Ethernet Interface Commands

This module provides command line interface (CLI) commands for configuring Ethernet interfaces on the Cisco CRS 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.

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.
- The range of carrier-delay on access port of CRS is 0 to 2147483648 msec.
- 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.

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 used, and the upper layer protocols are notified as quickly as possible when a physical link goes down.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
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 3.4.0	The **msec** keyword was replaced by the **down** keyword, and the value of the *milliseconds* argument was increased to 0 through 60000. The **up** keyword was added, and the value of the *milliseconds* argument was set at 0 through 60000.

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. No carrier-delay information is displayed if carrier-delay has not been configured on an interface.

Task ID

Task ID	Operations
interface	read, write

Examples

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

```
RP/0/RP0/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/RP0/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 4.2.3	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/RP0/CPU0:router# clear lldp counters
RP/0/RP0/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/RP0/CPU0:router# clear lldp table
RP/0/RP0/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 86	Displays information about LLDP neighbors.
show lldp traffic, on page 89	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 2.0	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/RP0/CPU0:router# clear mac-accounting TenGigE 0/1/5/0 location 1/0/0/1
```

Related Commands

Command	Description
mac-accounting, on page 20	Generates accounting information for IP traffic based on the source and destination MAC addresses on LAN interfaces.

Command	Description
show mac-accounting (Ethernet), on page 91	Displays MAC accounting statistics for an interface.

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 3.0	This command was introduced.

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/RP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RP0/CPU0:router(config-if)# flow-control ingress
```

Related Commands

Command	Description
show interfaces	Displays statistics for all interfaces configured on the router or for a specific node.

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** | **HundredGigE** | **TenGigE** *interface-path-id*

Syntax Description

GigabitEthernet	Specifies or creates a Gigabit Ethernet (1000 Mbps) interface.
HundredGigE	Specifies or creates a Hundred Gigabit Ethernet (100 Gbps) 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 2.0	This command was introduced.
Release 3.2	This command was modified. The **TenGigE** keyword was added.
Release 4.0.1	This command was modified. The **HundredGigE** keyword was added.

Usage Guidelines

To specify a physical interface, the notation for the *interface-path-id* 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.

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/RP0/CPU0:router(config)# interface TenGigE 0/4/0/0
RP/0/RP0/CPU0:router(config-if)#
```

Related Commands

Command	Description
interface (Ethernet), on page 10	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 4.2.3	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/RP0/CPU0:router(config)# lldp
```

This example shows how to enable LLDP on subinterfaces:

```
RP/0/RP0/CPU0:router(config)# lldp subinterfaces enable
```

Related Commands

Command	Description
show lldp, on page 79	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 4.2.3	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/RP0/CPU0:router(config)# interface GigabitEthernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lldp
RP/0/RP0/CPU0:router(config-lldp)#
```

Related Commands

Command	Description
interface (Ethernet), on page 10	Specifies or creates an Ethernet interface and enters interface configuration mode.
lldp, on page 12	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 4.2.3	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/RP0/CPU0:router(config)# lldp holdtime 60
```

Related Commands

Command	Description
lldp, on page 12	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 79	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 4.2.3	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/RP0/CPU0:router(config)# lldp reinit 4
```

Related Commands

Command	Description
lldp, on page 12	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 79	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 4.2.3	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/RP0/CPU0:router(config)# lldp timer 60
```

Related Commands

Command	Description
lldp, on page 12	Enables LLDP globally for both transmit and receive operation on the system.
show lldp, on page 79	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 4.2.3	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/RP0/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 3.0	This command was 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/RP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RP0/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 3.0	This command was first introduced.
Release 4.3.2	The mac-accounting egress command was supported on Bundle Ethernet interfaces.

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/RP0/CPU0:routerconfigure
RP/0/RP0/CPU0:routerinterface bundle-ether <bundle-id>
RP/0/RP0/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/RP0/CPU0:routerconfigure
RP/0/RP0/CPU0:routerinterface bundle-ether <bundle-id>
RP/0/RP0/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 6	Clears MAC accounting statistics for an interface.
show mac-accounting (Ethernet), on page 91	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 2.0	This command was 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/RP0/CPU0:router(config)# interface TenGigE 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# mac-address 0001.2468.ABCD
```

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 3.3.0	This command was introduced.

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/RP0/CPU0:router(config)# interface gigabitethernet 0/0/2/0
RP/0/RP0/CPU0:router(config-if)# negotiation auto
```

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

```
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/0/2/0
RP/0/RP0/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 3.0	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/RP0/CPU0:router(config)# interface TenGigE 0/3/0/0
RP/0/RP0/CPU0:router(config-if)# packet-gap non-standard
```

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** *interface-path-id* [**all** | **bert** | **control** | **internal** | **mac** | **periodic** | **phy** | **pm** | **regs** | **stats** | **xgxs**]

Syntax Description

{**GigabitEthernet** | **GigabitEthCtrlr | HundredGigE** | **HundredGigECtrlr** | **TenGigE** | **TenGigECtrlr**}	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. **Note** Not supported on the Cisco CRS 14-Port or Cisco CRS 20-Port or 10-Gigabit or 1-Port 100-Gigabit Ethernet LAN/WAN-PHY Interface Module.
control	Displays configuration and control information.
internal	Displays internal information for the interface.
periodic	Displays performance monitoring data periodically.
phy	Displays physical information for the interface.
pm	Displays Ethernet performance monitoring.
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 3.0	This command was introduced.
Release 3.5.0	This command was modified. The **GigabitEthernet** and **TenGigE** keywords were added.
Release 4.0.1	This command was modified. The **HundredGigE** keyword was added.
Release 6.0.x	This command was modified. The **GigabitCtrlr**, **TenGigECtrlr**, and **HundredGigECtrlr** keywords were added. keywords were 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

Examples

