4. **end**
or
commit

DETAILED STEPS

	Command or Action	Purpose
Step 1	**`configure`** **Example:** `RP/0/RSP0/CPU0:router# configure`	Enters global configuration mode.
Step 2	**`interface MgmtEth`** *`interface-path-id`* **Example:** `RP/0/RSP0/CPU0:router(config)# interface MgmtEth 0/RSP0/CPU0/0`	Enters interface configuration mode and specifies the Management Ethernet interface name and instance.
Step 3	**`speed`** `{`**`10`** `|` **`100`** `|` **`1000`**`}` **Example:** `RP/0/RSP0/CPU0:router(config-if)# speed 100`	Configures the interface speed parameter. On a Cisco ASR 9000 Series Router, valid **speed** options are **spemn(a)ndl6(d)]TJ/F3 1 T663f2.5 0 TD.0221 Tc-.00}**

•

If the TTL is non-zero, copy of an unknown organizationally-specific TLV is maintained, for later access through network management.

Supported LLDP Functions

The Cisco ASR 9000 Series Router supports these LLDP functions:

- IPv4 and IPv6 management addresses—In general, both IPv4 and IPv6 addresses are advertised if

DETAILED STEPS

	Command or Action	Purpose
Step 1		

Configuring Global LLDP Operational Characteristics

The "LLDP Default Configuration" section on page 52

Figure 7 shows an example of CFM loopback message flow between a MEP and MIP.

Figure 7 Loopback Messages

Loopback messages can be padded with user-specified data. This allows data corruption to be detected in the network. They also carry a sequence number which allows for out-of-order frames to be detected.

Except for one-way delay and jitter measurements, loopback messages can also be used for Ethernet SLA, if the peer does not support delay measurement.

- Loss of continuity.
- Receipt of AIS messages.
- Failure in the underlying transport, such as when an interface is down.

Received AIS messages can be used to

For more details about E-LMI messages and their supported information elements, refer to the

Step 6 **`frame window`** *`window`*

Example:

```
RP/0/RSP0/CPU0:router(config-eoam-lm)# frame
window 60
```

Verifying the CFM Configuration

Configuring Ethernet SLA

This section describes how to configure Ethernet SLA.

Ethernet SLA Configuration Guidelines

Configuration Examples for Ethernet OAM

```
 X - Cross-connect (wrong MAID)  U - Unexpected (cross-check)
 P - Peer port down

Domain foo (level 6), Service bar
```

```
Domain fred (level 5), Service barney
Up MEP on GigabitEthernet0/1/0/0.234, MEP-ID 2
================================================================================
  Interface state: Up      MAC address: 1122.3344.5566
  Peer MEPs: 3 up, 2 with errors, 0 timed out (archived)
  Cross-check defects: 0 missing, 0 unexpected

  CCM generation enabled:  Yes (Remote Defect detected: Yes)
  CCM defects detected:    R - Remote Defect received
                           P - Peer port down
                           C - Config (our ID received)
  AIS generation enabled:  Yes (level: 6, interval: 1s)
  Sending AIS:             Yes (to higher MEP, started 01:32:56 ago)
  Receiving AIS:           No
```

Example 3: Verbose

The following example shows how to display verbose statistics for MEPs in a domain service:

Standards

- All members of a bundle must be POS.
- The Cisco ASR 9000 SIP-700 line card can physically accomodate upto 32 POS link bundles.
-

Figure 6 Failure Modes

These are the failure categories:

-

Figure 11 VPLS Pseudowires in One Redundancy Group

Figure 12 VPLS Pseudowires in Two Redundancy Groups

Figure 13 H-VPLS: EoMPLS over Access Pseudowire

Configuring Multichassis Link Aggregation

Perform these tasks to configure Multichassis Link Aggregation (MC-LAG):

Configuring the Access Bundle for the Subscriber-Facing Side

The configuration of the access bundle f

```
 description Connected to DHD Gi0/0/0/0
 bundle id 1 mode active
 lacp period short
 no shutdown
!
interface GigabitEthernet0/0/0/3
 description Connected to POA2 Gi0/0/0/3
 ipv4 address 1.2.3.1 255.255.255.0
 proxy-arp
 no shutdown
!
router static
 address-family ipv4 unicast
  5.4.3.2/32 1.2.3.2
 !
!
mpls ldp
 router-id 5.4.3.1
 discovery targeted-hello accept
 log
  neighbor
 !
 interface GigabitEthernet0/0/0/3
 !
!
```

