

Ethernet Interface Commands

This module provides command line interface (CLI) commands for configuring Ethernet interfaces on the Cisco ASR 9000 Series Router.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

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carrier-delay

To delay the processing of hardware link down notifications, use the **carrier-delay** command in interface configuration mode.

Note

- The **carrier-delay** command is active only when both **up** and **down** are configured from the host.
- If this configuration is not used, the default value is determined by the underlying driver, and may vary depending on whether auto-negotiation is enabled. The default value is chosen to provide enough time for the hardware link to stabilize after state change and to protect the system from excessive link flaps.
- If a value of 0 is set, carrier-delay is disabled in that direction.
- The range of carrier-delay on access port of ASR 9000v is 1 to 60000 msec. If a value of 0 is set, the default value of 100 msec is applied. A value greater than 60000 msec will be ignored and **show interfaces** output will display the previously configured msec.

Note

- In the production environments, do not set the carrier-delay up value to 0 ms.
- Test the carrier-delay timer settings to confirm that they align with the specific requirements of the network environment and provide an effective balance between link stability and timely failure restoration. Further tuning may be necessary during production to adapt to evolving network conditions.
- For links with physical-layer instability, such as microwave links or long-haul optical paths with symbol errors or link fault history events, use a carrier-delay up value greater than the default to prevent control plane churn during link recovery cycles.

For interfaces on the following Cisco ASR 9000 Series Routers line cards, configure carrier-delay down to 300 ms or greater:

- A9K-16X100GE-TR
- A99-32X100GE-TR
- A99-16X100GE-X-SE
- A9K-20HG-FLEX-SE
- A9K-20HG-FLEX-TR
- A99-24HG-FLEX-SE
- A99-24HG-FLEX-TR
- A99-32X100GE-X-SE
- A99-32X100GE-X-TR
- A9K-8HG-FLEX-SE

- A9K-8HG-FLEX-TR

carrier-delay {**down** *milliseconds* [**up** *milliseconds*] | **up** *milliseconds* [**down** *milliseconds*]}

Syntax Description

down *milliseconds*	Length of time, in milliseconds, to delay the processing of hardware link down notifications. Range is from 0 through 2147483648.
up *milliseconds*	Length of time, in milliseconds, to delay the processing of hardware link up notifications. Range is from 0 through 2147483648.

Command Default

No carrier-delay is manually configured, there is a default carrier-delay setting of 10 msec up and 0 msec down.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	The default value used when there is no carrier-delay configuration changed from 0 to being defined by each driver.
Release 4.2.0	The range for both down and up was increased to 0 through 2147483648.
Release 3.7.2	This command was introduced.

Usage Guidelines

When you delay the processing of hardware link down notifications, the higher layer routing protocols are unaware of a link until that link is stable.

If the **carrier-delay down** *milliseconds* command is configured on a physical link that fails and cannot be recovered, link down detection is increased, and it may take longer for the routing protocols to re-route traffic around the failed link.

In the case of very small interface state flaps, running the **carrier-delay down** *milliseconds* command prevents the routing protocols from experiencing a route flap.

Note Enter the **show interface** command to see the current state of the carrier-delay operation for an interface. When no carrier-delay is manually configured, carrier-delay displays the default information of 10 msec up.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to delay the processing of hardware link down notifications:

```
RP/0/RSP0/CPU0:router(config-if)# carrier-delay down 10
```

The following example shows how to delay the processing of hardware link up and down notifications:

```
RP/0/RSP0/CPU0:router(config-if)# carrier-delay up 100 down 100
```

Related Commands

Command	Description
dampening	Turns on event dampening.

clear lldp

To reset Link Layer Discovery Protocol (LLDP) traffic counters or LLDP neighbor information, use the **clear lldp** command in EXEC mode.

clear lldp {**counters** | **table**}

Syntax Description

counters	Specifies that LLDP traffic counters are cleared.
table	Specifies that LLDP information in the neighbor table is cleared.

Command Default

LLDP traffic counters are not reset, and LLDP neighbor information is not cleared.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

To reset counters from the **show lldp traffic** command, use the **clear lldp counters** command. To clear neighbor information displayed by the **show lldp neighbors** command, use the **clear lldp table** command.

Task ID

Task ID	Operation
ethernet-services	read, write

The following example shows how to clear the LLDP counters and display LLDP traffic. The output from the **show lldp traffic** command shows that all the traffic counters have been reset to zero.

```
RP/0/RSP0/CPU0:router# clear lldp counters
RP/0/RSP0/CPU0:router# show lldp traffic
LLDP traffic statistics:
        Total frames out: 0
        Total entries aged: 0
        Total frames in: 0
        Total frames received in error: 0
        Total frames discarded: 0
        Total TLVs discarded: 0
        Total TLVs unrecognized: 0
```

The following example shows how to clear the LLDP table. The output of the **show lldp neighbors** command shows that all information has been deleted from the table.

```
RP/0/RSP0/CPU0:router# clear lldp table
RP/0/RSP0/CPU0:router# show lldp neighbors
Capability codes:
    (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
    (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
```

```
Device ID          Local Intf     Hold-time  Capability      Port ID
```

Related Commands

Command	Description
show lldp neighbors, on page 46	Displays information about LLDP neighbors.
show lldp traffic, on page 49	Displays statistics for LLDP traffic.

clear mac-accounting (Ethernet)

To clear Media Access Control (MAC) accounting statistics, use the **clear mac-accounting** command in EXEC mode.

clear mac-accounting {**GigabitEthernet** | **TenGigE**} *interface-path-id* [**location** *node-id*]

Syntax Description

{**GigabitEthernet** | **TenGigE**}	Type of Ethernet interface whose MAC accounting statistics you want to clear. Enter **GigabitEthernet**, **TenGigE**.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
location *node-id*	(Optional) Clears MAC accounting statistics for the designated node. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.1	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operations
interface	read, write
basic-services	read, write

Examples

This example shows how to clear all MAC accounting statistics for the TenGigE port at 1/0/0/1:

```
RP/0/RSP0/CPU0:router# clear mac-accounting TenGigE 0/1/5/0 location 1/0/0/1
```

Related Commands

Command	Description
mac-accounting, on page 23	Generates accounting information for IP traffic based on the source and destination MAC addresses on LAN interfaces.
show mac-accounting (Ethernet), on page 51	Displays MAC accounting statistics for an interface.

crc-ber auto-recover

To enable Cyclic Redundancy Check (CRC) Bit Error Rate (BER) auto recover, use the **crc-ber auto-recover** command in wanphy configuration mode.

crc-ber auto-recover

Syntax Description

This command has no keywords or arguments.

Command Default

Cyclic Redundancy Check (CRC) Bit Error Rate (BER) auto recover is disabled by default.

Command Modes

Wanphy configuration

Command History

Release	Modification
Release 7.4.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable Cyclic Redundancy Check (CRC) Bit Error Rate (BER) reporting.

