



Command Reference



Note

The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

This appendix provides a command reference for those Cisco IOS commands or those aspects of Cisco IOS commands that are unique to ML-Series cards. For information about the standard Cisco IOS Release 12.2 commands, refer to the Cisco IOS documentation set available at <http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/>.

[no] bridge *bridge-group-number* protocol {drpri-rstp | ieee | rstp}

To define the protocol employed by a bridge group, use the **bridge protocol** global configuration command. If no protocol will be employed by the bridge group, this command is not needed. To remove a protocol from the bridge group, use the no form of this command with the appropriate keywords and arguments.

Syntax Description

Parameter	Description
drpri-rstp	The protocol that enables the Dual Resilient Packet Ring Interconnect (DRPRI) feature of the ML-Series cards.
ieee	IEEE 802.1D Spanning Tree Protocol.
rstp	IEEE 802.1W Rapid Spanning Tree Protocol.
<i>bridge-group-number</i>	The identifying number of the bridge group being assigned a protocol.

Defaults

N/A

Command Modes

Global configuration

Usage Guidelines

The protocol DRPRI-RSTP is only employed when configuring ML-Series cards as part of a DRPRI. A bridge group with DRPRI is limited to one protocol, so the bridge group cannot also implement Rapid Spanning Tree Protocol (RSTP) or Spanning Tree Protocol (STP).

Examples

The following example assigns the DRPRI protocol to the bridge group with the bridge group number of 100.

```
Router(config)# bridge 100 protocol drpri-rstp
```

Related Commands

bridge-group

[no] clock auto

Use the **clock auto** command to determine whether the system clock parameters are configured automatically from the Advanced Timing, Communications, and Control/Advanced Timing, Communications, and Control Plus (TCC2/TCC2P) card. When enabled, both daylight savings time and timezone are automatically configured, and the system clock is periodically synchronized to the TCC2/TCC2P card. Use the no form of the command to disable this feature.

Syntax Description This command has no arguments or keywords.

Defaults The default setting is clock auto.

Command Modes Global configuration

Usage Guidelines The no form of the command is required before any manual configuration of summertime, timezone, or clock. The no form of the command is required if Network Time Protocol (NTP) is configured in Cisco IOS. The ONS 15454 SONET/SDH is also configured through Cisco Transport Controller (CTC) to use a NTP or Simple Network Time Protocol (SNTP) server to set the date and time of the node.

Examples Router(config)# **no clock auto**

Related Commands clock

clock timezone

clock set

interface spr 1

Use this command to create a shared packet ring (SPR) interface on an ML-Series card for a resilient packet ring (RPR). If the interface has already been created, this command enters spr interface configuration mode. The only valid spr interface number is 1.

Defaults

N/A

Command Modes

Global configuration

Usage Guidelines

The command allows the user to create a virtual interface for the RPR/SPR. Commands such as **spr wrap** or **spr station-id** can then be applied to the RPR through SPR configuration command mode.

Examples

The following example creates the shared packet ring interface:

```
Router(config)# interface spr 1
```

Related Commands

spr drpri-id
spr-intf-id
spr station-id
spr wrap

[no] ip radius nas-ip-address {hostname | ip-address}

The ML-Series card allows the user to configure a separate nas-ip-address for each ML-Series card. This allows the Remote Authentication Dial In User Services (RADIUS) server to distinguish among individual ML-Series card in the same ONS node. If there is only one ML-Series card in the ONS node, this command does not provide any advantage. The public IP address of the ONS node serves as the nas-ip-address in the RADIUS packet sent to the server.

Identifying the specific ML-Series card that sent the request to the server can be useful in debugging from the server. The nas-ip-address is primarily used for validation of the RADIUS authorization and accounting requests.

If this value is not configured, the nas-ip-address is filled in by the normal Cisco IOS mechanism using the value configured by the **ip radius-source** command. If no value is specified, then the best IP address that routes to the server is used. If no address routing to the server is available, the IP address of the server is used.

Defaults

N/A

Command Modes

Global configuration

Usage Guidelines

This command allows the user to specify the IP address or hostname of attribute 4 (nas-ip-address) in the radius packet.