```
RP/0/RP0/CPU0:router# show controllers GigabitEthernet 0/0/0/1
Operational data for interface GigabitEthernet0/0/0/1:

State:
    Administrative state: enabled
    Operational state: Up
```

```
    LED state: Green On

Media:
    Media type: X fiber over short-wl laser PMD, full duplex
    Optics:
        Vendor: CISCO-FINISAR
        Part number: FTLF8519P2BNL-C6
        Serial number: FNS120304T9

MAC address information:
    Operational address: 001d.e5eb.88e1
    Burnt-in address: 001d.e5eb.88e1
    No unicast addresses in filter
    No multicast addresses in filter
Autonegotiation enabled:
    No restricted parameters

Operational values:
    Speed: 1Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 1526
    MRU: 1526
    Inter-packet gap: standard (12)
```

The following example shows sample output from the **show controllers TenGigE** command for the Cisco 8-Port 10-Gigabit Ethernet physical layer interface module (PLIM):

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/3/0/0

PHY:
XENPAK device registers:
========================

Vendor Name: CISCO-SUMITOMO
Vendor PN: SXP3101NV-C1
Vendor Rev: A1
Vendor SN: ECL120701L2

Package OUI: 0041f426
Vendor OUI: 00137b11
Vendor Date Code: 2004071200
nvr_control_status = 0x0007
nvr_version = 0x1e
nvr_size0 = 0x01
nvr_size1 = 0x00
mem_used0 = 0x01
mem_used1 = 0x00
basic_addr = 0x0b
cust_addr = 0x77
vend_addr = 0xa7
ext_vend_addr0= 0x00
ext_vend_addr1= 0xff
reserved0 = 0x00
tcvr_type = 0x01
connector = 0x01
encoding = 0x01
bitrate0 = 0x27
bitrate1 = 0x10
protocol = 0x01
x_gbe_code_byte_0 = 0x02
x_gbe_code_byte_1 = 0x00
```

```
sonet_sdh_code_byte_0 = 0x00
sonet_sdh_code_byte_1 = 0x00
sonet_sdh_code_byte_2 = 0x00
sonet_sdh_code_byte_3 = 0x00
x_gfc_code_byte_0 = 0x00
x_gfc_code_byte_1 = 0x00
x_gfc_code_byte_2 = 0x00
x_gfc_code_byte_3 = 0x00
range0 = 0x03
range1 = 0xe8
fibre_type_byte_0 = 0x20
fibre_type_byte_1 = 0x00
Center Wavelength:
chan0 = 1310.00 nm

chan1 =  0.00 nm
chan2 =  0.00 nm
chan3 =  0.00 nm

basic_checksum = 0x00

Link Alarm Status Registers:
rx_alarm_control = 0x0019
tx_alarm_control = 0x0059
lasi_control = 0x0000
rx_alarm_status = 0x0018
tx_alarm_status = 0x0058
lasi_status = 0x0005

Digital Optical Monitoring:
Transceiver Temp: 34.246 C
Laser Bias Current:  4.8640 mA
Laser Output Power: 0.5059 mW, -3.0 dBm
Receive Optical Power: 0.0000 mW, -inf dBm

Quake: devid 0x0043a400
10GE PMA/PMD Registers:
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400 Speed Ability =
0x0001 Devices 1 = 0x001a Devices 2 = 0x0000 Control 2 = 0x0006 Status 2 = 0xb541 Tx
Disable = 0x0000 Rx Signal Detect = 0x0000 OUI 0 = 0x0041 OUI 1 = 0xf426

Quake (1.c001) = 0x0003

10GE PCS Registers:
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400 Speed Ability =
0x0001 Devices 1 = 0x001a Devices 2 = 0x0000 Control 2 = 0x0000 Status 2 = 0x8401 PKG ID 0

= 0x0000 PKG ID 1 = 0x0000 Base X Status = 0x0000 Base X Control = 0x0000 Base R Status 1
= 0x0004 Base R Status 2 = 0x0000 Base R jitter seed a0 = 0x0000 Base R jitter seed a1 =
0x0000 Base R jitter seed a2 = 0x0000 Base R jitter seed a3 = 0x0000 Base R jitter seed b0

= 0x0000 Base R jitter seed b1 = 0x0000 Base R jitter seed b2 = 0x0000 Base R jitter seed
b3 = 0x0000 Base R jitter test control = 0x0000 Base R jitter test counter = 0x0000
10GE XS/XS Registers:
Control = 0x2040 Status = 0x0002
Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001a Devices 2 = 0x0000 Status 2 = 0x8000 PKG ID 0 =
0x0000 PKG ID 1 = 0x0000 Lane Status = 0x1c0f Test Control = 0x0000

DTE XGXS (BCM8011):
Control = 0x0000 Status = 0x801f
Dev ID 0 = 0x0040 Dev ID 1 = 0x6092
Control 2 = 0x202f
Status 2 = 0x8b01
```

```
Speed Ability = 0x0001 Devices 1 = 0x001a Devices 2 = 0x0000 Status 2 = 0x8000 PKG ID 0 =
0x0000 PKG ID 1 = 0x0000 Lane Status = 0x1c0f Test Control = 0x0000

DTE XGXS (BCM8011):
Control = 0x0000 Status = 0x801f
Dev ID 0 = 0x0040 Dev ID 1 = 0x6092
Control 2 = 0x202f
Status 2 = 0x8b01

MAC (PLA):
Unicast MAC Address entries = 0
MAC (PLA) device is enabled
MAC (PLA) device is in promiscuous mode
MAC (PLA) device loopback is disabled

MAC (PLA) device MTU = 8226

8x10GE PLIM Registers:
local_regs_id = 0xa6602000 local_regs_inter_stat = 0x00000000 local_regs_inter_stat_alias
= 0x00000000 local_regs_inter_enbl_woset = 0x0000ff00 local_regs_inter_enbl_woclr =
0x0000ff00 local_regs_chip_reset = 0x00000000 local_regs_reset = 0xff000000
local_regs_misc_io = 0x00010000 sn_link_framed = 0x00000001 sn_link_crc_errors =
0x00000000 sn_link_force_reframe = 0x00000000 sn_link_error_reframe = 0x00000001
sn_link_force_error = 0x00000000 sn_link_error_cause = 0x00000000
sn_link_error_interrupt_mask = 0x00000003 channel0_control = 0x000000a6 channel1_control =

0x000000a6 channel2_control = 0x0000008e channel3_control = 0x0000008e channel4_control =
0x0000008e channel5_control = 0x000000a6 channel6_control = 0x000000a6 channel7_control =
0x0000008e
```