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/1/0/3
RP/0/RSP0/CPU0:router(config-wanphy)# crc-ber auto-recover
RP/0/RSP0/CPU0:router(config-wanphy)#
```

Related Commands

Command	Description
report sf-ber disable	Disables SF BER reporting.
show controllers wanphy	Displays alarms, registers, and module information for a 10-Gigabit Ethernet WAN PHY controller.
threshold sf-ber	Configures the threshold of the SF BER that is used to trigger a link state change.
report crc-ber	

flow-control

To enable the sending of flow-control pause frames, use the **flow-control** command in interface configuration mode. To disable flow control, use the **no** form of this command.

flow-control {**bidirectional** | **egress** | **ingress**}

Syntax Description

bidirectional	Enables flow-control for egress and ingress direction.
egress	Pauses egress traffic if IEEE 802.3x PAUSE frames are received.
ingress	Sends IEEE 802.3x PAUSE frames in case of congestion with ingress traffic.

Command Default

If auto-negotiate is enabled on the interface, then the default is negotiated.

If auto-negotiate is disabled on the interface, then the sending of flow-control pause frames is disabled for both egress and ingress traffic.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.7.2	This command was first introduced.
Release 4.2.3	This command was supported on 1 Gigabit Ethernet optical and copper SFPs.

Usage Guidelines



Note When you explicitly enable the sending of flow-control pause frames, the value you configured with the **flow-control** command overrides any auto-negotiated value. This prevents a link from coming up if the value you set with the **flow-control** command conflicts with the allowable settings on the other end of the connection.



Note The **flow-control** command is supported on Gigabit Ethernet, TenGigE interfaces only; the **flow-control** command is not supported on Management Ethernet Interfaces.



Note The **flow-control** command syntax options may vary, depending on the type of PLIM or SPA that is installed in your router.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable the sending of flow-control pause frames for ingress traffic on the TenGigE interface 0/3/0/0:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RSP0/CPU0:router(config-if)# flow-control ingress
```

interface (Ethernet)

To specify or create an Ethernet interface and enter interface configuration mode, use the **interface (Ethernet)** command in Global Configuration mode. Use the **no** form of the command to remove the configuration.

interface {**GigabitEthernet** | **TenGigE**} *interface-path-id*

Syntax Description

GigabitEthernet	Specifies or creates a Gigabit Ethernet (1000 Mbps) interface.
TenGigE	Specifies or creates a Ten Gigabit Ethernet (10 Gbps) interface.
interface-path-id	Physical interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

None

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

To specify a physical interface, use the *interface-path-id* format: *rack/slot/module/port/sub-port* (slashes are required). These are the definitions of each component:

- *rack*: Chassis number of the rack.
- *slot*: Physical slot number of the line card.
- *module*: Module number. For non-modular line cards, this is always 0. For modular line cards, use the appropriate module number as per your hardware documentation.
- *port*: Physical port number of the interface.
- *sub-port* (Optional): Breakout lane number of the logical interface when the physical port is operating in breakout mode.



Note Ten GigE interfaces will not show egress statistics when loopback line is configured because the loopback is closed at the interface controller level, before the Network Processor (NP). But on One GigE interfaces the line loopback is closed in the NP.

Task ID

Task ID	Operation
interface	read, write

This example shows how to enter interface configuration mode for a Ten Gigabit Ethernet interface:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/4/0/0
RP/0/RSP0/CPU0:router(config-if)#
```

Related Commands

Command	Description
interface (Ethernet), on page 13	Specifies or creates an Ethernet interface and enters interface configuration mode.

lldp

To enable the Link Layer Discovery Protocol (LLDP) globally for both transmit and receive operation on the system, use the **lldp** command in Global Configuration mode. To disable LLDP, use the **no** form of this command.

lldp

Syntax Description

This command has no keywords or arguments.

Command Default

LLDP is disabled.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.
Release 5.3.1	The **lldp subinterfaces enable** was introduced.

Usage Guidelines

When you enable LLDP globally using the **lldp** command, LLDP is not enabled on subinterfaces or bundle subinterfaces by default. This is to prevent the LLDP process from consuming high CPU cycles. In order to enable LLDP on subinterfaces and bundle subinterfaces as well, the **lldp subinterfaces enable** command is introduced.

Note When you use this command, you must remember that as the scale of interfaces(with subinterfaces and bundle subinterfaces) becomes higher, it might cause the LLDP process to hog the CPU.

Task ID

Task ID	Operation
ethernet-services	read, write

This example shows how to enable LLDP globally on the router:

```
RP/0/RSP0/CPU0:router(config)# lldp
```

This example shows how to enable LLDP on subinterfaces:

```
RP/0/RSP0/CPU0:router(config)# lldp subinterfaces enable
```

Related Commands

Command	Description
show lldp, on page 39	Displays the global LLDP operational characteristics on the system.

lldp (interface)

To enter LLDP configuration mode, use the **lldp (interface)** command.

lldp

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read, write
interface	read, write

This example shows how to enter LLDP configuration mode from Ethernet interface configuration mode:

```
RP/0/RSP0/CPU0:router(config)# interface GigabitEthernet 0/1/0/0
RP/0/RSP0/CPU0:router(config-if)# lldp
RP/0/RSP0/CPU0:router(config-lldp)#
```

Related Commands

Command	Description
interface (Ethernet), on page 13	Specifies or creates an Ethernet interface and enters interface configuration mode.
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.

lldp enable (per-interface)

When LLDP is enabled globally, all interfaces that support LLDP are automatically enabled for both transmit and receive operations. However, if you want to enable LLDP per interface, use `lldp enable` command in interface configuration mode.

lldp enable

Command Default

None

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Release 6.5.1	This command was introduced.

Task ID

Task ID	Operation
ethernet-services	read, write
interface	read, write

To enable LLDP per interface:

```
RP/0/RSP0/CPU0:ios(config)# int gigabitEthernet 0/2/0/0
RP/0/RSP0/CPU0:ios(config-if)# no sh
RP/0/RSP0/CPU0:ios(config-if)#commit
RP/0/RSP0/CPU0:ios(config-if)#lldp ?
RP/0/RSP0/CPU0:ios(config-if)#lldp enable
RP/0/RSP0/CPU0:ios(config-if)#commit
```

lldp holdtime

To specify the length of time that information from a Link Layer Discovery Protocol (LLDP) packet should be held by the receiving device before aging and removing it, use the **lldp holdtime** command in Global Configuration mode. To return to the default, use the **no** form of this command.

lldp holdtime *seconds*

Syntax Description

seconds	Number from 0 to 65535 that specifies the amount of time (in seconds) to hold the packet information. The default is 120.

Command Default

The packet hold time is 120 seconds (2 minutes).

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read, write

This example shows how to change the default hold time to 1 minute:

```
RP/0/RSP0/CPU0:router(config)# lldp holdtime 60
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 39	Displays the global LLDP operational characteristics on the system.

lldp reinit

To specify the length of time to delay initialization of the Link Layer Discovery Protocol (LLDP) on an interface, use the **lldp reinit** command in Global Configuration mode. To return to the default, use the **no** form of this command.

lldp reinit *seconds*

Syntax Description

seconds	Number from 2 to 5 that specifies the length of time (in seconds) that LLDP should delay initialization. The default is 2.

