Configuring IP SLAs DNS Operations

This chapter describes the DNS operations capabilities of IP Service Level Agreements (SLAs).

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IP SLAs DNS Operations

This section describes how to configure the IP SLAs DNS operations to measure the difference between the time that is taken to send a DNS request and receive a reply.

Guidelines and Limitations for IP SLA DNS Operations

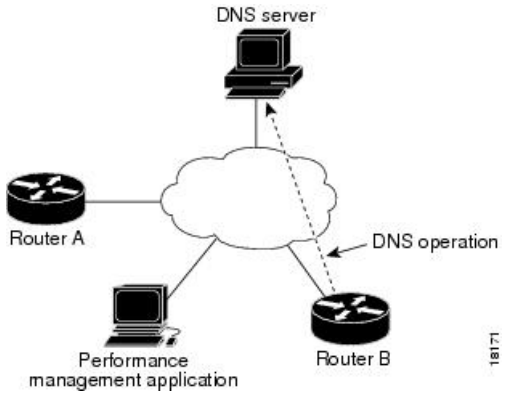
- **show** commands with the **internal** keyword are not supported.
- IPv6 is not supported for IP SLA DNS operations.

DNS Operation

The DNS operation measures the difference between the time that is taken to send a DNS request and receive a reply. DNS is used in the Internet for translating names of network nodes into addresses. The IP SLAs DNS operation queries for an IP address if you specify a hostname or queries for a hostname if you specify an IP address.

In the following figure, Device B is configured as the source IP SLAs device and a DNS operation is configured with the DNS server as the destination device.

Figure 1: DNS Operation



The connection response time is computed by measuring the difference between the time that is taken to send a request to the DNS server and the time a reply is received by Device B. The resulting DNS lookup time can help you analyze your DNS performance. Faster DNS lookup times translate to a faster web server access experience.

Configuring a Basic DNS Operation on the Source Device

SUMMARY STEPS

1. **configure terminal**
2. **feature sla sender**
3. **ip sla** *operation-number*
4. **dns** {*destination-ip-address* | *destination-hostname*} **name-server** *ip-address* [**source-ip** {*ip-address* | *hostname*} **source-port** *port-number*]
5. **frequency** *seconds*
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `switch# configure terminal`	Enters global configuration mode.
Step 2	**feature sla sender** **Example:** `switch(config)# feature sla sender`	Enables the IP SLAs operation feature.
Step 3	**ip sla** *operation-number* **Example:**	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.

	Command or Action	Purpose
	`switch(config)# ip sla 10`	
Step 4	**dns** {*destination-ip-address* | *destination-hostname*} **name-server** *ip-address* [**source-ip** {*ip-address* | *hostname*} **source-port** *port-number*] **Example:** `switch(config-ip-sla)# dns host1 name-server 172.20.2.132`	Defines a DNS operation and enters IP SLA DNS configuration mode.
Step 5	**frequency** *seconds* **Example:** `switch(config-ip-sla-dns)# frequency 60`	(Optional) Sets the rate at which a specified IP SLAs operation repeats.
Step 6	**end** **Example:** `switch(config-ip-sla-dns)# end`	Exits to privileged EXEC mode.

Configuring a DNS Operation with Optional Parameters on the Source Device

SUMMARY STEPS

1. **configure terminal**
2. **feature sla sender**
3. **ip sla** *operation-number*
4. **dns** {*destination-ip-address* | *destination-hostname*} **name-server** *ip-address* [**source-ip** {*ip-address* | *hostname*} **source-port** *port-number*]
5. **history buckets-kept** *size*
6. **history distributions-of-statistics-kept** *size*
7. **history filter**{**none** | **all** | **overThreshold** | **failures**}
8. **frequency** *seconds*
9. **history hours-of-statistics-kept** *hours*
10. **history lives-kept** *lives*
11. **owner** *owner-id*
12. **history statistics-distribution-interval** *milliseconds*
13. **tag** *text*
14. **threshold** *milliseconds*
15. **timeout** *milliseconds*
16. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `switch# configure terminal`	Enters global configuration mode.
Step 2	**feature sla sender** **Example:** `switch(config)# feature sla sender`	Enables the IP SLAs operation feature.
Step 3	**ip sla** *operation-number* **Example:** `switch(config)# ip sla 10`	Begins configuration for an IP SLAs operation and enters IP SLA configuration mode.
Step 4	**dns** {*destination-ip-address* | *destination-hostname*} **name-server** *ip-address* [**source-ip** {*ip-address* | *hostname*} **source-port** *port-number*] **Example:** `switch(config-ip-sla)# dns host1 name-server 172.20.2.132`	Defines a DNS operation and enters IP SLA DNS configuration mode.
Step 5	**history buckets-kept** *size* **Example:** `switch(config-ip-sla-dns)# history buckets-kept 25`	(Optional) Sets the number of history buckets that are kept during the lifetime of an IP SLAs operation.
Step 6	**history distributions-of-statistics-kept** *size* **Example:** `switch(config-ip-sla-dns)# history distributions-of-statistics-kept 5`	(Optional) Sets the number of statistics distributions kept per hop during an IP SLAs operation.
Step 7	**history filter**{**none** | **all** | **overThreshold** | **failures**} **Example:** `switch(config-ip-sla-dns)# history filter failures`	(Optional) Defines the type of information that is kept in the history table for an IP SLAs operation.
Step 8	**frequency** *seconds* **Example:** `switch(config-ip-sla-dns)# frequency 30`	(Optional) Sets the rate at which a specified IP SLAs operation repeats.
Step 9	**history hours-of-statistics-kept** *hours* **Example:**	(Optional) Sets the number of hours for which statistics are maintained for an IP SLAs operation.