On POA 2:

```
redundancy
 iccp
  group 1
   mlacp node 2
   mlacp system mac 000d.000e.000f
   mlacp system priority 1
   member
    neighbor 5.4.3.1
   !
  !
 !
!
interface B1
```

For example, if you want to capture Ethernet traffic that is sent by host A to host B, and both are connected to a hub, just attach a traffic analyzer to this hub. All other ports see the traffic between hosts A and B (Figure 17).

Figure 17 Traffic Mirroring Operation on a Hub

mirrored traffic streams is combined at the destination port. The result is that the traffic that comes out

How to Configure ACL-Based Traffic Mirroring

Prerequisites

Configuring Virtual Loopback and Null Interfaces on the Cisco ASR 9000 Series Router

Related Documents

Related Topic	Document Title

Standards

MIBs

Before configuring Channelized SONET/SDH, be sure that the following tasks and conditions are met:

- You have at least one of the following SPAs installed in your chassis:

  Cisco 1-Port Channelized OC-3/STM-1 SPA

  Cisco 2-Port Channelized OC-12c/DS0 SPA

  Cisco 1-Port Channelized OC-48/STM-16 SPA

-

Figure 25 shows the VTG paths that can be configured.

Step 9

DETAILED STEPS

	Command or Action	Purpose
Step 1	`aps group` *number* **Example:** `RP/0/RSP0/CPU0:router(config)# aps group 1`	Adds an APS group with a specified number and enters APS group configuration mode. • Use the **aps group** command in global configuration mode. • To remove a group, use the **no** form of this command, as in: **no aps group** , where the value range is from 1 to 255. **Note** To use the **aps group**

Step 12	`mode mode`
	
	Example:
	`RP/0/0/CPU0:router(config-e3)#mode e1`
		Sets the mode of interface. The modes are:
		• **e1**

Figure 30 shows the SDH AU4 paths that can be configured on the CEoP SPA.

Figure 30 SDH AU4 Paths

Default Configuration Values

Step 4	**controller sonet** *interface-path-id*	Enters controller configuration submode and specifies the SDH controller name and instance identifier with the

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure** **Example:** `RP/0/RSP0/CPU0:router# configure`	

Configuring Payload Size

To specify the number of bytes encapsulated into a single IP packet, use the **cem payload** command. The size argument specifies the number of bytes in the payload of each packet. The range is from 32 to 1312

```
 au 3
  mode c11-t1
commit
```

In case of structure agnostic cem interface:

```
controller T1 0/0/2/0/1/1/4
 cem-group unframed
```

In case of structure aware cem interface:

```
controller T1 0/0/2/0/1/7/1
```

Configuring a Hold-off Timer to Prevent Fast Reroute from Being Triggered

•

Cisco 1-Port Channelized OC-48/STM-16 SPA

This section describes the types of loopback supported on the 1-Port Channelized OC-48/STM-16 SPA:

-

Cisco 2-Port and 4-Port Clear Channel T3/E3 SPA

This section describes the types of loopback supported on the 2-Port and 4-Port Clear Channel T3/E3 SPA:

- Local loopback
- Network payload loopback (Configure the local framer to send all data received from the remote side

What to Do Next

- Modify the default configuration that is running on the T3 controller you just configured, as described in the

What to Do Next

- Modify the default configuration that is running on the T3 controller you just configured, as

- You have one of the following SPAs installed:

Step 3

Configuring Dense Wavelength Division Multiplexing Controllers on the Cisco ASR 9000 Series Router

This module describes the configuration of dense wavelength division multiplexing (DWDM)

Configuring Proactive FEC-FRR Triggering

Use the following procedure to configure automatic triggering of Forward Error Correction-Fast Re-Route (FEC-FRR).

SUMMARY STEPS

Prerequisites

Before you can modify the default PVC configuration, you must create the PVC on a POS subinterface, as described in the "Creating a Point-to-Point POS Subinterface with a PVC" section on page 496.