The following example shows sample output from the **show controllers TenGigE** command:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/7/0/0
Tue Mar 22 15:32:35.491 UTC
Operational data for interface TenGigE0/7/0/0:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On

Phy:
    Media type: R fiber over 1310nm optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: SFCT-7081Z-CS2
        Serial number: AGA1447N4JE

MAC address information:
    Operational address: 0021.a03a.4744
    Burnt-in address: 0021.a03a.4744
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
    Speed: 10Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 1522
    MRU: 1522
    Inter-packet gap: standard (12)
```

The following example shows sample output from the base form of the **show controllers TenGigE** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0
Thu Oct  7 16:18:32.348 EST
Operational data for interface TenGigE0/1/0/0:

State:
    Administrative state: disabled
    Operational state: Down (Reason: Link loss or low light, no loopback)
    LED state: Yellow On

Phy:
    Media type: R fiber over 1310nm optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: SXP3101NV-C1
        Serial number: ECL120701L2

MAC address information:
    Operational address: 0014.f294.6776
    Burnt-in address: 0014.f294.6776
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
    Speed: 10Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 1522
    MRU: 1522
    Inter-packet gap: standard (12)
```

The following example shows sample output from the **show controllers TenGigE all** form of the command:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/7/0/0 all
ue Mar 22 15:32:45.685 UTC
Operational data for interface TenGigE0/7/0/0:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On

Phy:
    Media type: R fiber over 1310nm optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: SXP3101NV-C1
        Serial number: ECL120701L2

MAC address information:
    Operational address: 0021.a03a.4744
    Burnt-in address: 0021.a03a.4744
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
```

```
    Speed: 10Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 1522
    MRU: 1522
    Inter-packet gap: standard (12)

Statistics for interface TenGigE0/7/0/0 (cached values):

Ingress:
    Input total bytes           = 60
    Input good bytes            = 60

    Input total packets         = 1
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 1
    Input pkts 65-127 bytes     = 0
    Input pkts 128-255 bytes    = 0
    Input pkts 256-511 bytes    = 0
    Input pkts 512-1023 bytes   = 0
    Input pkts 1024-1518 bytes  = 0
    Input pkts 1519-Max bytes   = 0

    Input good pkts             = 1
    Input unicast pkts          = 0
    Input multicast pkts        = 0
    Input broadcast pkts        = 1

    Input drop overrun          = 0
    Input drop abort            = 0
    Input drop invalid VLAN     = 0
    Input drop invalid DMAC     = 0
    Input drop invalid encap    = 0
    Input drop other            = 0

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
    Input error CRC             = 0
    Input error collisions      = 0
    Input error symbol          = 0
    Input error other           = 0

    Input MIB giant             = 0
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 0
    Output good bytes           = 0

    Output total packets        = 0
    Output 802.1Q frames        = 0
    Output pause frames         = 0
    Output pkts 64 bytes        = 0
    Output pkts 65-127 bytes    = 0
    Output pkts 128-255 bytes   = 0
    Output pkts 256-511 bytes   = 0
    Output pkts 512-1023 bytes  = 0
    Output pkts 1024-1518 bytes = 0
    Output pkts 1519-Max bytes  = 0
```

```
    Output good pkts            = 0
    Output unicast pkts         = 0
    Output multicast pkts       = 0
    Output broadcast pkts       = 0

    Output drop underrun        = 0
    Output drop abort           = 0
    Output drop other           = 0

    Output error other          = 0

Management information for interface TenGigE0/7/0/0:

Port number: 0
Bay number: 0
Interface handle: 0x1780200

Config:
    Auto-negotiation: Configuration not supported (Off)
    Carrier delay (up): Not configured
    Carrier delay (down): Not configured
    Speed: Configuration not supported (10Gbps)
    Duplex: Configuration not supported (Full Duplex)
    Flow Control: Not configured (None)
    IPG: Not configured (standard (12))
    Loopback: Not configured (None)
    MTU: Not configured
    Bandwidth: Not configured
    BER-SD Threshold: Configuration not supported
    BER-SD Report: Configuration not supported
    BER-SF Threshold: Configuration not supported
    BER-SF Report: Configuration not supported
    BER-SF Signal Remote Failure: Configuration not supported

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9600 bytes
    Max speed: 10Gbps
    Interface type: TenGigE
    Management interface: No
    Promiscuous mode: Yes
    Default carrier delay up (auto-neg on): 0 ms
    Default carrier delay down (auto-neg on): 0 ms
    Default carrier delay up (auto-neg off): 0 ms
    Default carrier delay down (auto-neg off): 0 ms
    Allowed config mask: 0x27b

