



## IP SLA VCCV Operation

The IP SLA supports Virtual Circuit Connectivity Verification (VCCV) for pseudowire Emulation Edge-to-Edge (PWE3) services across MPLS networks. The IP SLAs VCCV operation type is based on the **ping mpls pseudowire** command, which checks MPLS LSP connectivity across an Any Transport over MPLS (AToM) virtual circuit (VC) by sending a series of pseudowire ping operations to the specified destination PE router.

MPLS LSP connectivity checking is performed using an IP SLAs VCCV operation (rather than through the **ping mpls** command with the **pseudowire** keyword). The VCCV operation provides IP SLA proactive threshold monitoring and multioperation scheduling capabilities.



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**Note** IP SLA VCCV operation does not support LSP discovery.

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## Configuring and Scheduling an IP SLA VCCV Operation

### Procedure

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#### Step 1

**enable**

**Example:**

```
Router> enable
```

Enables privileged EXEC mode.

- Enter your password if prompted.

#### Step 2

**configure terminal**

**Example:**

```
Router# configure terminal
```

Enters global configuration mode.

**Step 3**      **ip sla** *operation-number*

**Example:**

```
Router(config)# ip sla 777
```

Begins configuring an IP SLA VCCV operation and enters IP SLA configuration mode.

**Step 4**      **mpls lsp ping pseudowire** *peer-ipaddr vc-id* [**source-ipaddr** *source-ipaddr*]

**Example:**

```
Router(config-ip-sla)# mpls lsp ping
pseudowire 192.168.1.103 123 source-ipaddr 192.168.1.102
```

Configures the IP SLA VCCV operation as an LSP pseudowire ping and enters VCCV configuration mode.

**Step 5**      **exp** *exp-bits*

**Example:**

```
Router(config-sla-vccv)# exp 5
```

(Optional) Specifies the experimental field value in the header for an echo request packet of an IP SLA VCCV operation.

**Step 6**      **frequency** *seconds*

**Example:**

```
Router(config-sla-vccv)# frequency 120
```

(Optional) Specifies the rate at which a specified IP SLA VCCV operation repeats.

**Step 7**      **request-data-size** *bytes*

**Example:**

```
Router(config-sla-vccv)# request-data-size 200
```

(Optional) Specifies the protocol data size for a request packet of an IP SLA VCCV operation.

**Step 8**      **secondary-frequency** {**both** | **connection-loss** | **timeout**} *frequency*

**Example:**

```
Router(config-sla-vccv)# secondary-frequency connection-loss 10
```

(Optional) Sets the measurement frequency (secondary frequency) to which an IP SLA VCCV operation should change when a reaction condition occurs.

**Step 9**      **tag** *text*

**Example:**

```
Router(config-sla-vccv)# tag testgroup
```

(Optional) Creates a user-specified identifier for an IP SLA VCCV operation.

**Step 10**     **threshold** *milliseconds*

**Example:**

```
Router(config-sla-vccv)# threshold 6000
```

(Optional) Sets the upper threshold value for calculating network monitoring statistics created by an IP SLA VCCV operation.

**Step 11**    **timeout** *milliseconds***Example:**

```
Router(config-sla-vccv)# timeout 7000
```

(Optional) Specifies the amount of time the IP SLA VCCV operation waits for a response from its request packet.

**Step 12**    **exit****Example:**

```
Router(config-sla-vccv)# exit
```

Exits VCCV configuration mode and returns to global configuration mode.

**Step 13**    **ip sla reaction-configuration** *operation-number* [**react** *monitored-element*] [**threshold-type** {**never** | **immediate** | **consecutive** [*consecutive-occurrences*] | **xofy** [*x-value y-value*] | **average** [*number-of-probes*]}] [**threshold-value** *upper-threshold lower-threshold*] [**action-type** {**none** | **trapOnly** | **triggerOnly** | **trapAndTrigger**}]

**Example:**

```
Router(config)# ip sla reaction-configuration 777 react connectionLoss threshold-type
consecutive 3 action-type traponly
```

(Optional) Configures certain actions to occur based on events under the control of Cisco IOS IP SLA VCCV Operation.

**Step 14**    **ip sla logging traps****Example:**

```
Router(config)# ip sla logging traps
```

(Optional) Enables the generation of SNMP system logging messages specific to IP SLA trap notifications.

**Step 15**    **ip sla schedule** *operation-number* [**life** {**forever** | *seconds*}] [**start-time** {*hh : mm[: ss]* [*month day* | *day month*] | **pending** | **now** | **after** *hh : mm : ss*}] [**ageout** *seconds*] [**recurring**]

**Example:**

```
Router(config)# ip sla schedule 777 life forever start-time now
```

Configures the scheduling parameters for an IP SLA VCCV operation.

**Step 16**    **exit****Example:**

```
Router(config)# exit
```

Exits global configuration submode and returns to privileged EXEC mode.

## Example for Configuring an IP SLA VCCV Operation

The following example shows how to configure an IP SLA VCCV operation with the proactive threshold monitoring and multioperation scheduling capabilities of the LSP Health Monitor.

In this example, a VC with the identifier 123 has already been established between the PE device and its peer at IP address 192.168.1.103.

IP SLA VCCV operation 777 is configured with operation parameters and reaction conditions, and it is scheduled to begin immediately and run indefinitely.

```
ip sla 777
mpls lsp ping pseudowire 192.168.1.103 123
  exp 5
  frequency 120
  secondary-frequency timeout 30
  tag testgroup
  threshold 6000
  timeout 7000
  exit
!
ip sla reaction-configuration 777 react rtt threshold-value 6000 3000 threshold-type
immediate 3 action-type traponly
ip sla reaction-configuration 777 react connectionLoss threshold-type immediate action-type
traponly
ip sla reaction-configuration 777 react timeout threshold-type consecutive 3 action-type
traponly
ip sla logging traps
!
ip sla schedule 777 life forever start-time now
exit
```

### RTT Thresholds

The **threshold** command configures 6000 milliseconds as the amount of time for a rising threshold to be declared on the monitored pseudowire. The first **ip sla reaction-configuration** command specifies that an SNMP logging trap is to be sent immediately if the round-trip time violates the upper threshold of 6000 milliseconds or the lower threshold of 3000 milliseconds.

### Connection Loss

The second **ip sla reaction-configuration** command specifies that an SNMP logging trap is to be sent immediately if a connection loss occurs for the monitored pseudowire.

### Response Timeout

The **timeout** command configures 7000 seconds as the amount of time that VCCV operation 777 waits for a response from its request packet before a timeout is declared. The **secondary-frequency** command specifies that, if a timeout occurs, the measurement frequency of the operation repeats is to be increased from 120 seconds (the initial measurement frequency that is specified using the **frequency** command) to a faster rate

of 30 seconds. The third **ip sla reaction-configuration** command specifies that an SNMP logging trap is to be sent if three consecutive timeouts occur.

