based on Cisco IOS Release

Cisco IOS Release	Global Configuration Command	Command Mode Entered
12.4(4)T, 12.0(32)SY, 12.2(33)SRB, 12.2(33)SB, 12.2(33)SXI or later releases	**ip sla**	IP SLA configuration
12.3(14)T, 12.4, 12.4(2)T, 12.2(31)SB2, or 12.2(33)SXH	**ip sla monitor**	IP SLA monitor configuration

Examples

The following examples show how to specify 1234ABCD5678 as the data pattern. Note that the Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table above).

The examples show the **data-pattern** command being used in an IPv4 network.

Examples

```
ip sla 1
 udp-echo 10.0.54.205 dest-port 101
 data-pattern 1234ABCD5678
!
ip sla schedule 1 life forever start-time now
```

Examples

```
ip sla monitor 1
 type udpEcho dest-ipaddr 10.0.54.205 dest-port 101
 data-pattern 1234ABCD5678
!
ip sla monitor schedule 1 life forever start-time now
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla monitor	Begins configuration for an IP SLAs operation and enters IP SLA monitor configuration mode.

dhcp (IP SLA)

To configure a Cisco IOS IP Service Level Agreements (SLAs) Dynamic Host Configuration Protocol (DHCP) operation, use the **dhcp**command in IP SLA configuration mode.

dhcp {*destination-ip-address*| *destination-hostname*} [**source-ip** {*ip-address*| *hostname*}] [**option-82** [**circuit-id** *circuit-id*] [**remote-id** *remote-id*] [**subnet-mask** *subnet-mask*]]

Syntax Description

destination-ip-address | *destination-hostname*	D estination IP address or hostname .
source-ip {*ip-address* | *hostname*}	(Optional) Specifies the source IP address or hostname . When a source IP address or hostname is not specified, IP SLAs chooses the IP address nearest to the destination.
option-82	(Optional) Specifies DHCP option 82 for the destination DHCP server.
circuit-id *circuit-id*	(Optional) Specifies the circuit ID in hexadecimal.
remote-id *remote-id*	(Optional) Specifies the remote ID in hexadecimal.
subnet-mask *subnet-mask*	(Optional) Specifies the subnet mask IP address. The default subnet mask is 255.255.255.0.

Command Default

No IP SLAs operation type is configured for the operation being configured.

Command Modes

IP SLA configuration (config-ip-sla)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **type dhcp** command.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **type dhcp** command.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **type dhcp**command.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **type dhcp**command.

Usage Guidelines

If the source IP address is configured, then packets will be sent with that source address.

You may configure the **ip dhcp-server** global configuration command to identify the DHCP server that the DHCP operation will measure. If the target IP address is configured, then only that device will be measured. If the **ip dhcp-server** command is not configured and the target IP address is not configured, then DHCP discover packets will be sent on every available IP interface.

Option 82 is called the Relay Agent Information option and is inserted by the DHCP relay agent when client-originated DHCP packets are forwarded to a DHCP server. Servers recognizing the Relay Agent Information option may use the information to implement IP address or other parameter assignment policies. The DHCP server echoes the option back verbatim to the relay agent in server-to-client replies, and the relay agent strips the option before forwarding the reply to the client.

The Relay Agent Information option is organized as a single DHCP option that contains one or more suboptions that convey information known by the relay agent. The initial suboptions are defined for a relay agent that is colocated in a public circuit access unit. These suboptions are as follows: a circuit ID for the incoming circuit, a remote ID that provides a trusted identifier for the remote high-speed modem, and a subnet mask designation for the logical IP subnet from which the relay agent received the client DHCP packet.

Note If an odd number of characters are specified for the circuit ID, a zero will be added to the end of the string.

You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation. To change the operation type of an existing IP SLAs operation, you must first delete the IP SLAs operation (using the **no ip sla**global configuration command) and then reconfigure the operation with the new operation type.

Examples

In the following example, IP SLAs operation number 4 is configured as a DHCP operation enabled for DHCP server 172.16.20.3:

```
ip sla 4
 dhcp option-82 circuit-id 10005A6F1234
ip dhcp-server 172.16.20.3
!
ip sla schedule 4 start-time now
```

Related Commands

Command	Description
ip dhcp-server	Specifies which DHCP servers to use on a network, and specifies the IP address of one or more DHCP servers available on the network.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

dns (IP SLA)

To configure a Cisco IOS IP Service Level Agreements (SLAs) Domain Name System (DNS) operation, use the **dns**command in IP SLA configuration mode.

dns {*destination-ip-address*| *destination-hostname*} **name-server** *ip-address* [**source-ip** {*ip-address*| *hostname*} **source-port** *port-number*]

Syntax Description

destination-ip-address | *destination-hostname*	Destination IP address or hostname.
name-server *ip-address*	Specifies the IP address of the DNS server.
source-ip {*ip-address* | *hostname*	(Optional) Specifies the source IP address or hostname . When a source IP address or hostname is not specified, IP SLAs chooses the IP address nearest to the destination.
source-port *port-number*	(Optional) Specifies the source port number. When a port number is not specified, IP SLAs chooses an available port.

Command Default

No IP SLAs operation type is configured for the operation being configured.

Command Modes

IP SLA configuration (config-ip-sla)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **type dns target-addr**command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **type dns target-addr** command.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **type dns target-addr**command.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **type dns target-addr**command.
15.2(3)T	This command was modified. Support for IPv6 addresses was added.
Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.

Release	Modification
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation. To change the operation type of an existing IP SLAs operation, you must first delete the IP SLAs operation (using the **no ip sla**global configuration command) and then reconfigure the operation with the new operation type.

Examples

In the following example, IP SLAs operation 7 is configured as a DNS operation using the target IPv4 address 172.20.2.132:

```
ip sla 7
 dns host1 name-server 172.20.2.132
!
ip sla schedule 7 start-time now
```

In the following example, IP SLAs operation 1 is configured in Cisco IOS Release 15.2(3)T and later releases as a DNS operation using an IPv6 address, 2001:10:10:10::3, as the target address.

```
ip sla 1
 dns host1 name-server 2001:10:10:10::3
!
ip sla schedule 1 start-time now
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

flow-label (IP SLA)

To define the flow label field in the IPv6 header of a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **flow-label** (IP SLA) command in the appropriate submode of IP SLA configuration or IP SLA monitor configuration mode. To return to the default value, use the no form of this command.

flow-label *number*

no flow-label

Syntax Description

number	Value in the flow label field of the IPv6 header. The range is from 0 to 1048575 (or FFFFF hexadecimal). This value can be preceded by "0x" to indicate hexadecimal notation. The default value is 0.

