



Pseudowire Group Switchover Configuration

This chapter provides information about the Pseudowire Group Switchover feature on the Cisco ASR 903 Router.

Prerequisites for Pseudowire Group Switchover

- This feature is supported only by Cisco IOS Release 15.3(3)S or later.
- The remote provider edge (PE) router should be capable of sending group status messages.
- Cisco ASR 903 cannot generate pseudowire group status messages. It can only process the message. To use the pseudowire group switchover feature, the Cisco ASR 903 must be connected with a router that supports the sending of group status messages.

Restrictions for Pseudowire Group Switchover

Cisco ASR 903 supports pseudowire group switchover for Ethernet, Asynchronous Transfer Mode (ATM), and T1/E1 circuit emulation (CEM) pseudowires. However, due to current limitations on Cisco ASR 9000, Ethernet pseudowire switchover in less than one second is not supported.

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Pseudowire Group Switchover

Currently, pseudowire switchovers to the backup pseudowires occur one by one from IOS to platform dataplane and can take up to four seconds for 1000 pseudowires. The group switchover feature reduces this switchover time by efficiently grouping status messages in both Label Distribution Protocol (LDP) and internal Inter-Process Communications (IPCs). Using group switchover feature, 1000 pseudowires can be switched to their backup pseudowires in less than one second.



Note The Pseudowire Group Switchover feature is enabled by default and cannot be disabled.

Configuring Predictive Switchover

In a Multi-Chassis Link Aggregation Group (MC-LAG) or multichassis LACP (mLACP) scenario, predictive switchover improves the performance when the remote PE router's standby pseudowire advertises down (standby) state to the local PE router. This scenario is also applicable for automatic protection switching (APS) for CEM and ATM.

Without predictive switchover, the active pseudowire has to wait for the standby pseudowire to be up before it does a switchover. With predictive switchover configured, the active pseudowire immediately switches over to the standby pseudowire as soon as the active pseudowire goes down, even if the remote state of the standby pseudowire is standby.

Depending on the requirement, the predictive switchover can be configured using either of the following methods:

Configuring Predictive Switchover on Global Configuration Mode

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **l2vpn**
4. **redundancy predictive enabled**
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	l2vpn Example: Router(config)# l2vpn	Enters Layer 2 VPN (L2VPN) configuration mode. To return to the default behavior, use the no form of this command.
Step 4	redundancy predictive enabled Example: Router(config-l2vpn)# redundancy predictive enabled	Enables redundancy predictive mode. To disable redundancy predictive mode, use the no form of the command. By default, redundancy predictive mode is disabled.

	Command or Action	Purpose
Step 5	end Example: <code>Router(config-l2vpn)# end</code>	Returns to privileged EXEC mode.

Configuring Predictive Switchover on per Cross Connect basis

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `l2vpn xconnect context context-name`
4. `redundancy predictive {enabled | disabled}`
5. `end`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <code>Router> enable</code>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: <code>Router# configure terminal</code>	Enters global configuration mode.
Step 3	l2vpn xconnect context context-name Example: <code>Router(config)# l2vpn xconnect context con1</code>	Creates a L2VPN cross connect context and enters cross connect configuration mode. context-name—Name of the cross connect context. To remove the connection, use the no form of this command.
Step 4	redundancy predictive {enabled disabled} Example: <code>Router(config-xconnect)# redundancy predictive enabled</code>	Enables redundancy predictive mode. enabled—enables the predictive mode. disabled—disables the predictive mode.
Step 5	end Example: <code>Router(config-xconnect)# end</code>	Returns to privileged EXEC mode.

Verifying Pseudowire Group Switchover Configurations

You can use various **show** commands to view information specific to pseudowire group switchover configurations.

The following example displays information about Any Transport over MPLS (AToM) virtual circuits (VCs):

```
Router# show l2vpn atom vc destination 2.2.2.2 group remote 100663808
```

Interface	Dest Address	VC ID	Service		Status
			Type	Name	
pw100041	2.2.2.2	1000	p2p	AT0/5/1.1/1/1.1:10/1000	UP

The following example display status of the pseudowire switching point:

```
Router# show l2vpn atom vc destination 2.2.2.2 group remote 100663808 detail
```

```
pseudowire100041 is up, VC status is up PW type: ATM AAL5
  Create time: 01:17:42, last status change time: 00:01:55
  Last label FSM state change time: 01:17:41
  Destination address: 2.2.2.2 VC ID: 1000
  Output interface: Gi0/3/3, imposed label stack {16003}
  Preferred path: not configured
  Default path: active
  Next hop: 11.0.0.2
  Member of xconnect service AT0/5/1.1/1/1.1:10/1000, group right
  Associated member AT0/5/1.1/1/1.1 is up, status is up
  Interworking type is Like2Like
  Service id: 0xb6000015
  Signaling protocol: LDP, peer 2.2.2.2:0 up
  Targeted Hello: 10.1.1.1(LDP Id) -> 2.2.2.2, LDP is UP
  Graceful restart: configured and enabled
  Non stop routing: not configured and not enabled
  PWid FEC (128), VC ID: 1000
  Status TLV support (local/remote)           : enabled/supported
  LDP route watch                             : enabled
  Label/status state machine                  : established, LruRru
  Local dataplane status received              : No fault
  BFD dataplane status received               : Not sent
  BFD peer monitor status received            : No fault
  Status received from access circuit         : No fault
  Status sent to access circuit                : No fault
  Status received from pseudowire i/f         : No fault
  Status sent to network peer                 : No fault
  Status received from network peer           : No fault
  Adjacency status of remote peer             : No fault
  Sequencing: receive disabled, send disabled
  Bindings
  Parameter      Local      Remote
  -----
  Label          514          16003
  Group ID       0            100663808
  Interface      4470         ATM0_1_0_0.1
  MTU            4470         4470
  Control word on (configured: autosense)     on
  PW type        ATM AAL5         ATM AAL5
  VCCV CV type  0x02             0x02
                  LSPV [2]           LSPV [2]
  VCCV CC type  0x02             0x07
```

```

RA [2] CW [1], RA [2], TTL [3]
Status TLV enabled supported
SSO Descriptor: 2.2.2.2/1000, local label: 514
Dataplane:
SSM segment/switch IDs: 4114/4096 (used), PWID: 41
Rx Counters
24 input transit packets, 1872 bytes
0 drops, 0 seq err
Tx Counters
27611 output transit packets, 5466978 bytes
0 drops

```

The following example lists the active/standby segment pairs associated with each peer IP address and group identifier:

```
Router# show ssm group
```

Active IP Address	Standby Group ID	Segment/Switch	Segment/Switch
2.2.2.2	100663808	7384593/7224772	7380496/7228869

The following example displays the number of active/standby segment pairs associated with each peer IP address and group identifier :

```
Router# show ssm group 2.1.1.2 6 summary
```

IP Address	Group ID	Group Members
2.2.2.2	100663808	900

The following example displays the number of pseudowires programmed in hardware with grouping:

```
Router# show platform hardware pp active pw eompls group brief
```

```
Brief L2VPN EoMPLS Pseudo Wire Group Info
```

IP address	Group ID	Count
0x02020202	100663808	900

Troubleshooting the Pseudowire Group Switchover Configuration



Caution We suggest you do not use the debug command without TAC supervision.

Use the **debug platform software atom brief** command to get details on Add Group, Delete From Group, and Group Switchovers.