Examples

The following example creates an IP address for attribute 4 of the RADIUS packet:

```
Router# configure terminal
```

```
Router (config)# [no] ip radius nas-ip-address 10.92.92.92
```

Related Commands

```
aaa new-model
```

```
aaa authentication login
```

microcode fail system reload

In the event of a microcode failure, it configures the ML-Series card to save information to the flash memory and then reboot. The information is saved for use by the Cisco Technical Assistance Center (Cisco TAC). To contact TAC, see the [Obtaining Technical Assistance, page xxxiv](#).

Defaults N/A

Command Modes Global configuration

Usage Guidelines This command and feature is specific to ML-Series card.

Examples ML-Series(config)# **microcode fail system-reload**

Related Commands N/A

[no] pos pdi holdoff *time*

Use this command to specify the time, in milliseconds, to hold off sending the path defect indication (PDI) to the far end when a virtual concatenation (VCAT) member circuit is added to the virtual concatenation group (VCG). Use the no form of the command to use the default value.

Syntax Description

Parameter	Description
<i>time</i>	Delay time in milliseconds, 100 to 1000

Defaults

The default value is 100 milliseconds.

Command Modes

Interface configuration mode (packet-over-SONET/SDH [POS] only)

Usage Guidelines

This value is normally configured to match the setting on the peer terminal equipment (PTE). The time granularity for this command is 1 milliseconds.

Examples

```
Gateway(config)# int pos0
Gateway(config-if)# pos pdi holdoff 500
```

Related Commands

pos trigger defects

[no] pos report *alarm*

Use this command to specify which alarms/signals are logged to the console. This command has no effect on whether alarms are reported to the TCC2/TCC2P and CTC. These conditions are soaked and cleared per Telcordia GR-253. Use the no form of the command to disable reporting of a specific alarm/signal.

Syntax Description	Parameter	Description
	<i>alarm</i>	The SONET/SDH alarm that is logged to the console. The alarms are as follows: all —All link down alarm failures ber_sd_b3 —PBIP BER in excess of SD threshold failure ber_sf_b3 —PBIP BER in excess of SF threshold failure encap —Path signal label encapsulation mismatch failure pais —Path alarm indication signal failure plop —Path loss of pointer failure ppdi —Path payload defect indication failure pplm —Payload label mismatch path prdi —Path remote defect indication failure ptim —Path trace indicator mismatch failure puneq —Path label equivalent to zero failure

Defaults The default is to report all alarms.

Command Modes Interface configuration mode (POS only)

Usage Guidelines This value is normally configured to match the setting on the peer PTE.

Examples

```
Gateway(config)# int pos0
Gateway(config-if)# pos report all
Gateway(config-if)# pos flag c2 1
03:16:51: %SONET-4-ALARM: POS0: PPLM
Gateway(config-if)# pos flag c2 0x16
03:17:34: %SONET-4-ALARM: POS0: PPLM cleared
```

Related Commands pos trigger defects

[non] pos trigger defects *condition*

Use this command to specify which conditions cause the associated POS link state to change. These conditions are soaked/cleared using the delay specified in the **pos trigger delay** command. Use the no form of the command to disable triggering on a specific condition.

Syntax Description	Parameter	Description
	<i>condition</i>	<p>The SONET/SDH condition that causes the link state change. The conditions are as follows:</p> <ul style="list-style-type: none"> all—All link down alarm failures ber_sd_b3—PBIP bit error rate (BER) in excess of signal degrade (SD) threshold failure ber_sf_b3—PBIP BER in excess of SF threshold failure encap—Path Signal Label Encapsulation Mismatch failure pais—Path Alarm Indication Signal failure plop—Path Loss of Pointer failure ppdi—Path Payload Defect Indication failure pplm—Payload label mismatch path prdi—Path Remote Defect Indication failure ptim—Path Trace Indicator Mismatch failure puneq—Path Label Equivalent to Zero failure

Defaults The default is to report all conditions. For a list of all conditions, see the list in the above description.

Command Modes Interface configuration mode (POS only)

Usage Guidelines This value is normally configured to match the setting on the peer PTE.

Examples

```
Gateway(config)# int pos0
Gateway(config-if)# pos trigger defects all
```

Related Commands pos trigger delay

[no] pos trigger delay *time*

Use this command to specify which conditions cause the associated POS link state to change. The conditions specified in the **pos trigger defects** command are soaked/cleared using this delay. Use the no form of the command to use the default value.