Command Default

The default flow label value is 0.

Command Modes

ICMP echo configuration (config-ip-sla-echo)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

The flow label value is stored in a a 20-bit field in the IPv6 packet header and is used by a source to label packets of a flow.

A flow label value of zero is used to indicate packets that are not part of any flow.

When the flow label is defined for an operation, the IP SLAs Responder will reflect the flow-label value it receives.

Note This command is applicable only to IPv6 networks.

To display the flow label value for all Cisco IOS IP SLAs operations or a specified operation, use the **show ip sla configuration** command.

Examples

In the following example, IP SLAs operation 1 is configured as an Internet Control Message Protocol (ICMP) echo operation with destination IPv6 address 2001:DB8:100::1. The value in the flow label field of the IPv6 header is set to 0x1B669.

```
ip sla 1
 icmp-echo 2001:DB8:100::1
 flow-label 0x1B669
!
ip sla schedule 1 start-time now
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
show ip sla configuration	Displays configuration values including all defaults for all Cisco IOS IP SLAs operations or a specified operation.

frequency (IP SLA)

To set the rate at which a specified IP Service Level Agreements (SLAs) operation repeats, use the **frequency** (IP SLA) command in the appropriate submode of IP SLA configuration or IP SLA monitor configuration mode. To return to the default value, use the **no** form of this command.

frequency *seconds*

no frequency

Syntax Description

seconds	Number of seconds between the IP SLAs operations. The default is 60.

Command Default

60 seconds

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP jitter configuration (config-ip-sla-icmpjitter)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

Multicast UDP jitter configuration (config-ip-sla-multicast-jitter-oper)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

VCCV configuration (config-sla-vccv)

VoIP configuration (config-ip-sla-voip)

IP SLA Monitor Configuration

DHCP configuration (config-sla-monitor-dhcp)

DLSw configuration (config-sla-monitor-dlsw)

DNS configuration (config-sla-monitor-dns)

FTP configuration (config-sla-monitor-ftp)

HTTP configuration (config-sla-monitor-http)

ICMP echo configuration (config-sla-monitor-echo)

ICMP path echo configuration (config-sla-monitor-pathEcho)

ICMP path jitter configuration (config-sla-monitor-pathJitter)

TCP connect configuration (config-sla-monitor-tcp)

UDP echo configuration (config-sla-monitor-udp)

UDP jitter configuration (config-sla-monitor-jitter)

VoIP configuration (config-sla-monitor-voip)

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SRB	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	The Ethernet echo and Ethernet jitter configuration modes were added.
15.2(4)M	This command was modified. The multicast UDP jitter configuration mode was added.

Usage Guidelines

A single IP SLAs operation will repeat at a given frequency for the lifetime of the operation. For example, a User Datagram Protocol (UDP) jitter operation with a frequency of 60 sends a collection of data packets (simulated network traffic) once every 60 seconds, for the lifetime of the operation. The default simulated traffic for a UDP jitter operation consists of ten packets sent 20 milliseconds apart. This “payload” is sent when the operation is started, then is sent again 60 seconds later.

If an individual IP SLAs operation takes longer to execute than the specified frequency value, a statistics counter called "busy" is incremented rather than immediately repeating the operation.

Consider the following guidelines before configuring the **frequency** (IP SLA), **timeout** (IP SLA), and **threshold** (IP SLA) commands. For the IP SLAs UDP jitter operation, the following guidelines are recommended:

- (**frequency***seconds*) > ((**timeout***milliseconds*) + N)
- (**timeout***milliseconds*) > (**threshold***milliseconds*)

where N = (**num-packets***number-of-packets*) * (**interval***interpacket-interval*). Use the **udp-jitter** command to configure the **num-packets***number-of-packets* and **interval***interpacket-interval* values.

For all other IP SLAs operations, the following configuration guideline is recommended:

(**frequency***seconds*) > (**timeout***milliseconds*) > (**threshold***milliseconds*)

Note We recommend that you do not set the frequency value to less than 60 seconds because the potential overhead from numerous active operations could significantly affect network performance.

The **frequency** (IP SLA) command is supported in IPv4 networks. This command is also supported in IPv6 networks when configuring an IP SLAs operation that supports IPv6 addresses.

IP SLAs Operation Configuration Dependence on Cisco IOS Release

The Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table below). You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation.

The configuration mode for the **frequency** (IP SLA) command varies depending on the Cisco IOS release you are running (see the table below) and the operation type configured. For example, if you are running Cisco IOS Release 12.4 and the ICMP echo operation type is configured, you would enter the **frequency** (IP SLA) command in ICMP echo configuration mode (config-sla-monitor-echo) within IP SLA monitor configuration mode.

Table 2: Command Used to Begin Configuration of an IP SLAs Operation Based on Cisco IOS Release

Cisco IOS Release	Global Configuration Command	Command Mode Entered
12.4(4)T, 12.0(32)SY, 12.2(33)SRB, 12.2(33)SB, 12.2(33)SXI , or later releases	**ip sla**	IP SLA configuration
12.3(14)T, 12.4, 12.4(2)T, 12.2(31)SB2, or 12.2(33)SXH	**ip sla monitor**	IP SLA monitor configuration

Examples

The following examples show how to configure an IP SLAs ICMP echo operation (operation 10) to repeat every 90 seconds. Note that the Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table above).

Examples

This example shows the **frequency** (IP SLA) command being used in an IPv4 network in ICMP echo configuration mode within IP SLA configuration mode:

```
ip sla 10
 icmp-echo 172.16.1.175
 frequency 90
!
ip sla schedule 10 life 300 start-time after 00:05:00
```

Examples

This example shows the frequency (IP SLA) command being used in an IPv4 network in ICMP echo configuration mode within IP SLA monitor configuration mode:

```
ip sla monitor 10
 type echo protocol ipIcmpEcho 172.16.1.175
 frequency 90
!
ip sla monitor schedule 10 life 300 start-time after 00:05:00
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla monitor	Begins configuration for an IP SLAs operation and enters IP SLA monitor configuration mode.
timeout (IP SLA)	Sets the amount of time the IP SLAs operation waits for a response from its request packet.

ftp get

To configure a Cisco IOS IP Service Level Agreements (SLAs) File Transfer Protocol (FTP) GET operation, use the **ftp get**command in IP SLA configuration mode.

ftp get *ur l* [**source-ip** {*ip-address* | *hostname*}][**mode**]{**active**| **passive**}

Syntax Description

url	URL location information for the file to be retrieved.
source-ip {*ip-address* | *hostname*	(Optional) Specifies the source IP address or hostname. When a source IP address or hostname is not specified, IP SLAs chooses the IP address nearest to the destination.
mode passive | **active**	(Optional) Specifies the FTP transfer mode as either passive or active. The default is passive transfer mode.