Restrictions

- The DLCI (or PVC identifier) must match on both ends of the PVC for the connection to

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure** **Example:** `RP/0/RSP0/CPU0:router# configure`	Enters global configuration mode.
Step 2	**interface pos** *interface-path-id.subinterface* **Example:** `RP/0/RSP0/CPU0:router(config)# interface pos 0/3/0/1.1`	

Configuring a POS Interface with PPP Encapsulation: Example

Contents

•

Table 20 provides a high-level overview of the tasks required to configure a T3 serial interface on the 1-Port Channelized OC-48/STM-16 SPA

Cisco HDLC Encapsulation

7. **exit**
8. **exit**
9. Repeat Step 1 through Step 8 to bring up the interface at the other end of the connection.
10. **show ipv4 interface brief**
11. **show interfaces s26.0erfa2 132.4sa-pa(s)cdef**

What to Do Next

Step 3	**pvc** *dlci* **Example:** `RP/0/0RP0/CPU0:router(config-if)# pvc 100`	Enters serial Frame Relay PVC configuration mode for the specified PVC.
Step 4	**encap** {**cisco** | **ietf**} **Example:** `RP/0/0RP0/CPU0:router(config-fr-vc)# encapsulation aal5`	Configures the encapsulation for a Frame Relay PVC.
Step 5	**service-policy** {**input** | **output**} *policy-map* **Example:** `RP/0/0RP0/CPU0:router (config-subif)# service-policy output policy1`	Attaches a policr1 75dAto

Configuring Frame Relay on the Cisco ASR 9000 Series Router

This module describes the optional configurable Frame Relay parameters available on

This configuration creates the controller for a generic multilink bundle. The controller ID number is the zero-based index of the controller chip. Currently, the SPAs that support multilink Frame Relay have only one controller per bay; therefore, the controller ID number is always zero (0).

Multilink Bundle Interface

After you create the multilink bundle, you create a multilink bundle interface that allows Frame Relay encapsulation, using the following commands:

interface multilink

encapsulation

DETAILED STEPS

Step 9 **`channel-group`** *`channel-group-number`*

Example:

```
RP/0/RSP0/CPU0:router(config-t1)# channel-group 0
```

Configuring PPP Authentication

This section contains the following procedures:

Enabling PAP, CHAP, and MS-CHAP Authentication

This task explains how to enable PAP, CHAP, and MS-CHAP authentication on a serial or POS interface.

Prerequisites

You must enable PPP encapsulation on the interface with the **encapsulation ppp** command, as described

Disabling an Authentication Protocol

This section contains the following procedures:

Disabling PAP Authentication on an Interface

This task explains how to disable PAP authentication on a serial or POS interface.

5. **keepalive** { _ | **disable**}[ ]
6. **exit**
7. **interface**

Step 5 **keepalive** {*interval* | **disable**}[*retry*]

Example:

DETAILED STEPS

Command or Action	Purpose

Example 2:

```
  Input Reassembled packets 0           Input Reassembled bytes 0

Multilink0/4/3/0/5 is up, line protocol is up
```

[redacted]

[redacted]

- You must have configured a Gigabit Ethernet interface, a 10-Gigabit Ethernet interface, or an Ethernet bundle interface.

Information About Configuring 802.1Q VLAN Interfaces

Configuration Examples for VLAN

Failure Detection in Cisco ASR 9000 Series nV Edge System

In the Cisco ASR 9000 Series nV Edge system, when the Primary DSC node fails, the RSP in the Backup DSC node becomes Primary. It executes the duties of the master RSP that hosts the active set of control plane processes. In a normal scenario of nV Edge System where the Primary and Backup DSC nodes are hosted on separate racks, the failure detection for the Primary DSC happens through communication between the racks.

These mechanisms are used to detect RSP failures across rack boundaries:

- FPGA state information detected by the peer RSP in the same chassis is broadcast over the control links. This information is sent if any state change occurs and periodically every 200ms.
- The UDLD state of the inter rack control or data links are sent to the remote rack, with failures detected at an interval of 500ms.
- A keep-alive message is sent between RSP cards through the inter rack control links, with a failure