Syntax Description	Parameter	Description
	<i>time</i>	Delay time in milliseconds, 200 to 2000

Defaults The default value is 200 milliseconds.

Command Modes Interface configuration mode (POS only)

Usage Guidelines This value is normally configured to match the setting on the peer PTE. The time granularity for this command is 50 milliseconds.

Examples

```
Gateway(config)# int pos0
Gateway(config-if)# pos trigger delay 500
```

Related Commands pos trigger defects

[no] pos scramble-spe

Use this command to enable scrambling.

Syntax Description This command has no arguments or keywords.

Defaults The default value depends on the encapsulation.

Encapsulation	Scrambling
LEX	pos scramble-spe
PPP/HDLC	no pos scramble-spe

Command Modes Interface configuration mode (POS only)

Usage Guidelines This value is normally configured to match the setting on the peer PTE. This command might change the pos flag c2 configuration.

Examples

```
Gateway(config)# int pos0
Gateway(config-if)# pos scramble-spe
```

Related Commands pos flag c2

[no] pos vcat defect {immediate | delayed}

Sets the VCAT defect processing mode to either handle a defects state change the instant it is detected or wait for the time specified by **pos trigger delay**. Use the no form of the command to use the default value.

Syntax Description

Parameter	Description
immediate	Handles a defect state change the instant it is detected.
delayed	Handles the defect after the time specified by the command pos trigger delay . If delay is configured and the circuit is on RPR, then the RPR defect processing will also be delayed by the delay time.

Defaults

The default setting is immediate.

Command Modes

POS interface configuration

Usage Guidelines

Immediate should be used if the VCAT circuit uses unprotected SONET/SDH circuits. Delayed should be run if the VCAT circuit uses SONET protected circuits (bidirectional line switch ring [BLSR] or path protection or SDH protected circuits (Subnetwork connection protection [SNCP] or multiplex section-shared protection ring [MS-SPRing]).

Examples

The following example sets an ML-Series card to delayed:

```
Router(config)# interface pos 1
Router(config-if)# pos vcat defect delayed
```

Related Commands

```
interface spr 1
spr wrap
interface pos 1
pos trigger delay
```

[no] pos vcat resequence {enable | disable}

Enables or disables the Software Link Capacity Adjustment Scheme (SW-LCAS) H4 byte sequence number resequence feature. If an ML-Series card running Software Release 4.6.2 or later is interoperating with an ML-Series card running Software Release 4.6.0 or 4.6.1, then the **pos vcat resequence disable** command must be added to the configuration of the ML-Series card running R4.6.2 or later.

Syntax Description	Parameter	Description
	Enable	Enables the resequencing of the H4 byte sequence numbers when a member is added to the VCAT group or removed from the VCAT group. If both members are up, then Member 0 will have a sequence number of zero (0) and Member 1 will have a sequence number of one (1). If only one member is up, then the sequence number of that member will be zero (0).
	Disables	Disables the resequencing of the H4 byte sequence numbers when a member is added to the VCAT group or removed from the VCAT group. Member 0 will always have a sequence number of zero (0) and Member 1 will always have a sequence number of one (1).

Defaults The default setting is Enable.

Command Modes Per POS port configuration

Usage Guidelines The no form of the command will set the mode to the default.

Examples The following example disables the resequencing of the H4 byte sequence numbers for POS Port 0:

```
Router(config)# int pos 0
Router(config)# pos vcat resequence disable
```

Related Commands None

show controller pos *interface-number* [details]

Use this command to display the status of the POS controller. Use the details argument to obtain additional SONET and POS information for the interface.

Syntax Description	Parameter	Description
	<i>interface-number</i>	Number of the POS interface (0–1)

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command can be used to help diagnose and isolate POS or SONET problems.