Cached driver state:
    MTU: 1522 bytes
    Burnt-in MAC address: 0021.a03a.4744

Operational carrier delay:
    Carrier delay (up): 0 ms
    Carrier delay (down): 0 ms

Bundle settings:
    Aggregated: No
    Bundle MTU: 1514 bytes
    Bundle MAC address: 0021.a03a.4744

Port FSM state:
    Port is enabled, link is up
Complete FSM state:
```

```
    Admin up
    Bundle admin up
    Client admin up
    Client admin tx not disabled
    Port enabled
    Port tx enabled
    Hardware link up
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:

0 Unicast Bundle MAC Addresses:

0 Multicast Bundle MAC Addresses:


Operational address: 0021.a03a.4744
Burnt-in address: 0021.a03a.4744

PLA 0 port 0  MAC enabled  Rx MAC enabled
Administrative state: Up
Operational state: Up

0 HSRP/VRRP MAC addresses

VLAN Ethertype: 0x8100
QinQ Ethertype: 0x88a8
MTP  Ethertype: 0x88e7

4 VLAN UIDB entries
VLAN1   VLAN2      Packet Type Flags      UIDB Result Flags
   0        0          VLAN                   1 VLAN
   0        0               ARPA              1 ARPA
   0        0                    SAP          1 SAP
   0        0                                 1 SNAP


Total Power Available on PLIM for XFP's: 35000 mW
  Power used by Inserted XFP's: 1500 mW
  Power Available: 33500 mW

     Port        Power Used       State
      00          1500 mW         XFP Inserted and Powered On
      01          0000 mW         No XFP Inserted
      02          0000 mW         No XFP Inserted
      03          0000 mW         No XFP Inserted
      04          0000 mW         No XFP Inserted
      05          0000 mW         No XFP Inserted
      06          0000 mW         No XFP Inserted
      07          0000 mW         No XFP Inserted
      08          0000 mW         No XFP Inserted
      09          0000 mW         No XFP Inserted
      10          0000 mW         No XFP Inserted
      11          0000 mW         No XFP Inserted
      12          0000 mW         No XFP Inserted
      13          0000 mW         No XFP Inserted

802.3ae Sections
```

```
================

PMA/PMD
  Previous Alarm Status:
    PMA/PMD NOT Locked to Local Signal
  Current Alarm Status:
    PMA/PMD Locked to Local Signal
    SR Ability
    Loopback Ability

PCS
  Previous Alarm Status:
    PCS Rx Link DOWN
    PCS Rx NOT Block Locked
    PCS Rx Link Status DOWN
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has NO Block Lock
  Current Alarm Status:
    PCS Rx Link UP
    PCS Rx Block Locked
    PCS Rx Link Status UP
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has Block Lock

WIS: HW In LAN Mode - No Info


XFP General Info:
=================

PHY/XFP Status:  XFP is Working as expected


XFP Info:
=========
Max Power Dissipation: 1500 mW

XFP Type: 10GBASE-LR
Vendor Name: CISCO-SUMITOMO
Vendor Part Number: SFCT-7081Z-CS2
Vendor OUI: 0x00-0x17-0x6a
Vendor Hardware Revision: 01
Vendor Serial number: AGA1447N4JE
Date Code (yy/mm/dd): 10/11/27
Lot Code: 01

Cisco PID: XFP10GLR-192SR-L
Cisco VID: V01
Cisco PN: 10-2542-01

ID: XFP
Extended ID: 0x18
  TX ref clock input is not required
  CDP is supported
  Power Level 1 (1.5W max. power)
Minimum bit rate is 9900 MBits/s.
Maximum bit rate is 11100 MBits/s.


XFP Detail Info:
================
```

```
Temp: 30.119
Tx bias: 35.178 mA
Tx power: 0.5141 mW ( -2.9 dBm)
Rx power: 0.4612 mW ( -3.4 dBm)
AUX 1: Laser Temperature: 0x40
AUX 2: +3.3V Supply Voltage: 0x7

XFP Status: enabled.
 laser is enabled
 MOD NR is ready
 is powered on
 has interrupt(s)
 has no LOS
 data is ready
 TX path is ready
 TX laser is not in fault condition
 TX path CDR is locked
 RX path is ready
 RX path CDR is locked

Alarms:
  Low RX power alarm

Warnings:
  Low TX bias warning
  Low TX power warning
  Low RX power warning

THRESHOLDS
                      High Alarm     Low Alarm     High Warning      Low Warning
   Temperature     C       78.0          0.0            73.0            5.0
   Voltage         V     000.0000      000.0000       000.0000        000.0000
   Bias Current   mA     090.0000      005.0000       075.0000        015.0000
   Transmit power mW     022.3870      000.7580       011.2200        001.5130
   Receive power  mW     022.3870      000.1810       011.2200        000.3630
DTE XGXS
  Current Alarm Status:
    XGXS Lanes All Synchronized
    XGXS Lanes Aligned
PHY XGXS
  Previous Alarm Status:
    NO XGXS Local Fault
    TX Link Down
  Current Alarm Status:
    NO XGXS Local Fault
    TX Link UP

LASI 802.3ae Registers:
=======================
Previous: LASI Status = 0x0001 Rx Alarm Status = 0x0004 Tx Alarm Status = 0x0020
Current: LASI Status = 0x0000 Rx Alarm Status = 0x0000 Tx Alarm Status = 0x0000

PMA/PMD 802.3ae Registers:
==========================
Control = 0x2040 Status = 0x0006 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0007 Status 2 = 0xb181
Tx Disable = 0x0000 Rx Signal Detect = 0x0001
OUI 0 = 0x0000 OUI 1 = 0x0000
Current: Status = 0x0006 Status 2 = 0xb181