Command Default

No IP SLAs operation type is configured for the operation being configured.

Command Modes

IP SLA configuration (config-ip-sla)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **type ftp operation get url**command.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **type ftp operation get url** command.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **type ftp operation get url**command.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **type ftp operation get url**command.
15.2(3)T	This command was modified. Support for IPv6 addresses was added.
Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

The *url* argument must be in one of the following formats:

- ftp://username:password@host/filename
- ftp://host/filename

If the username and password are not specified, the defaults are anonymous and test, respectively.

You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation. To change the operation type of an existing IP SLAs operation, you must first delete the IP SLAs operation (using the **no ip sla**global configuration command) and then reconfigure the operation with the new operation type.

Examples

In the following example, an FTP operation is configured. User1 is the username and password1 is the password; host1 is the host and file1 is the filename.

```
ip sla 3
 ftp get ftp://user1:password1@host1/file1
!
ip sla schedule 3 start-time now
```

In the following example, the source url of the file to be retrieved includes an IPv6 address. IPv6 addessing is supported in Cisco IOS Release 15.2(3)T and later releases.

```
ip sla 3
 ftp get ftp://root:lablab@2001:10:10:10::3/tmp/saatest.log
!
ip sla schedule 3 start-time now
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

history buckets-kept

To set the number of history buckets that are kept during the lifetime of a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history buckets-kept**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the no form of this command.

history buckets-kept *size*

no history buckets-kept

Syntax Description

size	Number of history buckets kept during the lifetime of the operation. The default is 50.

Command Default

The default number of buckets kept is 50 buckets.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

VCCV configuration (config-sla-vccv)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Parameters Configuration

ICMP echo configuration (config-icmp-ech-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **buckets-of-history-kept** command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **buckets-of-history-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **buckets-of-history-kept**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **buckets-of-history-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, TCP connect, and UDP echo configuration submodes in IP SLA template parameters configuration mode were added.

Usage Guidelines

Each time IP SLAs starts an operation, a new bucket is created until the number of history buckets matches the specified size or the lifetime of the operation expires. History buckets do not wrap.

To define the lifetime of an IP SLAs operation, use the **ip sla schedule** global configuration command. To define the lifetime of an auto IP SLAs operation template in Cisco IP SLAs Engine 3.0, use the **life**command in IP SLAs auto-measure schedule configuration mode.

Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

The **history buckets-kept** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

By default, the history for an IP SLAs operation is not collected. If history is collected, each bucket contains one or more history entries from the operation. When the operation type is Internet Control Message Protocol (ICMP) path echo, an entry is created for each hop along the path that the operation takes to reach its destination.

The type of entry stored in the history table is controlled by the **history filter** command.

The total number of entries stored in the history table is controlled by the combination of the **samples-of-history-kept**, **history buckets-kept**, and **history lives-kept** commands.

Note Collecting history increases the RAM usage. Collect history only if you think there is a problem in the network.

Examples

The following example shows how to configure an ICMP echo operation to keep 25 history buckets during the operation lifetime. The example shows the **history buckets-kept** command being used in an IPv4 network.

Examples

```
ip sla schedule 1 start-time now life forever
ip sla 1
 icmp-echo 172.16.161.21
 history buckets-kept 25
 history lives-kept 1
!
ip sla schedule 1 start-time now life forever
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 1
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history buckets-kept 25
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo 1
IP SLAs Auto Template: 1
    Measure Type: icmp-echo
.
.
.
Statistics Aggregation option:
        Hours of statistics kept: 5
    History options:
        History filter: none
        Max number of history records kept: 25
        Lives of history kept: 1
    Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 20
        Max number of distributions buckets: 1
    Reaction Configuration: None
```

Related Commands

Command	Description
history filter	Defines the type of information kept in the history table for the IP SLAs operation.
history lives-kept	Sets the number of lives maintained in the history table for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

Command	Description
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
life	Specifies the lifetime characteristic in an auto IP SLAs scheduler
samples-of-history-kept	Sets the number of entries kept in the history table per bucket.

history distributions-of-statistics-kept

To set the number of statistics distributions kept per hop during a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history distributions-of-statistics-kept**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the **no** form of this command.

history distributions-of-statistics-kept *size*

no history distributions-of-statistics-kept

Syntax Description

size	Number of statistics distributions kept per hop. The range is from 1 to 20. The default is 1.

Command Default

One distribution is kept per hop.

Command Modes

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP jitter configuration (config-ip-sla-icmpjitter)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

Multicast UDP jitter configuration (config-ip-sla-multicast-jitter-oper)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

VCCV configuration (config-sla-vccv)

Video configuration (config-ip-sla-video)

VoIP configuration (config-ip-sla-voip)

Command Modes

ICMP echo configuration (config-icmp-ech-params)

ICMP jitter configuration (config-icmp-jtr-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

UDP jitter configuration (config-udp-jtr-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **distributions-of-statistics-kept**command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **distributions-of-statistics-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **distributions-of-statistics-kept**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **distributions-of-statistics-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, ICMP jitter, TCP connect, UDP echo, and UDP jitter configuration submodes of IP SLA template parameters configuration mode were added.
12.2(58)SE	This command was modified. Support for the video configuration submode of IP SLA configuration mode was added.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG.
15.2(4)M	This command was modified. The multicast UDP jitter configuration mode was added.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Release	Modification
Cisco IOS XE 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

This command changes the value of distributions kept per hop for the IP SLAs operation from the default (1) to the specified value. When the number of distributions reaches the size specified, no further distribution-based information is stored in memory.

In most situations, you do not need to change the number of statistics distributions kept or the time interval for each distribution. Change these parameters only when distributions are required, for example, when performing statistical modeling of your network. To set the statistics distributions interval, use the **history statistics-distribution-interval**command.

Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

The **history distributions-of-statistics-kept** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

For the IP SLAs Internet Control Message Protocol (ICMP) path echo operation, the amount of router memory required to maintain the distribution statistics table is based on multiplying all of the values set by the following four commands:

- **history distributions-of-statistics-kept**
- **hops-of-statistics-kept**
- **paths-of-statistics-kept**
- **history hours-of-statistics-kept**

The general equation used to calculate the memory requirement to maintain the distribution statistics table for an ICMP path echo operation is as follows: Memory allocation = (160 bytes) * (**history distributions-of-statistics-kept** *size*) * (**hops-of-statistics-kept** *size*) * (**paths-of-statistics-kept** *size*) * (**history hours-of-statistics-kept** *hours*)

Note To avoid significant impact on router memory, careful consideration should be used when configuring the **history distributions-of-statistics-kept**, **hops-of-statistics-kept**, **paths-of-statistics-kept**, and **history hours-of-statistics-kept** commands.

Examples

In the following examples, the statistics distribution is set to five and the distribution interval is set to 10 ms for an ICMP echo operation. Consequently, the first distribution will contain statistics from 0 to 9 ms, the second distribution will contain statistics from 10 to 19 ms, the third distribution will contain statistics from 20 to 29 ms, the fourth distribution will contain statistics from 30 to 39 ms, and the fifth distribution will contain statistics from 40 ms to infinity. The examples show the **history distributions-of-statistics-kept** command being used in an IPv4 network.

Examples