Examples

Continuous Concatenation Circuit (CCAT) Show Controller Output Example

```

Router# show controller pos 0
Interface POS0
Hardware is Packet/Ethernet over Sonet
Concatenation: CCAT
Circuit state: IS
PATH
  PAIS      = 0          PLOP      = 0          PRDI      = 0          PTIM      = 0
  PPLM      = 0          PUNEQ     = 0          PPDI      = 0          PTIU      = 0
  BER_SF_B3 = 0          BER_SD_B3 = 0          BIP(B3)   = 20         REI       = 2
  NEWPTR    = 0          PSE       = 0          NSE       = 0

Active Alarms : None
Demoted Alarms: None
Active Defects: None
Alarms reportable to CLI: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3 BER_SD_B3
VCAT_OOU_TPT LOM SQM
Link state change defects: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3
Link state change time   : 200 (msec)

DOS FPGA channel number : 0
Starting STS (0 based)  : 0
VT ID (if any) (0 based): 255
Circuit size             : VC4
RDI Mode                 : 1 bit
C2 (tx / rx)            : 0x01 / 0x01
Framing                  : SDH

Path Trace
Mode                     : off
Transmit String          :
Expected String          :
Received String          :

```

```

Buffer          : Stable
Remote hostname :
Remote interface:
Remote IP addr  :

B3 BER thresholds:
SFBER = 1e-4,   SDBER = 1e-7

5 total input packets, 73842 post-HDLC bytes
0 input short packets, 73842 pre-HDLC bytes
0 input long packets , 0 input runt packets
67 input CRCerror packets , 0 input drop packets
0 input abort packets
0 input packets dropped by ucode

0 total output packets, 0 output pre-HDLC bytes
0 output post-HDLC bytes

Carrier delay is 200 msec

```

VCAT Show Controller Output Example

```

Router# show controller pos 1
Interface POS1
Hardware is Packet/Ethernet over Sonet
Concatenation: VCAT
VCG State: VCG_NORMAL
LCAS Type:NO LCAS
Defect Processing Mode: IMMEDIATE
PDI Holdoff Time: 100 (msec)
Active Alarms : None
Demoted Alarms: None

***** Member 1 *****
ESM State: IS
VCG Member State: VCG_MEMBER_NORMAL
    PAIS      = 0          PLOP      = 0          PRDI      = 0          PTIM      = 0
    PPLM      = 0          PUNEQ     = 0          PPDI      = 0          PTIU      = 0
    BER_SF_B3 = 0          BER_SD_B3 = 0          BIP(B3)   = 16         REI       = 17
    NEWPTR    = 0          PSE       = 0          NSE       = 0

Active Alarms : None
Demoted Alarms: None
Active Defects: None
Alarms reportable to CLI: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3 BER_SD_B3
VCAT_OOU_TPT LOM SQM
Link state change defects: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3
Link state change time   : 200 (msec)

DOS FPGA channel number : 2
Starting STS (0 based)  : 3
VT ID (if any) (0 based) : 255
Circuit size           : VC4
RDI Mode                : 1 bit
C2 (tx / rx)           : 0x01 / 0x01
Framing                 : SDH

Path Trace
Mode                    : off
Transmit String         :
Expected String         :
Received String         :

```

show controller pos interface-number [details]

```

Buffer          : Stable
Remote hostname :
Remote interface:
Remote IP addr  :

B3 BER thresholds:
SFBER = 1e-4,   SDBER = 1e-7

***** Member 2 *****
ESM State: IS
VCG Member State: VCG_MEMBER_NORMAL
  PAIS      = 0      PLOP      = 0      PRDI      = 0      PTIM      = 0
  PPLM      = 0      PUNEQ     = 0      PPDI      = 0      PTIU      = 0
  BER_SF_B3 = 0      BER_SD_B3 = 0      BIP(B3)   = 15     REI       = 35
  NEWPTR    = 0      PSE       = 0      NSE       = 0

Active Alarms : None
Demoted Alarms: None
Active Defects: None
Alarms reportable to CLI: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3 BER_SD_B3
VCAT_OOU_TPT LOM SQM
Link state change defects: PAIS PLOP PUNEQ PTIM PPLM PRDI PPDI BER_SF_B3
Link state change time   : 200 (msec)

DOS FPGA channel number : 3
Starting STS (0 based)  : 24
VT ID (if any) (0 based) : 255
Circuit size           : VC4
RDI Mode                : 1 bit
C2 (tx / rx)           : 0x01 / 0x01
Framing                 : SDH

Path Trace
Mode                    : off
Transmit String :
Expected String :
Received String :
Buffer              : Stable
Remote hostname :
Remote interface:
Remote IP addr  :

B3 BER thresholds:
SFBER = 1e-4,   SDBER = 1e-7

13 total input packets, 5031 post-HDLC bytes
0 input short packets, 5031 pre-HDLC bytes
0 input long packets , 0 input runt packets
0 input CRCError packets , 0 input drop packets
0 input abort packets
0 input packets dropped by ucode

13 total output packets, 5031 output pre-HDLC bytes
5031 output post-HDLC bytes

Carrier delay is 200 msec