	Command or Action	Purpose
	`switch(config-ip-sla-dns)# history hours-of-statistics-kept 4`	
Step 10	**history lives-kept** *lives* **Example:** `switch(config-ip-sla-dns)# history lives-kept 2`	(Optional) Sets the number of lives that are maintained in the history table for an IP SLAs operation.
Step 11	**owner** *owner-id* **Example:** `switch(config-ip-sla-dns)# owner admin`	(Optional) Configures the Simple Network Management Protocol (SNMP) owner of an IP SLAs operation.
Step 12	**history statistics-distribution-interval** *milliseconds* **Example:** `switch(config-ip-sla-dns)# history statistics-distribution-interval 10`	(Optional) Sets the time interval for each statistics distribution kept for an IP SLAs operation.
Step 13	**tag** *text* **Example:** `switch(config-ip-sla-dns)# tag TelnetPollServer1`	(Optional) Creates a user-specified identifier for an IP SLAs operation.
Step 14	**threshold** *milliseconds* **Example:** `switch(config-ip-sla-dns)# threshold 9000`	(Optional) Sets the upper threshold value for calculating network monitoring statistics that are created by an IP SLAs operation.
Step 15	**timeout** *milliseconds* **Example:** `switch(config-ip-sla-dns)# timeout 10000`	(Optional) Sets the amount of time an IP SLAs operation waits for a response from its request packet.
Step 16	**end** **Example:** `switch(config-ip-sla-dns)# end`	Exits to privileged EXEC mode.

Scheduling IP SLAs Operations

Note

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

SUMMARY STEPS

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

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `switch# configure terminal`	Enters global configuration mode.
Step 2	Use one of the following. • **ip sla schedule** *operation-number* [**life** {**forever**	*seconds*}] [**start-time** {[*hh*:*mm*:*ss*] [*month day*	*day month*]	**pending**	**now**	**after** *hh*:*mm*:*ss*}] [**ageout** *seconds*] [**recurring**] • **ip sla group schedule** *group-operation-number operation-id-numbers* {**schedule-period** *schedule-period-range*	**schedule-together**} [**ageout** *seconds*] [**frequency** *group-operation-frequency*] [**life** {**forever**	*seconds*}] [**start-time** {*hh*:*mm*[:*ss*] [*month day*	*day month*]	**pending**	**now**	**after** *hh*:*mm*[:*ss*]}] **Example:**	Configures the scheduling parameters for an individual IP SLAs operation. Specifies an IP SLAs operation group number and the range of operation numbers for a multioperation scheduler.

	Command or Action	Purpose

	`switch(config)# ip sla schedule 10 life forever start-time now`
	Example:
	`switch(config)# ip sla group schedule 1 3,4,6-9 life forever start-time now`	

Step 3	**exit** **Example:** `switch(config)# exit`	Exits to privileged EXEC mode.
Step 4	**show ip sla group schedule** **Example:** `switch# show ip sla group schedule`	(Optional) Displays IP SLAs group schedule details.
Step 5	**show ip sla configuration** **Example:** `switch# show ip sla configuration`	(Optional) Displays IP SLAs configuration details.

Configuration Example for a DNS Operation

This example shows how to configure a DNS operation from Device B to the DNS server (IP address 172.20.2.132) as shown in the “DNS Operation” figure in the “DNS Operation” section. The operation is scheduled to start immediately. In this example, the target address is a hostname and the DNS operation will query the DNS server for the IP address associated with the hostname host1. No configuration is required at the DNS server.

```
feature sla sender
ip sla 11
 dns host1 name-server 172.20.2.132
 frequency 50
 timeout 8000
 tag DNS-Test
ip sla schedule 11 start-time now
```

Configuration Example for a Basic DNS Operation on the Source Device

This example shows how to configure a basic DNS operation on the source device:

```
switch# configure terminal
switch(config)# feature sla sender
```

```
switch(config)# ip sla 10
switch(config-ip-sla)# dns host1 name-server 172.20.2.132
switch(config-ip-sla-dns)# frequency 60
switch(config-ip-sla-dns)# end
```

Configuration Example for a DNS Operation with Optional Parameters on the Source Device

This example shows how to configure a DNS operation with optimal parameters on the source device:

```
switch# configure terminal
switch(config)# feature sla sender
switch(config-ip-sla)# dns host1 name-server 172.20.2.132
switch(config)# ip sla 10
switch(config-ip-sla)# dns host1 name-server 172.20.2.132
switch(config-ip-sla-dns)# history buckets-kept 25
switch(config-ip-sla-dns)# history distributions-of-statistics-kept 5
switch(config-ip-sla-dns)# history filter failures
switch(config-ip-sla-dns)# frequency 30
switch(config-ip-sla-dns)# history hours-of-statistics-kept 4
switch(config-ip-sla-dns)# history lives-kept 2
switch(config-ip-sla-dns)# owner admin
switch(config-ip-sla-dns)# history statistics-distribution-interval 10
switch(config-ip-sla-dns)# tag TelnetPollServer1
switch(config-ip-sla-dns)# threshold 9000
switch(config-ip-sla-dns)# timeout 10000
switch(config-ip-sla-dns)# end
```

Configuration Example for Scheduling IP SLAs Operations

This example shows how to schedule IP SLAs operations:

```
switch# configure terminal
switch(config)# feature sla sender
switch(config)# ip sla schedule 10 life forever start-time now
switch(config)# exit
switch# show ip sla group schedule
switch# show ip sla configuration
```