```
ip sla 1
 icmp-echo 172.16.161.21
 history distributions-of-statistics-kept 5
 history statistics-distribution-interval 10
!
ip sla schedule 1 life forever start-time now
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 1
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history distributions-of-statistics-kept 5
Router(config-icmp-ech-params)# history statistics-distribution-interval 10
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo 1
IP SLAs Auto Template: 1
    Measure Type: icmp-echo (control enabled)
    Description:
.
.
.
Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 10
        Max number of distributions buckets: 5
```

Related Commands

Command	Description
history hours-of-statistics-kept	Sets the number of hours for which statistics are maintained for the IP SLAs operation.
history statistics-distribution-interval	Sets the time interval for each statistics distribution kept for the IP SLAs operation.
hops-of-statistics-kept	Sets the number of hops for which statistics are maintained per path for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
paths-of-statistics-kept	Sets the number of paths for which statistics are maintained per hour for the IP SLAs operation.

history enhanced

To enable enhanced history gathering for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history enhanced** command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode.

history enhanced [**interval** *seconds*] [**buckets** *number-of-buckets*]

Syntax Description

interval *seconds*	(Optional) Specifies the length of time, in seconds (sec), that enhanced history is gathered in each bucket. The range is from 1 to 3600. The default is 900.
buckets *number-of-buckets*	(Optional) Specifies the number of history buckets that are retained in system memory. The range is from 1 to 100. The default is 100.

Command Default

Enhanced history gathering is disabled.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

Multicast UDP jitter configuration (config-ip-sla-multicast-jitter-oper)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

VCCV configuration (config-sla-vccv)

Video (config-ip-sla-video)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Parameters Configuration

ICMP echo configuration (config-icmp-ech-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

UDP jitter configuration (config-udp-jtr-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **enhanced-history** command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **enhanced-history** command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **enhanced-history**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **enhanced-history** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, TCP connect, UDP echo, and UDP jitter configuration submodes in IP SLA template parameters configuration mode were added.
12.2(58)SE	This command was modified. Support for the video configuration submode of IP SLA configuration mode was added.
15.2(2)T	This command was integrated into Cisco IOS Release 15.2(2)T.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG.
15.2(4)M	This command was modified. The multicast UDP jitter configuration mode was added.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Release	Modification
Cisco IOS XE 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

This command enables enhanced history for the IP SLAs operation.

Performance statistics are stored in buckets that separate the accumulated data. Each bucket consists of data accumulated over the specified time interval. When the interval expires, history statistics are gathered in a new bucket. When the specified number of buckets is reached, statistic gathering for the operation ends.

By default, IP SLAs maintains two hours of aggregated statistics for each operation. Values from each operation cycle are aggregated with the previously available data within a given hour. The Enhanced History feature in IP SLAs allows for the aggregation interval to be shorter than one hour.

The **history enhanced** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

Prior to Cisco IOS Release 12.4(24)T, you can configure this command for IP SLAs VoIP RTP operation but operations are unaffected.

In Cisco IOS Release 12.4(24)T and later releases, you cannot configure this command for IP SLAs VoIP RTP operations. If you attempt to configure this command in VoIP RTP configuration mode, the following message appears.

```
Router(config-ip-sla-voip-rtp)# history enhanced interval 1200 buckets 99
%enhanced-history cannot be set for this probe
```

Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

Examples

In the following examples, an Internet Control Message Protocol (ICMP) echo operation is configured with the standard enhanced history settings. The example shows the **history enhanced** command being used in an IPv4 network.

Examples

```
ip sla 3
 icmp-echo 172.16.1.175
 history enhanced interval 900 buckets 100
!
ip sla schedule 3 start-time now life forever
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 3
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history enhanced interval 900 buckets 100
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo
IP SLAs Auto Template: 3
    Measure Type: icmp-echo (control enabled)
.
.
.
Statistics Aggregation option:
        Hours of statistics kept: 2
```

```
    Enhanced aggregation interval: 900 seconds
    Max number of enhanced interval buckets: 100
History options:
    History filter: none
    Max number of history records kept: 15
    Lives of history kept: 0
Statistics Distributions options:
    Distributions characteristics: RTT
    Distributions bucket size: 20
    Max number of distributions buckets: 1
Reaction Configuration: None
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
show ip sla auto summary-statistics	Displays the current operational status and statistics for IP SLAs auto-measure groups.
show ip sla auto template	Displays configuration including default values of auto IP SLAs operation templates.
show ip sla enhanced-history collection-statistics	Displays data for all collected history buckets for the specified IP SLAs operation, with data for each bucket shown individually.
show ip sla enhanced-history distribution-statistics	Displays enhanced history data for all collected buckets in a summary table.

history filter

To define the type of information kept in the history table for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history filter**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the no form of this command.

history filter {**none**| **all**| **overThreshold**| **failures**}

no history filter {**none**| **all**| **overThreshold**| **failures**}

Syntax Description

none	No history is kept. This is the default.
all	All operations attempted are kept in the history table.
overThreshold	Only packets that are over the threshold are kept in the history table.
failures	Only packets that fail for any reason are kept in the history table.