```

Related Commands

```

show interface pos
clear counters

```


show interface pos *interface-number*

Use this command to display the status of the POS.

Syntax Description	Parameter	Description
	<i>interface-number</i>	Number of the POS interface (0–1)

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command can be used to help diagnose and isolate POS or SONET/SDH problems.

Examples

```
Gateway# show interfaces pos0
POS0 is up, line protocol is up
  Hardware is Packet/Ethernet over Sonet
  Description: foo bar
  MTU 4470 bytes, BW 155520 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, crc 32, loopback not set
  Keepalive set (10 sec)
  Scramble enabled
  Last input 00:00:09, output never, output hang never
  Last clearing of "show interface" counters 05:17:30
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec

    2215 total input packets, 223743 post-HDLC bytes
    0 input short packets, 223951 pre-HDLC bytes
    0 input long packets , 0 input runt packets
    0 input CRCerror packets , 0 input drop packets
    0 input abort packets
    0 input packets dropped by ucode

    0 packets input, 0 bytes
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 parity
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

  2216 total output packets, 223807 output pre-HDLC bytes
  224003 output post-HDLC bytes

  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 applique, 8 interface resets
  0 output buffer failures, 0 output buffers swapped out
  0 carrier transitions
```

■ `show interface pos interface-number`

Related Commands `show controller pos`
`clear counters`

show ons alarm

Use this command to display all the active alarms on the ML-Series card running the Cisco IOS CLI session.

Syntax Description This command has no arguments or keywords.

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command can be used to help diagnose and isolate card problems.

Examples

```

router# show ons alarm
Equipment Alarms
Active: CONTBUS-IO-A CTNEQPT-PBWORK

Port Alarms
  POS0 Active: None
  POS1 Active: None
  FastEthernet0 Active: None
  FastEthernet1 Active: None
  FastEthernet2 Active: None
  FastEthernet3 Active: None
  FastEthernet4 Active: None
  FastEthernet5 Active: None
  FastEthernet6 Active: None
  FastEthernet7 Active: None
  FastEthernet8 Active: None
  FastEthernet9 Active: None
  FastEthernet10 Active: None
  FastEthernet11 Active: None

POS0

Active Alarms : None
Demoted Alarms: None

POS1 VCG State: VCG_NORMAL
VCGAT Group
Active Alarms : None
Demoted Alarms: None

Member 0
Active Alarms : None
Demoted Alarms: None

Member 1
Active Alarms : None
Demoted Alarms: None

```

Related Commands

show controller pos
show ons alarm defects
show ons alarm failures

show ons alarm defect eqpt

This command displays the equipment layer defects.

Syntax Description This command has no arguments or keywords.

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command displays the set of active defects for the equipment layer and the possible set of defects that can be set.

Examples

```
router# show ons alarm defect eqpt
Equipment Defects
Active: CONTBUS-IO-B
Reportable to TCC/CLI: CONTBUS-IO-A CONTBUS-IO-B CTNEQPT-PBWORK CTNEQPT-PBPROT EQPT
RUNCFG-SAVENEED ERROR-CONFIG
```

Related Commands show ons alarm failures

show ons alarm defect port

This command displays the port layer defects.

Syntax Description This command has no arguments or keywords.

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command displays the set of active defects for the link layer and the possible set of defects that can be set. Note that the TPTFAIL defect can only occur on the POS ports and the CARLOSS defect can only occur on the Ethernet ports.