WIS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
```

```
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8003 Status 3 = 0x0008
Test Pattern Error Counter = 0x0000 Far End BLock Error Counter = 0x0000
J1 TX 1 = 0x0000 J1 TX 2 = 0x0000 J1 TX 3 = 0x0000 J1 TX 4 = 0x0000
J1 TX 5 = 0x0000 J1 TX 6 = 0x0000 J1 TX 7 = 0x0000 J1 TX 8 = 0x8900
J1 RX 1 = 0x0000 J1 RX 2 = 0x0000 J1 RX 3 = 0x0000 J1 RX 4 = 0x0000
J1 RX 5 = 0x0000 J1 RX 6 = 0x0000 J1 RX 7 = 0x0000 J1 RX 8 = 0x0000
Far End BIP Error 0 = 0x0000 Far End BIP Error 1 = 0x0000
Line BIP Error 0 = 0x0000 Line BIP Error 1 = 0x0000
Path BIP Error Count = 0x0000 Section BIP Error Count = 0x0000
J0 Tx 1 = 0x0000 J0 Tx 2 = 0x0000 J0 Tx 3 = 0x0000 J0 Tx 4 = 0x0000
J0 Tx 5 = 0x0000 J0 Tx 6 = 0x0000 J0 Tx 7 = 0x0000 J0 Tx 8 = 0x8900
J0 Rx 1 = 0x0000 J0 Rx 2 = 0x0000 J0 Rx 3 = 0x0000 J0 Rx 4 = 0x0000
J0 Rx 5 = 0x0000 J0 Rx 6 = 0x0000 J0 Rx 7 = 0x0000 J0 Rx 8 = 0x0000
Current: Status = 0x0082 Status 2 = 0x8003 Status 3 = 0x0008

PCS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0006 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8005
PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Base X Status = 0x0000 Base X Control = 0x0000
Base R Status 1 = 0x1005 Base R Status 2 = 0x8000
Base R jitter seed a0 = 0x0000 Base R jitter seed a1 = 0x0000
Base R jitter seed a2 = 0x0000 Base R jitter seed a3 = 0x0000
Base R jitter seed b0 = 0x0000 Base R jitter seed b1 = 0x0000
Base R jitter seed b2 = 0x0000 Base R jitter seed b3 = 0x0000
Base R jitter test control = 0x0000 Base R jitter test counter = 0x0000
Current: Status = 0x0006 Status 2 = 0x8005 Base R 1 = 0x1005 Base R 2 = 0x8000

PHY XS 802.3ae Registers:
=========================
Control = 0x2040 Status = 0x0006
Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Status 2 = 0x8000 PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Lane Status = 0x1c0f Test Control = 0x0000
Current: Status = 0x0006 Status 2 = 0x8000 Lane Status = 0x1c0f

XFP Register Info (MSA):
========================
(Reg 000 = 0x06)  (Reg 001 = 0x00)  (Reg 002 = 0x4e)  (Reg 003 = 0x00)
(Reg 004 = 0x00)  (Reg 005 = 0x00)  (Reg 006 = 0x49)  (Reg 007 = 0x00)
(Reg 008 = 0x05)  (Reg 009 = 0x00)  (Reg 010 = 0x00)  (Reg 011 = 0x00)
(Reg 012 = 0x00)  (Reg 013 = 0x00)  (Reg 014 = 0x00)  (Reg 015 = 0x00)
(Reg 016 = 0x00)  (Reg 017 = 0x00)  (Reg 018 = 0xaf)  (Reg 019 = 0xc8)
(Reg 020 = 0x09)  (Reg 021 = 0xc4)  (Reg 022 = 0x92)  (Reg 023 = 0x7c)
(Reg 024 = 0x1d)  (Reg 025 = 0x4c)  (Reg 026 = 0x57)  (Reg 027 = 0x73)
(Reg 028 = 0x02)  (Reg 029 = 0xf6)  (Reg 030 = 0x2b)  (Reg 031 = 0xd4)
(Reg 032 = 0x05)  (Reg 033 = 0xe9)  (Reg 034 = 0x57)  (Reg 035 = 0x73)
(Reg 036 = 0x00)  (Reg 037 = 0xb5)  (Reg 038 = 0x2b)  (Reg 039 = 0xd4)
(Reg 040 = 0x01)  (Reg 041 = 0x6b)  (Reg 042 = 0x5d)  (Reg 043 = 0x00)
(Reg 044 = 0x00)  (Reg 045 = 0x00)  (Reg 046 = 0x58)  (Reg 047 = 0x00)
(Reg 048 = 0x05)  (Reg 049 = 0x00)  (Reg 050 = 0x8d)  (Reg 051 = 0xcc)
(Reg 052 = 0x74)  (Reg 053 = 0x04)  (Reg 054 = 0x87)  (Reg 055 = 0x8c)
(Reg 056 = 0x7a)  (Reg 057 = 0x44)  (Reg 058 = 0x00)  (Reg 059 = 0x00)
(Reg 060 = 0x00)  (Reg 061 = 0x00)  (Reg 062 = 0x00)  (Reg 063 = 0x00)
(Reg 064 = 0x00)  (Reg 065 = 0x00)  (Reg 066 = 0x00)  (Reg 067 = 0x00)
(Reg 068 = 0x00)  (Reg 069 = 0x00)  (Reg 070 = 0x00)  (Reg 071 = 0x00)
(Reg 072 = 0x00)  (Reg 073 = 0x00)  (Reg 074 = 0x00)  (Reg 075 = 0x00)
(Reg 076 = 0x00)  (Reg 077 = 0x00)  (Reg 078 = 0x00)  (Reg 079 = 0x00)
(Reg 080 = 0x00)  (Reg 081 = 0x00)  (Reg 082 = 0x00)  (Reg 083 = 0x00)
(Reg 084 = 0x00)  (Reg 085 = 0x00)  (Reg 086 = 0x00)  (Reg 087 = 0x00)
```