Command Default

No IP SLAs history is kept for an operation.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

VCCV configuration (config-sla-vccv)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Parameters Configuration

ICMP echo configuration (config-icmp-ech-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **filter-for-history** command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **filter-for-history** command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **filter-for-history**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **filter-for-history** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, TCP connect, and UDP echo configuration submodes in IP SLA template parameters configuration mode were added.

Usage Guidelines

Use the **history filter**command to control what gets stored in the history table for an IP SLAs operation. To control how much history gets saved in the history table, use the **history lives-kept**, **history buckets-kept**, and the **samples-of-history-kept**commands.

The **history filter** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

For auto IP SLAs in Cisco IOS IP SLAs Engine 3.0--Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

An IP SLAs operation can collect history and capture statistics. By default, the history for an IP SLAs operation is not collected. When a problem arises where history is useful (for example, a large number of timeouts are occurring), use the **history lives-kept** command to enable history collection.

Note Collecting history increases the RAM usage. Collect history only when you think there is a problem in the network.

Examples

In the following example, only operation packets that fail are kept in the history table. The example shows the **history filter** command being used in an IPv4 network.

Examples

```
ip sla auto template type ip icmp-echo
 icmp-echo 172.16.161.21
  history lives-kept 1
  history filter failures
!
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 1
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history filter failures

Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo
IP SLAs Auto Template: 1
    Measure Type: icmp-echo
.
.
.
Statistics Aggregation option:
        Hours of statistics kept: 2
    History options:
        History filter: failures
        Max number of history records kept: 15
        Lives of history kept: 0
    Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 20
        Max number of distributions buckets: 1
    Reaction Configuration: None
```

Related Commands

Command	Description
history buckets-kept	Sets the number of history buckets that are kept during the lifetime of the IP SLAs operation.
history lives-kept	Sets the number of lives maintained in the history table for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.

Command	Description
samples-of-history-kept	Sets the number of entries kept in the history table per bucket for the IP SLAs operation.

history hours-of-statistics-kept

To set the number of hours for which statistics are maintained for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history hours-of-statistics-kept**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the **no** form of this command.

history hours-of-statistics-kept *hours*

no history hours-of-statistics-kept

Syntax Description

hours	Length of time, in hours, for which statistics are maintained in memory. The range is from 0 to 25. The default is 2.

Command Default

Statistics are kept in platform memory for 2 hours.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP jitter configuration (config-ip-sla-icmpjitter)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

Multicast UDP jitter configuration (config-ip-sla-multicast-jitter-oper)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

VCCV configuration (config-sla-vccv)

Video (config-ip-sla-video)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Parameters Configuration

ICMP echo configuration (config-icmp-ech-params)

ICMP jitter configuration (config-icmp-jtr-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

UDP jitter configuration (config-udp-jtr-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **hours-of-statistics-kept** command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **hours-of-statistics-kept**command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **hours-of-statistics-kept** command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **hours-of-statistics-kept**command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, ICMP jitter, TCP connect, UDP echo, and UDP jitter configuration submodes in IP SLA template parameters configuration mode were added.
12.2(58)SE	This command was modified. Support for the video configuration submode of IP SLA configuration mode was added.
15.2(2)T	This command was modified. Support for the video configuration submode of IP SLA configuration mode was added.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG.

Release	Modification
15.2(4)M	This command was modified. The multicast UDP jitter configuration mode was added.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.
Cisco IOS XE 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

This command changes the value of history hours in the IP SLAs operation from the default (2) to the specified value. When the number of hours exceeds the specified value, the statistics table wraps and the oldest information is replaced by newer information.

For the IP SLAs Internet Control Message Protocol (ICMP) path echo operation, the amount of router memory required to maintain the distribution statistics table is based on multiplying all of the values set by the following four commands:

- **history distributions-of-statistics-kept**
- **hops-of-statistics-kept**
- **paths-of-statistics-kept**
- **history hours-of-statistics-kept**

The general equation used to calculate the memory requirement to maintain the distribution statistics table for an ICMP path echo operation is as follows: Memory allocation = (160 bytes) * (**history distributions-of-statistics-kept** *size*) * (**hops-of-statistics-kept** *size*) * (**paths-of-statistics-kept** *size*) * (**history hours-of-statistics-kept** *hours*)

Note To avoid significant impact on router memory, careful consideration should be used when configuring the **history distributions-of-statistics-kept**, **hops-of-statistics-kept**, **paths-of-statistics-kept**, and **history hours-of-statistics-kept** commands.

The **history hours-of-statistics-kept** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

For auto IP SLAs in Cisco IOS IP SLAs Engine 3.0, before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

Examples

The following examples show how to maintain 3 hours of statistics for an ICMP echo operation. The example shows the **history hours-of-statistics-kept** command being used in an IPv4 network.

Examples

```
ip sla 2
 icmp-echo 172.16.1.177
```

```
 history hours-of-statistics-kept 3
!
ip sla schedule 2 life forever start-time now
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 2
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history hours-of-statistics-kept 3
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo
IP SLAs Auto Template: 2
    Measure Type: icmp-echo
.
.
.
Statistics Aggregation option:
        Hours of statistics kept: 3
    History options:
        History filter: none
        Max number of history records kept: 15
        Lives of history kept: 0
    Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 20
        Max number of distributions buckets: 1
    Reaction Configuration: None
```

Related Commands

Command	Description
history distributions-of-statistics-kept	Sets the number of statistics distributions kept per hop during the lifetime of the IP SLAs operation.
history statistics-distribution-interval	Sets the time interval for each statistics distribution kept for the IP SLAs operation.
hops-of-statistics-kept	Sets the number of hops for which statistics are maintained per path for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
paths-of-statistics-kept	Sets the number of paths for which statistics are maintained per hour for the IP SLAs operation.

history lives-kept

To set the number of lives maintained in the history table for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history lives-kept**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the **no** form of this command.

history lives-kept *lives*

no history lives-kept

Syntax Description

lives	Number of lives maintained in the history table for the operation. If you specify 0 lives, history is not collected for the operation.

Command Default

The default is 0 lives.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

VCCV configuration (config-sla-vccv)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Configuration

ICMP echo configuration (config-icmp-ech-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **lives-of-history-kept**command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **lives-of-history-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **lives-of-history-kept**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **lives-of-history-kept** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, TCP connect, and UDP echo configuration submodes in IP SLA template parameters configuration mode were added.