Examples

```
router# show ons alarm defect port
Port Defects
  POS0
  Active: TPTFAIL
  Reportable to TCC: CARLOSS TPTFAIL
  POS1
  Active: TPTFAIL
  Reportable to TCC: CARLOSS TPTFAIL
  GigabitEthernet0
  Active: None
  Reportable to TCC: CARLOSS TPTFAIL
  GigabitEthernet1
  Active: None
  Reportable to TCC: CARLOSS TPTFAIL
```

Related Commands show interface
show ons alarm failures

show ons alarm defect pos *interface-number*

This command displays the link layer defects.

Syntax Description	Parameter	Description
	<i>interface-number</i>	Number of the interface (0-1)

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command displays the set of active defects for the POS layer and the possible set of defects that can be set.

Examples

```
router# show ons alarm defect pos0
POS0
Active Defects: None
Alarms reportable to TCC/CLI: PAIS PRDI PLOP PUNEQ PPLM PTIM PPDI BER_SF_B3 BER_SD_B3
```

Related Commands

- show controller pos
- show ons alarm failures

show ons alarm failure eqpt

This command displays the equipment layer failures.

Syntax Description This command has no arguments or keywords.

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command displays the set of active failures for the equipment layer. If an EQPT alarm is present, the Board Fail defect that was the source of the alarm is displayed.

Examples

```
router# show ons alarm failure eqpt
Equipment
Active Alarms: None
```

Related Commands show ons alarm defect

show ons alarm failure port

This command displays the port layer failures.

Syntax Description This command has no arguments or keywords.

Defaults N/A

Command Modes Privileged EXEC

Usage Guidelines This command displays the set of active failures for the link layer.

Examples

```
router# show ons alarm failure port
Port Alarms
  POS0 Active: TPTFAIL
  POS1 Active: TPTFAIL
  GigabitEthernet0 Active: None
  GigabitEthernet1 Active: None
```

Related Commands

- show interface
- show ons alarm defect

show ons alarm failure pos *interface-number*

This command displays the link layer failures.

Syntax Description	Parameter	Description
	<i>interface-number</i>	Number of the interface (0–1)
Defaults	N/A	
Command Modes	Privileged EXEC	
Usage Guidelines	This command displays the set of active failures for a specific interface at the POS layer. The display also specifies if an alarm has been demoted, as defined in Telcordia GR-253.	
Examples	<pre>router# show ons alarm failure pos 0 POS0 Active Alarms : None Demoted Alarms: None</pre>	
Related Commands	show controller pos show ons alarm defect	

spr drpri-id { 0 | 1 }

Creates a DRPRI identification number of 0 or 1 to differentiate between the ML-Series cards paired for the DRPRI protection feature.

Defaults N/A

Command Modes SPR interface configuration

Usage Guidelines DRPRI paired sets share the same SPR station ID, so the DRPRI identification number helps identify a particular card in a DRPRI pair.

Examples The following example assigns a DRPRI identification number of zero to the SPR interface on an ML-Series card:

```
Router(config)# interface spr 1  
Router(config-if)# spr drpri-id 0
```

Related Commands

- interface spr 1
- spr-intf-id
- spr station-id
- spr wrap

spr-intf-id *shared-packet-ring-number*

Assigns the POS interface to the SPR interface.

Syntax Description	Parameter	Description
	<i>shared-packet-ring-number</i>	The only valid shared-packet-ring-number (SPR number) is 1.

Defaults N/A

Command Modes POS interface configuration

Usage Guidelines

- The SPR number must be 1, which is the same SPR number assigned to the SPR interface.
- The members of the SPR interface must be POS interfaces.
- An SPR interface is configured similarly to a EtherChannel (port-channel) interface. Instead of using the **channel-group** command to define the members, you use the **spr-intf-ID** command. Like port-channel, you then configure the SPR interfaces instead of the POS interface.

Examples The following example assigns an ML-Series card POS interface to an SPR interface with a shared-packet-ring-number of 1:

```
Router(config)# interface pos 0
Router(config-if)# spr-intf-id 1
```

Related Commands

```
interface spr 1
spr drpri-id
spr station-id
spr wrap
```

[no] spr load-balance { auto | port-based }

Specifies the RPR load-balancing scheme for Unicast packets.

Syntax Description	Parameter	Description
	auto	The default auto option balances the load based on the MAC addresses or source and destination addresses of the IP packet.
	port-based	The port-based load balancing option maps even ports to the POS 0 interface and odd ports to the POS 1 interface.