```
(Reg 088 = 0x00)  (Reg 089 = 0x00)  (Reg 090 = 0x00)  (Reg 091 = 0x00)
(Reg 092 = 0x00)  (Reg 093 = 0x00)  (Reg 094 = 0x00)  (Reg 095 = 0x00)
(Reg 096 = 0x1e)  (Reg 097 = 0x77)  (Reg 098 = 0x00)  (Reg 099 = 0x00)
(Reg 100 = 0x44)  (Reg 101 = 0xb5)  (Reg 102 = 0x14)  (Reg 103 = 0x38)
(Reg 104 = 0x12)  (Reg 105 = 0x04)  (Reg 106 = 0x26)  (Reg 107 = 0xda)
(Reg 108 = 0x7e)  (Reg 109 = 0x32)  (Reg 110 = 0x04)  (Reg 111 = 0x00)
(Reg 112 = 0x00)  (Reg 113 = 0x00)  (Reg 114 = 0x00)  (Reg 115 = 0x00)
(Reg 116 = 0x00)  (Reg 117 = 0x00)  (Reg 118 = 0x00)  (Reg 119 = 0x00)
(Reg 120 = 0x00)  (Reg 121 = 0x00)  (Reg 122 = 0x00)  (Reg 123 = 0x00)
(Reg 124 = 0x00)  (Reg 125 = 0x00)  (Reg 126 = 0x00)  (Reg 127 = 0x01)