Usage Guidelines

The following rules apply to the **history lives-kept** command:

- The number of lives you can specify is dependent on the type of operation you are configuring.
- The default value of 0 lives means that history is not collected for the operation.
- When the number of lives exceeds the specified value, the history table wraps (that is, the oldest information is replaced by newer information).
- When an operation makes a transition from a pending to active state, a life starts. When the life of an operation ends, the operation makes a transition from an active to pending state.

The **history lives-kept** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

To disable history collection, use the **no history lives-kept** command rather than the **history filter none** command. The **no history lives-kept**command disables history collection before an IP SLAs operation is attempted. The **history filter** command checks for history inclusion after the operation attempt is made.

Examples

The following example shows how to maintain the history for five lives of an ICMP echo operation. The example shows the **history lives-kept** command being used in an IPv4 network.

Examples

```
ip sla 1
 icmp-echo 172.16.1.176
 history lives-kept 5
!
ip sla schedule 1 life forever start-time now
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 1
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history lives-kept 5
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip icmp-echo
IP SLAs Auto Template: 1
    Measure Type: icmp-echo
.
.
.
Statistics Aggregation option:
        Hours of statistics kept: 2
    History options:
        History filter: none
        Max number of history records kept: 15
        Lives of history kept: 5
    Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 20
        Max number of distributions buckets: 1
    Reaction Configuration: None
```

Related Commands

Command	Description
history buckets-kept	Sets the number of history buckets that are kept during the lifetime of the IP SLAs operation.
history filter	Defines the type of information kept in the history table for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
samples-of-history-kept	Sets the number of entries kept in the history table per bucket for the IP SLAs operation.

history statistics-distribution-interval

To set the time interval for each statistics distribution kept for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **history statistics-distribution-interval**command in the appropriate submode of IP SLA configuration or IP SLA template parameters configuration mode. To return to the default value, use the **no** form of this command.

history statistics-distribution-interval *milliseconds*

no history statistics-distribution-interval

Syntax Description

milliseconds	Length of time, in milliseconds (ms), for which each statistics distribution is kept. The range is from 1 to 100. The default is 20.

Command Default

A statistics distribution is kept for 20 ms.

Command Modes

IP SLA Configuration

DHCP configuration (config-ip-sla-dhcp)

DLSw configuration (config-ip-sla-dlsw)

DNS configuration (config-ip-sla-dns)

Ethernet echo (config-ip-sla-ethernet-echo)

Ethernet jitter (config-ip-sla-ethernet-jitter)

FTP configuration (config-ip-sla-ftp)

HTTP configuration (config-ip-sla-http)

ICMP echo configuration (config-ip-sla-echo)

ICMP jitter configuration (config-ip-sla-icmpjitter)

ICMP path echo configuration (config-ip-sla-pathEcho)

ICMP path jitter configuration (config-ip-sla-pathJitter)

TCP connect configuration (config-ip-sla-tcp)

UDP echo configuration (config-ip-sla-udp)

UDP jitter configuration (config-ip-sla-jitter)

VCCV configuration (config-sla-vccv)

Video configuration (config-ip-sla-video)

VoIP configuration (config-ip-sla-voip)

IP SLA Template Parameters Configuration

ICMP echo configuration (config-icmp-ech-params)

ICMP jitter configuration (config-icmp-jtr-params)

TCP connect configuration (config-tcp-conn-params)

UDP echo configuration (config-udp-ech-params)

UDP jitter configuration (config-udp-jtr-params)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **statistics-distribution-interval**command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **statistics-distribution-interval**command. The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SRC	The VCCV configuration mode was added.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **statistics-distribution-interval**command. The following configuration modes were added: • Ethernet echo • Ethernet jitter • VCCV
12.4(20)T	The Ethernet echo and Ethernet jitter configuration modes were added.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **statistics-distribution-interval** command. The Ethernet echo and Ethernet jitter configuration modes were added.
15.1(1)T	This command was modified. The ICMP echo, ICMP jitter, TCP connect, UDP echo, and UDP jitter configuration submodes in IP SLA template parameters configuration mode were added.
12.2(58)SE	This command was modified. Support for the video configuration submode of IP SLA configuration mode was added.
15.2(2)T	This command with support for the video configuration submode of IP SLA configuration mode was integrated into Cisco IOS Release 15.2(2)T.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG.

Usage Guidelines

This command changes the value of distribution interval for the IP SLAs operation from the default (20 ms) to the specified value.

In most situations, you do not need to change the number of statistics distributions kept or the time interval for each distribution. Change these parameters only when distributions are required, for example, when performing statistical modeling of your network. To set the number of statistics distributions kept, use the **history statistics-distribution-interval**command.

The **history statistics-distribution-interval** command is supported in IPv4 networks. This command is also supported in IPv6 networks to configure an IP SLAs operation that supports IPv6 addresses.

Before you can use this command to configure auto IP SLAs operation templates, you must enter the **parameters** command in IP SLA template configuration mode.

Examples

In the following examples, the statistics distribution is set to five and the distribution interval is set to 10 ms for an IP SLAs operation. Consequently, the first distribution will contain statistics from 0 to 9 ms, the second distribution will contain statistics from 10 to 19 ms, the third distribution will contain statistics from 20 to 29 ms, the fourth distribution will contain statistics from 30 to 39 ms, and the fifth distribution will contain statistics from 40 ms to infinity.

The example shows the **history statistics-distribution-interval** command being used in an IPv4 network.

Examples

```
ip sla 1
 icmp-echo 172.16.161.21
 history distributions-of-statistics-kept 5
 history statistics-distribution-interval 10
!
ip sla schedule 1 life forever start-time now
```

Examples

```
Router(config)# ip sla auto template type ip icmp-echo 3
Router(config-tplt-icmp-ech)# parameters
Router(config-icmp-ech-params)# history enhanced interval 900 buckets 100
Router(config-icmp-ech-params)# end
Router# show ip sla auto template type ip udp-echo
IP SLAs Auto Template: 5
    Measure Type: icmp-echo
.
.
.
History options:
        History filter: none
        Max number of history records kept: 15
        Lives of history kept: 0
    Statistics Distributions options:
        Distributions characteristics: RTT
        Distributions bucket size: 10
        Max number of distributions buckets: 1
    Reaction Configuration: None
```

Related Commands

Command	Description
history distributions-of-statistics-kept	Sets the number of statistics distributions kept per hop during the IP SLAs operation's lifetime.