Command Default

Initialization of LLDP is delayed for 2 seconds on an interface.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read, write

The following example shows how to change the default initialization delay from 2 to 4 seconds:

```
RP/0/RSP0/CPU0:router(config)# lldp reinit 4
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 39	Displays the global LLDP operational characteristics on the system.

lldp timer

To specify the Link Layer Discovery Protocol (LLDP) packet rate, use the **lldp timer** command in Global Configuration mode. To return to the default, use the **no** form of this command.

lldp timer *seconds*

Syntax Description

seconds	Number from 5 to 65534 that specifies the rate (in seconds) at which to send LLDP packets. The default is 30.

Command Default

LLDP packets are sent every 30 seconds.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read, write

The following example shows how to change the default LLDP packet rate from 30 seconds to 1 minute:

```
RP/0/RSP0/CPU0:router(config)# lldp timer 60
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 39	Displays the global LLDP operational characteristics on the system.

lldp tlv-select disable

To disable transmission of the selected Type Length Value (TLV) in Link Layer Discovery Protocol (LLDP) packets, use the **lld tlv-select disable** command in Global Configuration mode. To return to the default, use the **no** form of this command.

lldp tlv-select *tlv-name* **disable**

Syntax Description

tlv-name	Name of the TLV to be suppressed from LLDP packets. The *tlv-name* can be one of the following LLDP TLV types: • **management-address** • **port-description** • **system-capabilities** • **system-description** • **system-name**

Command Default

All TLVs are sent in LLDP packets.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Certain TLVs are classified as mandatory in LLDP packets, such as the Chassis ID, Port ID, and Time to Live (TTL) TLVs. These TLVs must be present in every LLDP packet. You can use the **lldp tlv-select disable** command to suppress transmission of certain other optional TLVs in LLDP packets.

Task ID

Task ID	Operation
ethernet-services	read, write

The following example shows how to disable transmission of the System Capabilities TLV from LLDP packets:

```
RP/0/RSP0/CPU0:router(config)# lldp tlv-select system-capabilities disable
```

loopback (Ethernet)

To configure an Ethernet controller for loopback mode, use the **loopback** command in interface configuration mode. To disable loopback, use the **no** form of this command.

loopback {**external** | **internal** | **line**}

Syntax Description

external	All IPv4 self-ping packets are sent out of the interface and looped back externally before being received on the ingress path.
internal	All packets are looped back internally within the router before reaching an external cable.
line	Incoming network packets are looped back through the external cable.

Command Default

Loopback mode is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.7.2	This command was first introduced.

Usage Guidelines

The **loopback** command is available for all Ethernet interface types (Gigabit Ethernet, 10-Gigabit Ethernet).

Two loopback operation modes are supported for diagnostic purposes: internal and line. In the terminal (internal) loopback, the sent signal is looped back to the receiver. In the facility (line) loopback, the signal received from the far end is looped back and sent on the line. The two loopback modes cannot be active at the same time. In normal operation mode, neither of the two loopback modes is enabled.



Tip Use the **loopback external** command when an external loopback connector is attached to the interface.

Task ID

Task ID	Operations
interface	read, write

Examples

In the following example, all packets are looped back to the TenGigE controller:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RSP0/CPU0:router(config-if)# loopback internal
```

mac-accounting

To generate accounting information for IP traffic based on the source and destination Media Access Control (MAC) addresses on LAN interfaces, use the **mac-accounting** command in interface configuration mode. To disable MAC accounting, use the **no** form of this command.

mac-accounting {**egress** | **ingress**}

Syntax Description

egress	Generates accounting information for IP traffic based on the destination MAC addresses (egress direction).
ingress	Generates accounting information for IP traffic based on the source MAC addresses (ingress direction).

Command Default

MAC accounting is disabled

Command Modes

Interface configuration

Command History

Release	Modification
Release 4.1.1	This command was introduced.

Usage Guidelines

The **mac-accounting** command calculates the total packet and byte counts for a LAN interface that receives or sends IPv4 packets to or from a unique MAC address.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable MAC accounting for the source MAC address on the ingress direction:

```
RP/0/RSP0/CPU0:routerconfigure
RP/0/RSP0/CPU0:routerinterface bundle-ether <bundle-id>
RP/0/RSP0/CPU0:router(config-if)# mac-accounting ingress
```

This example shows how to enable MAC accounting for the source MAC address on the egress direction:

```
RP/0/RSP0/CPU0:routerconfigure
RP/0/RSP0/CPU0:routerinterface bundle-ether <bundle-id>
RP/0/RSP0/CPU0:router(config-if)# mac-accounting egress
```

Note In order to view the mac-accounting statistics for the configured bundle interface, use the **show mac-accounting bundle-ether <bundle id>** command.

Related Commands

Command	Description
clear mac-accounting (Ethernet), on page 8	Clears MAC accounting statistics for an interface.
show mac-accounting (Ethernet), on page 51	Displays MAC accounting statistics for an interface.

mac-address (Ethernet)

To set the MAC layer address of an Ethernet interface, use the **mac-address** command in interface configuration mode. To return the device to its default MAC address, use the **no** form of this command.

mac-address *value1.value2.value3*

Syntax Description

value1.	High 2 bytes of the MAC address in hexadecimal format. Range is from 0 to ffff.
value2.	Middle 2 bytes of the MAC address in hexadecimal. Range is from 0 to ffff.
value3	Low 2 bytes of the MAC address in hexadecimal. Range is from 0 to ffff.

Command Default

The default MAC address is read from the hardware burned-in address (BIA).

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.7.2	This command was first introduced.

Usage Guidelines

The MAC address must be in the form of three 4-digit values (12 digits in dotted decimal notation).

The **mac-address** command is available for all types of line card Ethernet interfaces (Gigabit Ethernet, 10-Gigabit Ethernet) and for the Management Ethernet interface.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to set the MAC address of a Ten Gigabit Ethernet interface located at 0/3/0/0:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/1/0/0
RP/0/RSP0/CPU0:router(config-if)# mac-address 0001.2468.ABCD
```

mtu (interface)

To configure maximum transmission unit (MTU) size on an Ethernet interface, use the **mtu** command in interface configuration mode.

mtu *size in bytes*

Syntax Description

size in bytes	Specify the MTU size that you want to configure.

Command Default

None

Command Modes

Interface configuration

Command History

Release	Modification
Release 7.6.2	This command is a generic command.

Usage Guidelines

None

Example

This example shows how to configure the MTU size on an interface. *Bundle-Ether1* is the interface name.

```
Router(config)#interface Bundle-Ether1
Router(config-if)#mtu 9646
Router(config-if)#commit
```

negotiation auto

To enable link autonegotiation on Gigabit Ethernet interfaces, use the **negotiation auto** command in interface configuration mode. To disable link autonegotiation, use the **no** form of this command.

negotiation auto

Syntax Description

This command has no keywords or arguments.

Command Default

Link auto-negotiation is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.7.2	This command was first introduced.
Release 4.2.3	The **negotiation auto** command was supported on 1 Gigabit Ethernet interfaces.
Release 7.4.1	This command was supported on the 1GE fiber optic plugged in Cisco ASR 9901 Router's dual-rate (1/10 GE) interface.