(Reg 128 = 0x06)  (Reg 129 = 0x18)  (Reg 130 = 0x07)  (Reg 131 = 0x40)
(Reg 132 = 0x00)  (Reg 133 = 0x00)  (Reg 134 = 0x00)  (Reg 135 = 0x40)
(Reg 136 = 0x00)  (Reg 137 = 0x00)  (Reg 138 = 0x00)  (Reg 139 = 0xb0)
(Reg 140 = 0x63)  (Reg 141 = 0x6f)  (Reg 142 = 0x0a)  (Reg 143 = 0x00)
(Reg 144 = 0x00)  (Reg 145 = 0x00)  (Reg 146 = 0x00)  (Reg 147 = 0x40)
(Reg 148 = 0x43)  (Reg 149 = 0x49)  (Reg 150 = 0x53)  (Reg 151 = 0x43)
(Reg 152 = 0x4f)  (Reg 153 = 0x2d)  (Reg 154 = 0x41)  (Reg 155 = 0x56)
(Reg 156 = 0x41)  (Reg 157 = 0x47)  (Reg 158 = 0x4f)  (Reg 159 = 0x20)
(Reg 160 = 0x20)  (Reg 161 = 0x20)  (Reg 162 = 0x20)  (Reg 163 = 0x20)
(Reg 164 = 0xf9)  (Reg 165 = 0x00)  (Reg 166 = 0x17)  (Reg 167 = 0x6a)
(Reg 168 = 0x53)  (Reg 169 = 0x46)  (Reg 170 = 0x43)  (Reg 171 = 0x54)
(Reg 172 = 0x2d)  (Reg 173 = 0x37)  (Reg 174 = 0x30)  (Reg 175 = 0x38)
(Reg 176 = 0x31)  (Reg 177 = 0x5a)  (Reg 178 = 0x2d)  (Reg 179 = 0x43)
(Reg 180 = 0x53)  (Reg 181 = 0x32)  (Reg 182 = 0x20)  (Reg 183 = 0x20)
(Reg 184 = 0x30)  (Reg 185 = 0x31)  (Reg 186 = 0x66)  (Reg 187 = 0x58)
(Reg 188 = 0x0f)  (Reg 189 = 0xa0)  (Reg 190 = 0x46)  (Reg 191 = 0x67)
(Reg 192 = 0x4b)  (Reg 193 = 0x1e)  (Reg 194 = 0x05)  (Reg 195 = 0x00)
(Reg 196 = 0x41)  (Reg 197 = 0x47)  (Reg 198 = 0x41)  (Reg 199 = 0x31)
(Reg 200 = 0x34)  (Reg 201 = 0x34)  (Reg 202 = 0x37)  (Reg 203 = 0x4e)
(Reg 204 = 0x34)  (Reg 205 = 0x4a)  (Reg 206 = 0x45)  (Reg 207 = 0x20)
(Reg 208 = 0x20)  (Reg 209 = 0x20)  (Reg 210 = 0x20)  (Reg 211 = 0x20)
(Reg 212 = 0x31)  (Reg 213 = 0x30)  (Reg 214 = 0x31)  (Reg 215 = 0x31)
(Reg 216 = 0x32)  (Reg 217 = 0x37)  (Reg 218 = 0x30)  (Reg 219 = 0x31)
(Reg 220 = 0x08)  (Reg 221 = 0x60)  (Reg 222 = 0x47)  (Reg 223 = 0xf4)
(Reg 224 = 0x00)  (Reg 225 = 0x00)  (Reg 226 = 0x06)  (Reg 227 = 0xef)
(Reg 228 = 0xfa)  (Reg 229 = 0xc9)  (Reg 230 = 0x9a)  (Reg 231 = 0x6c)
(Reg 232 = 0x5b)  (Reg 233 = 0x06)  (Reg 234 = 0x70)  (Reg 235 = 0xc5)
(Reg 236 = 0x2d)  (Reg 237 = 0xa5)  (Reg 238 = 0x7f)  (Reg 239 = 0xdf)
(Reg 240 = 0x9a)  (Reg 241 = 0x03)  (Reg 242 = 0xf6)  (Reg 243 = 0x00)
(Reg 244 = 0x00)  (Reg 245 = 0x00)  (Reg 246 = 0x00)  (Reg 247 = 0x00)
(Reg 248 = 0x00)  (Reg 249 = 0x00)  (Reg 250 = 0x00)  (Reg 251 = 0x00)
(Reg 252 = 0xf8)  (Reg 253 = 0x68)  (Reg 254 = 0x92)  (Reg 255 = 0xd1)
```

The following example shows sample output from the **show controllers TenGigE all** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 all

Thu Oct  7 18:23:49.231 EST
Operational data for interface TenGigE0/1/0/0:

State:
    Administrative state: disabled
    Operational state: Down (Reason: Link loss or low light, no loopback)
    LED state: Yellow On

Phy:
    Media type: R fiber over 1310nm optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: SXP3101NV-C1
        Serial number: ECL120701L2
```

```
MAC address information:
    Operational address: 0014.f294.6776
    Burnt-in address: 0014.f294.6776
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
    Speed: 10Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 1522
    MRU: 1522
    Inter-packet gap: standard (12)

Statistics for interface TenGigE0/1/0/0 (cached values):

Ingress:
    Input total bytes           = 0
    Input good bytes            = 0

    Input total packets         = 0
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 0
    Input pkts 65-127 bytes     = 0
    Input pkts 128-255 bytes    = 0
    Input pkts 256-511 bytes    = 0
    Input pkts 512-1023 bytes   = 0
    Input pkts 1024-1518 bytes  = 0
    Input pkts 1519-Max bytes   = 0

    Input good pkts             = 0
    Input unicast pkts          = 0
    Input multicast pkts        = 0
    Input broadcast pkts        = 0

    Input drop overrun          = 0
    Input drop abort            = 0
    Input drop invalid VLAN     = 0
    Input drop invalid DMAC     = 0
    Input drop invalid encap    = 0
    Input drop other            = 0

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
    Input error CRC             = 0
    Input error collisions      = 0
    Input error symbol          = 0
    Input error other           = 0

    Input MIB giant             = 0
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 0
    Output good bytes           = 0

    Output total packets        = 0
```

```
    Output 802.1Q frames        = 0
    Output pkts 64 bytes        = 0
    Output pkts 65-127 bytes    = 0
    Output pkts 128-255 bytes   = 0
    Output pkts 256-511 bytes   = 0
    Output pkts 512-1023 bytes  = 0
    Output pkts 1024-1518 bytes = 0
    Output pkts 1519-Max bytes  = 0

    Output good pkts            = 0
    Output unicast pkts         = 0
    Output multicast pkts       = 0
    Output broadcast pkts       = 0

    Output drop underrun        = 0
    Output drop abort           = 0
    Output drop other           = 0

    Output error other          = 0

Management information for interface TenGigE0/1/0/0:

Port number: 0
Bay number: 0
Interface handle: 0x1180200

Config:
    Auto-negotiation: Configuration not supported (Off)
    Carrier delay (up): Not configured
    Carrier delay (down): Not configured
    Speed: Configuration not supported (10Gbps)
    Duplex: Configuration not supported (Full Duplex)
    Flow Control: Not configured (None)
    IPG: Not configured (standard (12))
    Loopback: Not configured (None)
    MTU: Not configured
    Bandwidth: Not configured --> This output field is changed
    BER-SD Threshold: Configuration not supported
    BER-SD Report: Configuration not supported
    BER-SF Threshold: Configuration not supported
    BER-SF Report: Configuration not supported
    BER-SF Signal Remote Failure: Configuration not supported

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9600 bytes
    Max speed: 10Gbps
    Interface type: TenGigE
    Management interface: No
    Promiscuous mode: Yes
    Default carrier delay up (auto-neg on): 0 ms
    Default carrier delay down (auto-neg on): 0 ms
    Default carrier delay up (auto-neg off): 0 ms