Command	Description
history hours-of-statistics-kept	Sets the number of hours for which statistics are maintained for the IP SLAs operation.
hops-of-statistics-kept	Sets the number of hops for which statistics are maintained per path for the IP SLAs operation.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla auto template	Begins configuration for an auto IP SLAs operation template and enters IP SLA template configuration mode.
paths-of-statistics-kept	Sets the number of paths for which statistics are maintained per hour for the IP SLAs operation.

hours-of-statistics-kept

Note Effective with Cisco IOS Release 12.4(4)T, 12.2(33)SRB, 12.2(33)SB, and 12.2(33)SXI, the **hours-of-statistics-kept**command is replaced by the **history hours-of-statistics-kept**command. See the **history hours-of-statistics-kept**command for more information.

To set the number of hours for which statistics are maintained for a Cisco IOS IP Service Level Agreements (SLAs) operation, use the **hours-of-statistics-kept**command in the appropriate submode of IP SLA monitor configuration mode. To return to the default value, use the **no** form of this command.

hours-of-statistics-kept *hours*

no hours-of-statistics-kept

Syntax Description

hours	Number of hours that statistics are maintained. The default is 2.

Command Default

2 hours

Command Modes

DHCP configuration (config-sla-monitor-dhcp)

DLSw configuration (config-sla-monitor-dlsw)

DNS configuration (config-sla-monitor-dns)

FTP configuration (config-sla-monitor-ftp)

HTTP configuration (config-sla-monitor-http)

ICMP echo configuration (config-sla-monitor-echo)

ICMP path echo configuration (config-sla-monitor-pathEcho)

ICMP path jitter configuration (config-sla-monitor-pathJitter)

TCP connect configuration (config-sla-monitor-tcp)

UDP echo configuration (config-sla-monitor-udp)

UDP jitter configuration (config-sla-monitor-jitter)

VoIP configuration (config-sla-monitor-voip)

Command History

Release	Modification
11.2	This command was introduced.
12.4(4)T	This command was replaced by the **history hours-of-statistics-kept** command.

Release	Modification
12.2(33)SRB	This command was replaced by the **history hours-of-statistics-kept** command.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.2(33)SB	This command was replaced by the **history hours-of-statistics -kept** command.
12.2(33)SXI	This command was replaced by the **history hours-of-statistics -kept** command.

Usage Guidelines

When the number of hours exceeds the specified value, the statistics table wraps (that is, the oldest information is replaced by newer information).

For the IP SLAs Internet Control Message Protocol (ICMP) path echo operation, the amount of router memory required to maintain the distribution statistics table is based on multiplying all of the values set by the following four commands:

- **distributions-of-statistics-kept**
- **hops-of-statistics-kept**
- **paths-of-statistics-kept**
- **hours-of-statistics-kept**

The general equation used to calculate the memory requirement to maintain the distribution statistics table for an ICMP path echo operation is as follows: Memory allocation = (160 bytes) * (**distributions-of-statistics-kept** *size*) * (**hops-of-statistics-kept** *size*) * (**paths-of-statistics-kept** *size*) * (**hours-of-statistics-kept** *hours*)

Note To avoid significant impact on router memory, careful consideration should be used when configuring the **distributions-of-statistics-kept**, **hops-of-statistics-kept**, **paths-of-statistics-kept**, and **hours-of-statistics-kept** commands.

Note You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation.

Examples

The following example shows how to maintain 3 hours of statistics for IP SLAs ICMP path echo operation 2.

```
ip sla monitor 2
 type pathecho protocol ipIcmpEcho 172.16.1.177
```

```
 hours-of-statistics-kept 3
!
ip sla monitor schedule 2 life forever start-time now
```

Related Commands

Command	Description
distributions-of-statistics-kept	Sets the number of statistics distributions kept per hop during the lifetime of the IP SLAs operation.
hops-of-statistics-kept	Sets the number of hops for which statistics are maintained per path for the IP SLAs operation.
ip sla monitor	Begins configuration for an IP SLAs operation and enters IP SLA monitor configuration mode.
paths-of-statistics-kept	Sets the number of paths for which statistics are maintained per hour for the IP SLAs operation.
statistics-distribution-interval	Sets the time interval for each statistics distribution kept for the IP SLAs operation.

hours-of-statistics-kept (LSP discovery)

To set the number of hours for which label switched path (LSP) discovery group statistics are maintained for a Cisco IOS IP Service Level Agreements (SLAs) LSP Health Monitor operation, use the **hours-of-statistics-kept** command in auto IP SLA MPLS LSP discovery parameters configuration mode. To return to the default value, use the **no** form of this command.

hours-of-statistics-kept *hours*

no hours-of-statistics-kept

Syntax Description

hours	Number of hours that statistics are maintained. The default is 2.

Command Default

2 hours

Command Modes

Auto IP SLA MPLS LSP discovery parameters configuration (config-auto-ip-sla-mpls-lpd-params)

Command History

Release	Modification
12.2(31)SB2	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

The LSP discovery group statistics are distributed in one-hour increments. Since the number of LSP discovery groups for a single LSP Health Monitor operation can be significantly large, the collection of group statistics is restricted to a maximum of 2 hours. If the *number* argument is set to zero, no LSP discovery group statistics are maintained.

Use the **path-discover** command to enable the LSP discovery option for an IP SLAs LSP Health Monitor operation and enter auto IP SLA MPLS LSP discovery parameters configuration mode.

Examples

The following example shows how to configure operation parameters, proactive threshold monitoring, and scheduling options using the LSP Health Monitor. In this example, the LSP discovery option is enabled for LSP Health Monitor operation 1. Operation 1 is configured to automatically create IP SLAs LSP ping operations for the equal-cost multipaths to all Border Gateway Protocol (BGP) next hop neighbors in use by all VPN routing and forwarding (VRF) instances associated with the source Provider Edge (PE) router. LSP discovery group statistics are collected every 1 hour.

```
auto ip sla mpls-lsp-monitor 1
 type echo ipsla-vrf-all
 path-discover
```

```
!
 maximum-sessions 2
 session-timeout 60
 interval 2
 timeout 4
 force-explicit-null
 hours-of-statistics-kept 1
 scan-period 30
!
auto ip sla mpls-lsp-monitor schedule 1 schedule-period 60 frequency 100 start-time now
!
auto ip sla mpls-lsp-monitor reaction-configuration 1 react lpd tree-trace action-type
trapOnly
auto ip sla mpls-lsp-monitor reaction-configuration 1 react lpd lpd-group retry 3 action-type
 trapOnly
```

Related Commands

Command	Description
auto ip sla mpls-lsp-monitor	Begins configuration for an IP SLAs LSP Health Monitor operation and enters auto IP SLA MPLS configuration mode.
path-discover	Enables the LSP discovery option for an IP SLAs LSP Health Monitor operation and enters auto IP SLA MPLS LSP discovery parameters configuration mode.

http (IP SLA)

To configure a Cisco IOS IP Service Level Agreements (SLAs) HTTP operation, use the **http**command in IP SLA configuration mode.