Usage Guidelines

The **negotiation auto** command is available on Gigabit Ethernet interfaces only.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable link autonegotiation on an interface:

```
RP/0/RSP0/CPU0:router(config)# interface gigabitethernet 0/0/2/0
RP/0/RSP0/CPU0:router(config-if)# negotiation auto
```

This example shows how to disable link autonegotiation on an interface:

```
RP/0/RSP0/CPU0:router(config)# interface gigabitethernet 0/0/2/0
RP/0/RSP0/CPU0:router(config-if)# no negotiation auto
```

packet-gap non-standard

To change the packet interval for traffic on an interface for improved interoperability with Cisco Catalyst 6000 series switches, use the **packet-gap non-standard** command in interface configuration mode. To use the standard packet interval as defined by the IEEE 802.ae specification, use the **no** form of this command.

packet-gap non-standard

Syntax Description

This command has no keywords or arguments.

Command Default

The interface uses the standard packet interval as defined by the IEEE 802.ae specification.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.7.2	This command was first introduced.

Usage Guidelines

An interface that is connected to a Cisco Catalyst 6000 series switch may experience packet loss problems that can be resolved by changing the packet interval of traffic from standard (as defined by the IEEE 802.ae specification) to nonstandard using the **packet-gap non-standard** command.

Note The **packet-gap non-standard** command is available on 10-Gigabit Ethernet interfaces only.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to change the packet interval for traffic on an interface from standard to nonstandard:

```
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RSP0/CPU0:router(config-if)# packet-gap non-standard
```

report crc-ber

To enable Cyclic Redundancy Check (CRC) Bit Error Rate (BER) reporting, use the **report crc-ber** command in wanphy configuration mode.

report crc-ber

Syntax Description

This command has no keywords or arguments.

Command Default

Cyclic Redundancy Check (CRC) Bit Error Rate (BER) reporting is disabled by default.

Command Modes

Wanphy configuration

Command History

Release	Modification
Release 7.4.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to enable Cyclic Redundancy Check (CRC) Bit Error Rate (BER) reporting.

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/1/0/3
RP/0/RSP0/CPU0:router(config-wanphy)# report crc-ber
RP/0/RSP0/CPU0:router(config-wanphy)#
```

Related Commands

Command	Description
report sf-ber disable	Disables SF BER reporting.
show controllers wanphy	Displays alarms, registers, and module information for a 10-Gigabit Ethernet WAN PHY controller.
threshold sf-ber	Configures the threshold of the SF BER that is used to trigger a link state change.
crc-ber auto-recover	

show controllers (Ethernet)

To display status and configuration information about the Ethernet interfaces on a specific node, use the **show controllers command** in EXEC mode.

show controllers { **GigabitEthernet** | **GigabitEthCtrlr** | **HundredGigE** | **HundredGigECtrlr** | **TenGigE** | **TenGigECtrlr** | **FortyGigE** } *interface-path-id* [**all** | **bert** | **control** | **internal** | **mac** | **periodic** | **phy** | **pm** | **priority-flow-control** | **regs** | **stats** | **xgxs**]

Syntax Description

{**GigabitEthernet** | **GigabitEthCtrlr** | **HundredGigE** | **HundredGigECtrlr** | **TenGigE** | **TenGigECtrlr**|**FortyGigE**}	Specifies the type of Ethernet interface or controller whose status and configuration information you want to display. Enter GigabitEthernet, GigabitEthernetCtrlr, HundredGigE, HundredGigeCtrlr, TenGigE, or TenGigeCtrlr.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
all	Displays detailed information for the specified interface.
bert	Displays BERT status information for the interface.
control	Displays configuration and control information.
internal	Displays internal information for the interface.
mac	Displays mac address information for the interface.
periodic	Displays performance monitoring data periodically.
phy	Displays physical information for the interface.
pm	Displays Ethernet performance monitoring.
priority-flow-control	Displays priority flow control information.
regs	Displays register information.
stats	Displays statistical information for the interface.
xgxs	Displays information about the 10 Gigabit Ethernet Extended Sublayer (XGXS).

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.7.2	This command was first introduced.
Release 6.0.x	This command was modified. The **GigabitCtrlr**, **TenGigECtrlr**, and **HundredGigECtrlr** keywords were added.
Release 6.2.1	The command was updated to display receiving optical power threshold value configured, and the minimum and maximum threshold values, as part of Early Indication of Link Loss Change feature.
Release 7.1.3	This command was modified. The **FortyGE** keyword was added.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number. A physical layer interface module (PLIM) is always 0.
  - *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.

For controllers, use the following keywords only.

- all
- periodic
- pm
- stats

Task ID

Task ID	Operations
cisco-support	read **Note** Required in addition to the interface (read) task ID to use the **control** keyword only.
dwdm	read
interface	read
sonet-sdh	read

The port speed on QSFP-40/100G-SRBD dual-mode optic was changed from 100Gps to 40Gps. This example shows the QSFP-40/100G-SRBD dual-mode optic status on FortyGigE 0/0/0/21/0:

```
RP/0/RSP0/CPU0:router#show controllers FortyGigE0/0/0/21/0 internal
```

```
Wed Nov 11 06:34:26.861 UTC

Internal data for interface: FortyGigE0/0/0/21/0
Subport Number : 0
Port Number : 21
Bay Number : 0
Ifinst : 6
Ifinst Subport : 21
Board Type : 0x003d1013
Port Type : 40GE
Bandwidth(Kbps) : 40000000
Transport mode : LAN
BIA MAC addr : badb.ad03.a84d
Oper. MAC addr : badb.ad03.a84d
Egress MAC addr : badb.ad03.a84d
Port Available : true
Status polling is : enabled
Status events are : enabled
I/F Handle : 0x04001300
Cfg Link Enabled : tx/rx enabled
H/W Tx Enable : yes
MTU : 1514
H/W Speed : 40 Gbps
H/W Loopback Type : None
FEC : Disable
H/W FlowCtrl Type : None
H/W AutoNeg Enable : Off
Rx OPD : Not Supported
H/W Link Defects : (0x0000000000000000) none
H/W Raw Link Defects : (0x0000000000000000) none
Link Up : yes
Link Led Status : Link up -- Green/Amber
Serdes fw version : 100.0
Pluggable Present : yes
Pluggable Type : 100/40G SRBD
Pluggable PID : QSFP-40/100-SRBD
Pluggable Compl. : Compliant
Pluggable Type Supp.: Supported
Pluggable PID Supp. : Supported
```

This example shows the receiving optical power alarm status on HuGigE0/1/2/3:

```
RP/0/RSP0/CPU0:router#show controllers GigabitEthernet0/0/0/4
Operational data for interface HuGigE0/1/2/3:

State:
    Administrative state: Enabled
    Operational state: Up,
    LED state: Green On

Phy:
    Media type: 100GBASE-LR4, fiber over 4 Lane optics (long reach),
    Optics:
        Vendor: CISCO-AVAGO
        Part number: 10-2134-01 (ver.: V01)
        Serial number: IPUIALJRAA

    Digital Optical Monitoring:
        Transceiver Temp: 98.781 C
        Transceiver Voltage: 3.283 V

        Alarms key: (H) Alarm high, (h) Warning high
                    (L) Alarm low, (l) Warning low
```