Defaults The default setting is auto.

Command Modes SPR interface configuration

Examples The following example configures an SPR interface to use port-based load balancing:

```
Router(config)# interface spr 1
Router(config-if)# spr load-balance port-based
```

Related Commands interface spr 1

spr station-id *station-id-number*

Configures a station ID.

Syntax Description	Parameter	Description
	<i>station-id-number</i>	The user must configure a different number for each SPR interface that attaches to the RPR. Valid station ID numbers range from 1 to 254.

Defaults N/A

Command Modes SPR interface configuration

Usage Guidelines The different ML-Series cards attached to the RPR all have the same interface type and number, spr1. The station ID helps to differentiate the SPR interfaces.

Examples The following example sets an ML-Series card SPR station ID to 100:

```
Router(config)# interface spr 1
Router(config-if)# spr station-id 100
```

Related Commands

- interface spr 1
- spr drpri-id
- spr-intf-id
- spr wrap

spr wrap { immediate | delayed }

Sets the RPR wrap mode to either wrap traffic the instant it detects a link state change or to wrap traffic after the carrier delay, which gives the SONET protection time to register the defect and declare the link down.

Syntax Description	Parameter	Description
	immediate	Wraps RPR traffic the instant it detects a link state change.
	delayed	Wraps RPR traffic after the carrier delay time expires.

Defaults The default setting is immediate.

Command Modes SPR interface configuration

Usage Guidelines Immediate should be used if RPR is running over unprotected SONET/SDH circuits. Delayed should be run for SONET protected circuits, such as BLSR or path protection, or SDH protected circuits, such as SNCP or MS-SPRing.

Examples The following example sets an ML-Series card to delayed:

```
Router(config)# interface spr 1
Router(config-if)# spr wrap delayed
```

Related Commands

- interface spr 1
- spr drpri-id
- spr-intf-id
- spr station-id

xconnect

Use the **xconnect** interface configuration command at customer-edge (CE) or service provider-edge customer-located equipment (PE-CLE) ingress and egress Ethernet ports or dot1Q VLAN subinterfaces with a destination and virtual connection identifier (VC ID) to route Layer 2 packets over a specified point-to-point VC by using Ethernet over multiprotocol label switching (EoMPLS). Use the no form of this command on both edge devices to delete the VC.

xconnect destination vc-id encapsulation mpls

no xconnect



Note

This command replaces the **mpls l2transport route** interface configuration command.

Syntax Description

<i>destination</i>	The destination label distribution protocol (LDP) IP address of the remote provider edge device. The IP address cannot be an IP address on the route on which the command is entered.
<i>vc-id</i>	Assign a VC ID for the virtual connection between the two peer provider edge devices. The range is 1 to 4294967295.
encapsulation mpls	Specify the MPLS data encapsulation method.



Note

Though visible in the command-line help strings, the **pw-class** keyword is not supported.

Defaults

There are no point-to-point connections configured.

Command Modes

Interface configuration

Usage Guidelines

An MPLS VC runs across an MPLS cloud to connect Ethernet interfaces on two PE-CLE devices at each edge of the service provider network. You must enter the command at the PE device at each edge of the service provider network to establish a bidirectional virtual connection, which consists of two unidirectional label-switched paths (LSPs). A VC is not established if it is not properly defined from both ends.

For the *destination* parameter, specify the LDP IP address of the other PE-CLE device; do not specify the IP address of the device on which you are entering the command.

The *vc-id* must be unique for each pair of provider edge devices. Therefore, in large networks, you should keep track of the VC ID assignments to ensure that a VC ID is not assigned more than once.

Examples

This example shows how to establish an EoMPLS tunnel between the PE1 VLAN 3 interfaces and the PE2 VLAN 4 interface. PE1 has IP address 10.0.0.1/32 that PE2 discovers through routing and PE2 has IP address 20.0.0.1/32 that PE1 discovers through routing.

At the PE1 interface:

```
Switch(config)# interface vlan 3  
Switch(config-if)# xconnect 20.0.0.1 123 encapsulation mpls
```

At the PE2 interface:

```
Switch(config)# interface vlan 4  
Switch(config-if)# xconnect 10.0.0.1 123 encapsulation mpls
```

Related Commands show mpls l2transport route