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*]

Syntax Description

get	Specifies an HTTP GET operation.
raw	Specifies an HTTP RAW operation.
url	URL of destination HTTP server.
name-server *ip-address*	(Optional) Specifies the destination IP address of a Domain Name System (DNS) Server.
version *version-number*	(Optional) Specifies the version number.
source-ip {*ip-address* | *hostname*}	(Optional) Specifies the source IP address or hostname. When a source IP address or hostname is not specified, IP SLAs chooses the IP address nearest to the destination.
source-port *port-number*	(Optional) Specifies the source port number. When a port number is not specified, IP SLAs chooses an available port.
cache enable | **disable**	(Optional) Enables or disables download of a cached HTTP page.
proxy *proxy-url*	(Optional) Specifies proxy information or URL.

Command Default

No IP SLAs operation type is configured for the operation being configured.

Command Modes

IP SLA configuration (config-ip-sla)

Command History

Release	Modification
12.4(4)T	This command was introduced. This command replaces the **type http operation**command.
12.0(32)SY	This command was integrated into Cisco IOS Release 12.0(32)SY.

Release	Modification
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB. This command replaces the **type http operation** command.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB. This command replaces the **type http operation**command.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI. This command replaces the **type http operation**command.
15.2(3)T	This command was modified. Support for IPv6 addresses was added.
Cisco IOS XE Release 3.7S	This command was integrated into Cisco IOS XE Release 3.7S.
15.1(2)SG	This command was integrated into Cisco IOS Release 15.1(2)SG.
Cisco IOS XE Release 3.4SG	This command was integrated into Cisco IOS XE Release 3.4SG.

Usage Guidelines

You must configure the type of IP SLAs operation, such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo, before you can configure any of the other parameters of the operation. To change the operation type of an existing IP SLAs operation, you must first delete the IP SLAs operation (using the **no ip sla**global configuration command) and then reconfigure the operation with the new operation type.

Examples

In the following example, IP SLAs HTTP operation 6 is configured as an HTTP RAW operation. The destination URL of the HTTP server is http://www.cisco.com.

```
ip sla 6
 http raw http://www.cisco.com
 http-raw-request
 GET /index.html HTTP/1.0\r\n
 \r\n
!
ip sla schedule 6 start-time now
```

In the following example, IP SLAs HTTP operation 7 is configured as an HTTP GET operation. The destination URL of the HTTP server is 2001:10:10:10::3.

```
ip sla 7
 http get http://2001:10:10:10::3
 http-get-request
 GET /index.html HTTP/1.0\r\n
 \r\n
!
ip sla schedule 7 start-time now
```

Related Commands

Command	Description
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

http-raw-request

To explicitly specify the options for a GET request for a Cisco IOS IP Service Level Agreements (SLAs) Hypertext Transfer Protocol (HTTP) operation, use the **http-raw-request** command in the appropriate submode of IP SLA configuration or IP SLA monitor configuration mode.

http-raw-request

Syntax Description

This command has no arguments or keywords.

Command Default

No options are specified for a GET request.

Command Modes

IP SLA Configuration

HTTP configuration (config-ip-sla-http)

IP SLA Monitor Configuration

HTTP configuration (config-sla-monitor-http)

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **http-raw-request** command to explicitly specify the content of an HTTP request. Use HTTP version 1.0 commands after entering the **http-raw-request** command.

IP SLAs will specify the content of an HTTP request if you use the **typehttpoperationget** command. IP SLAs will send the HTTP request, receive the reply, and report round-trip time (RTT) statistics (including the size of the page returned).

IP SLAs Operation Configuration Dependence on Cisco IOS Release

The Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table below). You must configure the type of IP SLAs operation (such as User Datagram Protocol [UDP] jitter or Internet Control Message Protocol [ICMP] echo) before you can configure any of the other parameters of the operation.

The configuration mode for the **http-raw-request** command varies depending on the Cisco IOS release you are running (see the table below) and the operation type configured. For example, if you are running Cisco

IOS Release 12.4 and the HTTP operation type is configured, you would enter the **http-raw-request** command in HTTP configuration mode (config-sla-monitor-http) within IP SLA monitor configuration mode.

Table 3: Command Used to Begin Configuration of an IP SLAs Operation Based on Cisco IOS Release

Cisco IOS Release	Global Configuration Command	Command Mode Entered
12.4(4)T, 12.0(32)SY, 12.2(33)SRB, 12.2(33)SB, 12.2(33)SXI , or later releases	**ip sla**	IP SLA configuration
12.3(14)T, 12.4, 12.4(2)T, 12.2(31)SB2, or 12.2(33)SXH	**ip sla monitor**	IP SLA monitor configuration

Examples

In the following examples, IP SLAs operation 6 is created and configured as an HTTP operation. The HTTP **GET** command is explicitly specified. Note that the Cisco IOS command used to begin configuration for an IP SLAs operation varies depending on the Cisco IOS release you are running (see the table above).

Examples

```
ip sla 6
 http raw http://www.cisco.com
 http-raw-request
 GET /index.html HTTP/1.0\r\n
 \r\n
!
ip sla schedule 6 start-time now
```

Examples

```
ip sla monitor 6
 type http operation raw url http://www.cisco.com
 http-raw-request
 GET /index.html HTTP/1.0\r\n
 \r\n
!
ip sla monitor schedule 6 start-time now
```

Related Commands

Command	Description
http (IP SLA)	Configures an HTTP IP SLAs operation in IP SLA configuration mode.
ip sla	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
ip sla monitor	Begins configuration for an IP SLAs operation and enters IP SLA monitor configuration mode.
type http operation	Configures an HTTP IP SLAs operation in IP SLA monitor configuration mode.