```
            Wavelength    Tx Power          Rx Power      Laser Bias
          Lane  (nm)     (dBm)     (mW)      (dBm)      (mW)       (mA)
          --    -----    ------    ------    ------    ------     ------
          01    1270      -1.6     0.699h    -37.0    0.0002L     9.408
          02    1290      -1.6     0.493     -37.0    0.0003L     9.406
          03    1310      -1.6     0.501h    -37.0    0.0002L     9.407
          04    1330      -1.6     0.400     -37.0    0.0003L     9.399

          DOM alarms:
             Transceiver Temp: Alarm high
             Transmit Power: Warning high
             Receive Power: Alarm low

          Alarm                     Alarm     Warning   Warning    Alarm
          Thresholds                High       High       Low       Low
                                   -------   -------   -------   -------
          Transceiver Temp (C):     90.000    85.000    -5.000   -10.000
          Transceiver Voltage (V):   3.630     3.470     3.140     2.970
          Laser Bias (mA):          15.000    15.000     2.000     2.000
          Transmit Power (mW):       1.000     0.501     0.112     0.045
          Receive Power (mW):        1.995     1.000     0.020     0.008

      Alarms:
          Current:
              SD-BER
              SF-BER
          Previous:
              No alarms

      Statistics:
          Sync Header Error Count: <count>
          PCS BIP Error count: <count>
          FEC:
              Corrected Codeword Count: <count>
              Uncorrected Codeword Count: <count>

  MAC address information:
      Operational address: 0003.6cff.0c00
      Burnt-in address: 0003.6cff.0c00
      1 unicast address(es) in filter:
          0012.3456.7890
      Operating in multicast promiscuous mode

  Autonegotiation disabled

  Priority Flow Control:
      Total Rx PFC Frames: 1030
      Total Tx PFC Frames: 4440
      CoS  Status  Rx Frames   Tx Frames
      ---  ------  ----------  ----------
        0  off             15         125
        1  on             115         115
        2  on             125        1225
        3  on             135         135
        4  off            145        1245
        5  off            155         155
        6  off            165        1265
        7  off            175         175

  Operational values:
      Speed: 10 Gbps,
      Bandwidth utilization: 19.73%,
      Duplex: Full Duplex,
```

```
    Flowcontrol: None,
    Priority flow control: On,
    Loopback: None (or external),
    MTU: 1514 bytes,
    MRU: 1514 bytes,
    Inter-packet gap: standard (12),
    Forward error correction: Standard (Reed-Solomon)
```

Note A higher count of Bit Interleaved Parity (BIP) errors lead to Bit Error Rate (BER) errors. Ethernet interfaces must be continuously monitored in order to detect any link that is not working due to BER errors (bit error rate) and to bring down the interface connected to that link. BER informs you of the number of bit errors per unit time and helps you test cables and diagnose signal problems in the field. For more information on BER, see the *Interface and Hardware Component Configuration Guide for Cisco ASR 9000 Series Routers*.

This example shows the receiving optical power degrade threshold value configured on GigabitEther interface location 0/0/0/4:

```
RP/0/RSP0/CPU0:router#show controllers GigabitEthernet0/0/0/4 control
Management information for interface GigabitEthernet0/0/0/4:

Port number: 4
Interface handle: 0x08000400

Config:
    Auto-negotiation: Off
    Carrier delay (up): None
    Carrier delay (down): None
    Duplex: Not configured
    Flow Control: None
    Priority Flow Control: None
    Forward Error Correction: Standard (Reed-Solomon)
    IPG: Standard (12)
    Loopback: None
    MTU: Not configured
    Speed: Not configured
    Soft BW: Not configured
    MAC Address: Not configured
    Rx Optical Power Degrade Threshold: -10db

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9000 bytes
    Max speed: 1Gbps
    Interface type: Gigabit Ethernet
    Mgmt interface: No
    Allowed config mask: 0x26f

Cached driver state:
    MTU: 1514 bytes
    Burnt-in MAC Address: 0001.0203.0404

Not a member of a bundle interface.

Port FSM state:
    Port is disabled due to an admin down condition.

Complete FSM state:
    Admin down
    Bundle admin up
```

```
    Client admin up
    Client admin tx up
    Port disabled
    Port tx disabled
    HW link down

IDB interface state information:
    IDB bundle admin up
    IDB client admin up
    IDB client tx admin up
    IDB error disable not set

0 Unicast MAC Addresses:

0 Multicast MAC Addresses:
```

The following example shows sample output from the **show controllers hundredGigE phy** command for A9K-2x100GE line card:

```
RP/0/RSP0/CPU0:router# show controller hundredGigE 0/9/0/0 phy

PHY data for interface: HundredGigE0/9/0/0:

Rx        64B66B      Lane        Sync        PCS         Virt  PCS
Service   Block       Marker      Header      Lane        Lane  Lane
Lane      Lock        Sync        Err Cnt     BIP Errors  Error Mapping
--        ---------   ---------   ----------  ----------  ----- -------
0         Locked      Locked      0           0           Clean 0
1         Locked      Locked      0           0           Clean 10
2         Locked      Locked      0           0           Clean 1
3         Locked      Locked      0           0           Clean 11
4         Locked      Locked      0           0           Clean 12
5         Locked      Locked      0           0           Clean 2
6         Locked      Locked      0           0           Clean 3
7         Locked      Locked      0           0           Clean 13
8         Locked      Locked      0           0           Clean 14
9         Locked      Locked      0           0           Clean 4
10        Locked      Locked      0           0           Clean 15
11        Locked      Locked      0           0           Clean 5
12        Locked      Locked      0           0           Clean 6
13        Locked      Locked      0           0           Clean 16
14        Locked      Locked      0           0           Clean 17
15        Locked      Locked      0           0           Clean 7
16        Locked      Locked      0           0           Clean 8
17        Locked      Locked      0           0           Clean 18
18        Locked      Locked      0           0           Clean 9
19        Locked      Locked      0           0           Clean 19

CFP EEPROM port: 0
  Xcvr Type: CFP
  Ext Type: 8W,
  Connector Type: MPO
  Ethernet Application Codes: 100GE-SR10,
  Number of Lanes: Network 10, Host 10
  Max Bit Rate: Network Lane 10.4Gbit/s, Host Lane 10.4Gbit/s
    Link Reaches: SM Fiber 0KM, MM Fiber: 100M, Copper: 0M
  Device Tech1: VCSEL, DML,
  Device Tech2: No WL, Uncool Xmtr, Xmtr not tunable, No VOA, PIN detector, No EDC,
  Encoding: NRZ, Non-PSK,
  Vendor Name: Reflex Photonics
  Vendor OUI: 00.00.00
  Vendor Part Number: CF-X12-C11801
```

```
  Vendor Serial Number: X000A906
  Date Code (yyyymmdd): 20110527, Lot Code 25
  DDM Type: RX Avg Power, TX OMA,
  Module DDM: Power Supply Voltage, Temperature,
  Per Lane DDM: Laser Temp,
  Enhanced Options:
 MSA Data (CFP NVR 1 Table - addr 0x8000-0x807F)
0x0000: 0e 30 09 03 00 00 00 00 : 08 aa 4a 34 34 00 0a 00
0x0010: 0a 01 83 40 86 60 4e 20 : 00 04 40 3c 50 26 fa 46
0x0020: 00 52 65 66 6c 65 78 20 : 50 68 6f 74 6f 6e 69 63
0x0030: 73 00 00 00 43 46 2d 58 : 31 32 2d 43 31 31 38 30
0x0040: 31 20 20 20 58 30 30 30 : 41 39 30 36 20 20 20 20
0x0050: 20 20 20 20 32 30 31 31 : 30 35 32 37 32 35 20 20
0x0060: 20 20 20 20 20 20 20 20 : 0a 0d 04 14 04 05 0c 03
0x0070: 01 00 01 01 01 00 01 01 : 40 00 00 00 00 00 00 17


        Part Number:   (ver.: )
        Product ID:
 Vendor Specific Data (Vendor Cisco NVR 1 Table - address 0x8400-0x847F)
0x0100: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0110: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0120: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0130: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0140: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0150: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0160: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x0170: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00


 Module
 Thresholds:        Alarm High         Warning High          Warning Low            Alarm
Low
 Temperature:       +0.273 C             +0.253 C             +0.019 C             +0.000
 C
 Voltage:           5.031 Volt            5.338 Volt           0.013 Volt            2.879
 Volt

 Temperature: +45.132 C
 Voltage: 3.355 Volt

 Lanes
 Thresholds:        Alarm High           Warning High             Warning Low
Alarm Low
 Temperature:       +0.273 C              +0.253 C                +0.019 C
+0.000 C
 Bias:              0.000 mAmps           0.000 mAmps             0.000 mAmps
0.000 mAmps
 Transmit Power: 0.000 mW (<-40.00 dBm)   0.000 mW (<-40.00 dBm)  0.000 mW (<-40.00 dBm)
0.000 mW (<-40.00 dBm)
 Receive Power: 0.000 mW (<-40.00 dBm)    0.000 mW (<-40.00 dBm)  0.000 mW (<-40.00 dBm)
0.000 mW (<-40.00 dBm)

               Lane            Temp             Bias                    Tx Power
         Rx Power
                    0       +42.640 C             N/A                        N/A
              N/A
                    1       +42.640 C             N/A                        N/A
              N/A
                    2       +42.640 C             N/A                        N/A
              N/A
                    3       +42.640 C             N/A                        N/A
              N/A
                    4       +42.640 C             N/A                        N/A
```

```
                N/A
                     5       +42.640 C              N/A                          N/A
                N/A
                     6       +42.640 C              N/A                          N/A
                N/A
                     7       +42.640 C              N/A                          N/A
                N/A
                     8       +42.640 C              N/A                          N/A
                N/A
                     9       +42.640 C              N/A                          N/A
                N/A
Threshold Data (CFP NVR 2 Table - address 0x8080-0x80ff)
0x0080: 00 46 00 41 00 05 00 00 : c4 86 d0 84 00 7d 70 7b
0x0090: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x00a0: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x00b0: 00 00 00 00 00 00 00 00 : 00 46 00 41 00 05 00 00
0x00c0: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x00d0: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x00e0: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 00
0x00f0: 00 00 00 00 00 00 00 00 : 00 00 00 00 00 00 00 1e
```

The following example shows sample output from the **show controllers hundredGigE phy** command for A9K-400G-DWDM-TR line card:

```
RP/0/RSP0/CPU0:router# show controller hundredGigE0/2/0/20/0 phy

Rx        64B66B      Lane        Sync        PCS         Virt  PCS
Service   Block       Marker      Header      Lane        Lane  Lane
Lane      Lock        Sync        Err Cnt     BIP Errors  Error Mapping
--        ---------   ---------   ----------  ----------  ----- -------
0         Locked      Locked      0           0           Clean 1
1         Locked      Locked      0           0           Clean 2
2         Locked      Locked      0           0           Clean 4
3         Locked      Locked      0           0           Clean 7
4         Locked      Locked      0           0           Clean 9
5         Locked      Locked      0           0           Clean 10
6         Locked      Locked      0           0           Clean 12
7         Locked      Locked      0           0           Clean 14
8         Locked      Locked      0           0           Clean 17
9         Locked      Locked      0           0           Clean 18
10        Locked      Locked      0           0           Clean 0
11        Locked      Locked      0           0           Clean 3
12        Locked      Locked      0           0           Clean 5
13        Locked      Locked      0           0           Clean 6
14        Locked      Locked      0           0           Clean 8
15        Locked      Locked      0           0           Clean 11
16        Locked      Locked      0           0           Clean 13
17        Locked      Locked      0           0           Clean 15
18        Locked      Locked      0           0           Clean 16
19        Locked      Locked      0           0           Clean 19

*** PHY PCS PMA Statistics ***
Rx        Rx          Aligment    PCS         PCS
Service   Block       Marker      Lane        Lane
Lane      Lock        Lock        BIP Errors  Mapping
-------   ---------   ---------   ----------  -------
0         Locked      Locked      367        0
1         Locked      Locked      367        0
2         Locked      Locked      367        0
3         Locked      Locked      367        0
4         Locked      Locked      367        0
5         Locked      Locked      367        0
6         Locked      Locked      367        0
7         Locked      Locked      367        0
```

```
8          Locked      Locked      367         0
9          Locked      Locked      367         0
10         Locked      Locked      367         0
11         Locked      Locked      367         0
12         Locked      Locked      367         0
13         Locked      Locked      367         0
14         Locked      Locked      367         0
15         Locked      Locked      367         0
16         Locked      Locked      367         0
17         Locked      Locked      367         0
18         Locked      Locked      367         0
19         Locked      Locked      367         0
```

show lldp

To display the global Link Layer Discovery Protocol (LLDP) operational characteristics on the system, use the **show lldp** command in EXEC mode.

show lldp

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

The **show lldp** command displays the LLDP operational characteristics when LLDP is enabled globally on the system using the **lldp** command. The settings for the following commands are displayed:

- **lldp timer**
- **lldp holdtime**
- **lldp reinit**

Task ID

Task ID	Operation
ethernet-services	read

Example 1

The following example shows the default LLDP operational characteristics when LLDP is enabled globally on the system:

```
RP/0/RSP0/CPU0:router# show lldp
Wed Apr 13 06:16:45.510 DST
Global LLDP information:
        Status: ACTIVE
        LLDP advertisements are sent every 30 seconds
        LLDP hold time advertised is 120 seconds
        LLDP interface reinitialisation delay is 2 seconds
```

Example 2

The following example shows the output when LLDP is not enabled globally on the system:

```
RP/0/RSP0/CPU0:router# show lldp
Wed Apr 13 06:42:48.221 DST
% LLDP is not enabled
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
lldp timer, on page 20	Specifies the LLDP packet rate.
lldp holdtime, on page 18	Specifies the length of time that information from an LLDP packet should be held by the receiving device before aging and removing it.
lldp reinit, on page 19	Specifies the length of time to delay initialization of LLDP on an interface.

show lldp entry

To display detailed information about LLDP neighbors, use the **show lldp entry** command in EXEC mode.

show lldp entry {***** *name*}

Syntax Description

*****	Displays detailed information about all LLDP neighbors.
name	Name of a specific LLDP neighbor for which detailed information is displayed.

Syntax Description This command has no keywords or arguments.

Command Modes EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read

The following example shows sample output for all LLDP neighbor table entries on the system:

```
RP/0/RSP0/CPU0:router# show lldp entry *
Wed Apr 13 10:29:40.342 UTC
Capability codes:
        (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
        (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

------------------------------------------------
Local Interface: GigabitEthernet0/0/0/8
Chassis id: 0026.9815.c3e6
Port id: Gi0/0/0/8
Port Description: GigabitEthernet0/0/0/8
System Name: asr9k-5

System Description:
Cisco IOS XR Software, Version 4.1.0.32I[Default]
Copyright (c) 2011 by Cisco Systems, Inc.

Time remaining: 102 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses:
  IPv4 address: 10.5.173.110



------------------------------------------------
Local Interface: GigabitEthernet0/0/0/8
```

```
Chassis id: 0026.9815.c3e6
Port id: Gi0/0/0/8.1
Port Description: GigabitEthernet0/0/0/8.1
System Name: asr9k-5

System Description:
Cisco IOS XR Software, Version 4.1.0.32I[Default]
Copyright (c) 2011 by Cisco Systems, Inc.

Time remaining: 96 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses:
  IPv4 address: 10.5.173.110


Total entries displayed: 2
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.

show lldp errors

To display Link Layer Discovery Protocol (LLDP) error and overflow statistics, use the **show lldp errors** command in EXEC mode.

show lldp errors [**location** *location*]

Syntax Description

location	*location*	(Optional) Displays information about LLDP neighbors for the specified location. The *location* argument is entered in the *rack/slot/module* notation.

Command Default

Totals of LLDP error and overflow statistics for the system are displayed.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ethernet-services	read

The following example shows sample output for the **show lldp errors** command:

```
RP/0/RSP0/CPU0:router# show lldp errors
Wed Apr 13 06:17:08.321 DST

LLDP errors/overflows:
        Total memory allocation failures: 0
        Total encapsulation failures: 0
        Total input queue overflows: 0
        Total table overflows: 0
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
show lldp traffic, on page 49	Displays statistics for LLDP traffic.

show lldp interface

To display Link Layer Discovery Protocol (LLDP) configuration and status information on an interface, use the **show lldp interface** command in EXEC mode.

show lldp interface [*type interface-path-id* | **location** *location*]

Syntax Description

type	(Optional) Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location *location*	(Optional) Displays information about LLDP neighbors for the specified location. The *location* argument is entered in the *rack/slot/module* notation.

Command Default

LLDP configuration and status information for all interfaces is displayed.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

When LLDP is enabled globally on the system, all supported interfaces are automatically enabled for both LLDP receive and transmit operations. You can individually disable interfaces for either LLDP receive or transmit operations using the **receive disable** command or **transmit disable** command in LLDP configuration mode under the interface.

Task ID

Task ID	Operation
ethernet-services	read

The following example shows sample output for the **show lldp interface** command for the Gigabit Ethernet interface at 0/1/0/7:

```
RP/0/RSP0/CPU0:router# show lldp interface gigabitethernet 0/1/0/7
Wed Apr 13 13:22:30.501 DST


GigabitEthernet0/1/0/7:
        Tx: enabled
        Rx: enabled
        Tx state: IDLE
        Rx state: WAIT FOR FRAME
```

Table 1: show lldp interface Field Descriptions

Field	Description
Tx:	Configuration status of the interface to transmit LLDP advertisements.
Rx:	Configuration status of the interface to receive LLDP advertisements.
Tx state:	Status of the LLDP transmit process on the interface.
Rx state:	Status of the LLDP receive process on the interface.

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
lldp (interface), on page 16	Enters LLDP configuration mode.

show lldp neighbors

To display information about Link Layer Discovery Protocol (LLDP) neighbors, use the **show lldp neighbors** command in EXEC mode.

show lldp neighbors [*type interface-path-id* | **location** *location*] [**detail**]

Syntax Description

type	(Optional) Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location *location*	(Optional) Displays information about LLDP neighbors for the specified location. The *location* argument is entered in the *rack/slot/module* notation.
detail	(Optional) Displays all available information about LLDP neighbors.

Command Default

Basic device information for LLDP neighbors is displayed.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

To clear the neighbor information displayed by the **show lldp neighbors** command, use the **clear lldp table** command.

Task ID

Task ID	Operation
ethernet-services	read

The following example show sample output for the **show lldp neighbors** command:

```
RP/0/RSP0/CPU0:router# show lldp neighbors
Capability codes:
    (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
    (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

Device ID           Local Intf     Hold-time  Capability      Port ID
R1                  Et1/0          150        R               Et1/0

Total entries displayed: 1
```

Table 2: show lldp neighbors Field Descriptions

Field	Description
Device ID	Name of the neighbor device. **Note** If the device ID has more than 20 characters, the ID will be truncated to 20 characters in command output because of display constraints.
Local Intf	Local interface through which this neighbor is connected.
Hold-time	Amount of time (in seconds) that the local device will hold the LLDP advertisement from a sending device before discarding it.
Capability	The device type of the neighbor, whose values correspond to the characters and definition displayed in the "Capability codes" section.
Port ID	Interface and port number of the neighboring device.

The following example shows sample output for the **show lldp neighbors detail** command:

```
RP/0/RSP0/CPU0:router# show lldp neighbors detail
Wed Apr 13 10:29:40.342 UTC
Capability codes:
        (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
        (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

------------------------------------------------
Local Interface: GigabitEthernet0/0/0/8
Chassis id: 0026.9815.c3e6
Port id: Gi0/0/0/8
Port Description: GigabitEthernet0/0/0/8
System Name: asr9k-5

System Description:
Cisco IOS XR Software, Version 4.1.0.32I[Default]
Copyright (c) 2011 by Cisco Systems, Inc.

Time remaining: 102 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses:
  IPv4 address: 10.5.173.110



------------------------------------------------
Local Interface: GigabitEthernet0/0/0/8
Chassis id: 0026.9815.c3e6
Port id: Gi0/0/0/8.1
Port Description: GigabitEthernet0/0/0/8.1
System Name: asr9k-5

System Description:
Cisco IOS XR Software, Version 4.1.0.32I[Default]
```

```
Copyright (c) 2011 by Cisco Systems, Inc.

Time remaining: 96 seconds
Hold Time: 120 seconds
System Capabilities: R
Enabled Capabilities: R
Management Addresses:
  IPv4 address: 10.5.173.110


Total entries displayed: 2
```

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
clear lldp, on page 6	Resets LLDP traffic counters or LLDP neighbor information.

show lldp traffic

To display statistics for Link Layer Discovery Protocol (LLDP) traffic, use the **show lldp traffic** command in EXEC mode.

show lldp traffic [**location** *location*]

Syntax Description

location	*location*	(Optional) Displays LLDP statistics for traffic at the specified location. The *location* argument is entered in the *rack/slot/module* notation.

Command Default

Totals of LLDP statistics for the system are displayed.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

To reset the counters displayed by the **show lldp traffic** command, use the **clear lldp counters** command.

Task ID

Task ID	Operation
ethernet-services	read

The following example shows sample output for statistics for all LLDP traffic on the system:

```
RP/0/RSP0/CPU0:router# show lldp traffic
LLDP traffic statistics:
    Total frames out: 277
    Total entries aged: 0
    Total frames in: 328
    Total frames received in error: 0
    Total frames discarded: 0
    Total TLVs discarded: 0
    Total TLVs unrecognized: 0
```

Table 3: show lldp traffic Field Descriptions

Field	Description
Total frames out:	Number of LLDP advertisements sent from the device.
Total entries aged:	Number of LLDP neighbor entries removed due to expiration of the hold time.
Total frames in:	Number of LLDP advertisements received by the device.
Total frames received in error:	Number of times the LLDP advertisements contained errors of any type.

Field	Description
Total frames discarded:	Number of times the LLDP process discarded an incoming advertisement.
Total TLVs discarded:	Number of times the LLDP process discarded a Type Length Value (TLV) from an LLDP frame.
Total TLVs unrecognized:	Number of TLVs that could not be processed because the content of the TLV was not recognized by the device or the contents of the TLV were incorrectly specified.

Related Commands

Command	Description
lldp, on page 15	Enables LLDP globally for both transmit and receive operation on the system.
clear lldp, on page 6	Resets LLDP traffic counters or LLDP neighbor information.

show mac-accounting (Ethernet)

To display MAC accounting statistics for an interface, use the **show mac-accounting** command in EXEC mode.

show mac-accounting {**GigabitEthernet** | **TenGigE**} *interface-path-id* [**location node-id**]

Syntax Description

{**GigabitEthernet** | **TenGigEHundred GigEbundle-ether** }	Indicates the type of Ethernet interface whose MAC accounting statistics you want to display. Enter **GigabitEthernet**, **TenGigE** , .
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
location *node-id*	(Optional) Displays detailed MAC accounting information for the specified interface on the specified node. The *node-id* argument is entered in the *rack*/*slot*/*module*/*port* notation.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.1.1	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use these guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number. A physical layer interface module (PLIM) is always 0.
  - *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

Task ID	Operations
interface	read

Examples

These examples show the outputs from the **show mac-accounting** command, which displays MAC accounting statistics on any specified interface:

```
RP/0/RSP0/CPU0:router# show mac-accounting TenGigE 0/2/0/4 location 0/1/CPU0

TenGigE0/2/0/4
  Input (511 free)
000b.4558.caca: 4 packets, 456 bytes
             Total: 4 packets, 456 bytes
```

Table 4: show mac-accounting Field Descriptions

Field	Description
Interface	The interface from which the statistics are generated.
Input	Heading for the ingress MAC accounting statistics. The number of MAC accounting entries still available is shown in parentheses.
Total	Total statistics for the traffic accounted for by MAC accounting. This excludes any traffic for which there is no MAC address entry, such as non-IP traffic from an unknown MAC source address. This output also excludes any MAC addresses that have 0 packets currently, even if that MAC address was accounted before. Such type of MAC addresses still contribute towards the maximum address limit.

Related Commands

Command	Description
clear mac-accounting (Ethernet), on page 8	Clears MAC accounting statistics for an interface.
mac-accounting, on page 23	Generates accounting information for IP traffic based on the source and destination MAC addresses on LAN interfaces.

small-frame-padding

To enable small frame padding on physical interfaces, use the **small-frame-padding** command in the interface configuration mode. To disable small frame padding, use the **no** form of this command.

small-frame-padding *interface-path-id*

Syntax Description

interface-path-id	Physical interface type.

Command Default

None

Command Modes

Interface Configuration mode

Command History

Release	Modification
Release 4.3.1	This command was introduced.
Release 6.3.1	This command was enabled for Satellite nV access interfaces.
Release 7.10.1	The command extended support with the following line cards: • Fourth generation of the ASR 9000 Series Ethernet line cards • Fifth generation of the ASR 9000 Series Ethernet line cards

Usage Guidelines

This command is applicable for all physical interfaces of the Cisco ASR 9000 series router line cards.

Task ID

Task ID	Operation
interface	read, write

Example

This example shows how to use the small-frame-padding command:

```
RP/0/RSP0/CPU0:router(config)# interface HundredGigE 0/1/0/0
RP/0/RSP0/CPU0:router(config-if)# small-frame-padding
```

speed (Fast Ethernet)

To configure the speed for a Fast Ethernet interface, enter the **speed** command in interface configuration mode. To return the system to auto-negotiate speed, use the **no** form of this command.

speed {**10** | **100** | **1000**}

Syntax Description

10	Configures the interface to transmit at 10 Mbps.
100	Configures the interface to transmit at 100 Mbps.
1000	Configures the interface to transmit at 1000 Mbps (1 Gbps).

Command Default

If auto-negotiation is enabled on an interface, the default speed is negotiated.

If auto-negotiation is disabled on an interface, the default speed is the maximum speed allowed on the interface.

Command Modes

Interface configuration

Command History

Release	Modification
Release 4.2.3	This command was introduced.

Usage Guidelines

Note The **speed** command is available on Management Ethernet interfaces and Fast Ethernet interfaces only.

Note Keep in mind that both ends of a link must have the same interface speed. A manually configured interface speed overrides any auto-negotiated speed, which can prevent a link from coming up if the configured interface speed at one end of a link is different from the interface speed on the other end.

Note The **speed** configuration is supported for 1 Gigabit Ethernet copper SFPs and not supported for 1 Gigabit Ethernet optical SFPs.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure the Fast Ethernet interface to transmit at one gigabit:

```
RP/0/RSP0/CPU0:router(config)# interface FastEthernet 0/0/2/0
RP/0/RSP0/CPU0:router(config-if)# speed 1000
```

transport-mode (UDLR)

To specify the Unidirectional Link Routing (UDLR) mode as receive-only or transmit-only for a 10-Gigabit Ethernet interface, use the **transport-mode** command in interface configuration mode. To return to the default mode, use the **no** form of this command.



Note The **signal-degrade** option specified is applicable only on 1 GigabitEthernet Cisco ASR 9000 Ethernet and Enhanced Ethernet line cards.

transport-mode { {**rx-only** | **tx-only**} | {**signal-degrade**}}

Syntax Description

rx-only	Configures the 10GE UDLR mode as receive-only.
tx-only	Configures the 10GE UDLR mode as transmit-only
signal-degrade	Configures the port as signal-degrade mode. When you configure **signal-degrade** on 1 GigabitEthernet Cisco ASR 9000 Ethernet and Enhanced Ethernet Line cards, it brings down the interface when low Rx power is detected. Once the signal is recovered, the interface comes up.

Command Default

UDLR is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
Release 4.2.2	This command was introduced.
Release 5.3.0	The **signal-degrade** keyword was added.

Usage Guidelines

UDLR is supported in 10GE LAN mode only on these line cards:

- 24-Port 10-Gigabit Ethernet line card (A9K-24X10GE-SE/TR)
- 36-Port 10-Gigabit Ethernet line card (A9K-36X10GE-SE/TR)

Task ID

Task ID	Operations
interface	read, write

Examples

This example shows how to configure the 10GE interface for transmit-only mode:

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# interface TenGigE 0/1/0/1
RP/0/RSP0/CPU0:router(config-if)# transport-mode tx-only
RP/0/RSP0/CPU0:router(config-if)# commit
```