    Default carrier delay down (auto-neg off): 0 ms
    Allowed config mask: 0x27b

Cached driver state:
    MTU: 1522 bytes
    Burnt-in MAC address: 0014.f294.6776

Operational carrier delay:
    Carrier delay (up): 0 ms
    Carrier delay (down): 0 ms
```

```
Bundle settings:
    Aggregated: No
    Bundle MTU: 1514 bytes
    Bundle MAC address: 0014.f294.6776

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 not disabled
    Port disabled
    Port tx disabled
    Hardware 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:

0 Unicast Bundle MAC Addresses:

0 Multicast Bundle MAC Addresses:


Operational address: 0014.f294.6776
Burnt-in address: 0014.f294.6776

PLA 0 port 0  MAC enabled  Rx MAC disabled
Administrative state: Forced Remote fault
Operational state: Remote fault

0 HSRP/VRRP MAC addresses

VLAN Ethertype: 0x8100
QinQ Ethertype: 0x88a8
MTP  Ethertype: 0x88e7

4 VLAN UIDB entries
VLAN1   VLAN2      Packet Type Flags      UIDB Result Flags
   0        0          VLAN                   1 VLAN
   0        0               ARPA              1 ARPA
   0        0                    SAP          1 SAP
   0        0                                 1 SNAP


Total Power Available on PLIM for XFP's: 35000 mW
  Power used by Inserted XFP's: 33000 mW
  Power Available: 2000 mW

     Port        Power Used       State
      00          2500 mW         XFP Inserted and Powered On
      01          2500 mW         XFP Inserted and Powered On
      02          1500 mW         XFP Inserted and Powered On
      03          2500 mW         XFP Inserted and Powered On
      04          2500 mW         XFP Inserted and Powered On
      05          1500 mW         XFP Inserted and Powered On
      06          2500 mW         XFP Inserted and Powered On
      07          2500 mW         XFP Inserted and Powered On
```

```
      09          2500 mW         XFP Inserted and Powered On
      10          2500 mW         XFP Inserted and Powered On
      11          2500 mW         XFP Inserted and Powered On
      12          2500 mW         XFP Inserted and Powered On
      13          2500 mW         XFP Inserted and Powered On

802.3ae Sections
================

PMA/PMD
  Previous Alarm Status:
    PMA/PMD NOT Locked to Local Signal
  Current Alarm Status:
    PMA/PMD NOT Locked to Local Signal
    PMA/PMD Local Fault
    SR Ability
    Loopback Ability
    Rx Local Fault

PCS
  Previous Alarm Status:
    PCS Rx Link DOWN
    PCS Rx NOT Block Locked
    PCS Rx Link Status DOWN
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has NO Block Lock
  Current Alarm Status:
    PCS Rx Link DOWN
    PCS Local Fault Detected
    PCS Rx Local Fault Detected
    PCS Rx NOT Block Locked
    PCS Rx Link Status DOWN
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has NO Block Lock

WIS: HW In LAN Mode - No Info


XFP General Info:
=================

UDI Checking: Disabled
PHY/XFP Status: XFP Not UDI Compliant
 XFP is Working as expected


XFP Info:
=========
Max Power Dissipation: 2500 mW

XFP Type: 10GBASE-LR
Vendor Name: CISCO-SUMITOMO
Vendor Part Number: SXP3101NV-C1
Vendor OUI: 0x00-0x00-0x5f
Vendor Hardware Revision: C
Vendor Serial number: ECL120701L2
Date Code (yy/mm/dd): 08/02/27
Lot Code: D0

Cisco PID: XFP-10GLR-OC192SR
Cisco VID: V02
Cisco PN: 10-1989-02
```

```
ID: XFP
Extended ID: 0x58
  TX ref clock input is not required
  CDP is supported
  Power Level 2 (2.5W max. power)
Minimum bit rate is 9900 MBits/s.
Maximum bit rate is 10300 MBits/s.


XFP Detail Info:
================

Temp: 32.223
Tx bias: 0.0 mA
Tx power: 0.0 mW (-40 dBm)
Rx power: 0.33 mW (-24 dBm)
AUX 1: +3.3V Supply Voltage: 0x70
AUX 2: Auxiliary monitoring not implemented: 0x0

XFP Status: enabled.
 laser is enabled
 MOD NR is not ready
 is powered off
 doesn't have interrupt(s)
 has LOS
 data is ready
 TX path is ready
 TX laser is not in fault condition
 TX path CDR is locked
 RX path is not ready
 RX path CDR is not locked

Alarms:
  Low RX power alarm

Warnings:
  Low RX power warning

THRESHOLDS
                      High Alarm     Low Alarm     High Warning      Low Warng
   Temperature     C       80.0          -15.0           75.0           -10.0
   Voltage         V     000.0000        000.0000        000.0000        000.000
   Bias Current   mA     100.0000        000.0000        080.0000        000.000
   Transmit power mW     015.8480        001.2580        010.0000        001.990
   Receive power  mW     022.3870        000.1810        014.1250        000.280
DTE XGXS
  Current Alarm Status:
    XGXS Lanes All Synchronized
    XGXS Lanes Aligned
PHY XGXS
  Previous Alarm Status:
    NO XGXS Local Fault
    TX Link Down
  Current Alarm Status:
    NO XGXS Local Fault
    TX Link UP

LASI 802.3ae Registers:
=======================
Previous: LASI Status = 0x000d Rx Alarm Status = 0x0018 Tx Alarm Status = 0x0020
Current: LASI Status = 0x000c Rx Alarm Status = 0x0018 Tx Alarm Status = 0x0000

PMA/PMD 802.3ae Registers:
```

```
============================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0007 Status 2 = 0xb581
Tx Disable = 0x0000 Rx Signal Detect = 0x0000
OUI 0 = 0x0000 OUI 1 = 0x0000
Current: Status = 0x0082 Status 2 = 0xb581

WIS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8003 Status 3 = 0x0048
Test Pattern Error Counter = 0x0000 Far End BLock Error Counter = 0x0000
J1 TX 1 = 0x0000 J1 TX 2 = 0x0000 J1 TX 3 = 0x0000 J1 TX 4 = 0x0000
J1 TX 5 = 0x0000 J1 TX 6 = 0x0000 J1 TX 7 = 0x0000 J1 TX 8 = 0x8900
J1 RX 1 = 0x0000 J1 RX 2 = 0x0000 J1 RX 3 = 0x0000 J1 RX 4 = 0x0000
J1 RX 5 = 0x0000 J1 RX 6 = 0x0000 J1 RX 7 = 0x0000 J1 RX 8 = 0x0000
Far End BIP Error 0 = 0x0000 Far End BIP Error 1 = 0x0000
Line BIP Error 0 = 0x0000 Line BIP Error 1 = 0x0000
Path BIP Error Count = 0x0000 Section BIP Error Count = 0x0000
J0 Tx 1 = 0x0000 J0 Tx 2 = 0x0000 J0 Tx 3 = 0x0000 J0 Tx 4 = 0x0000
J0 Tx 5 = 0x0000 J0 Tx 6 = 0x0000 J0 Tx 7 = 0x0000 J0 Tx 8 = 0x8900
J0 Rx 1 = 0x0000 J0 Rx 2 = 0x0000 J0 Rx 3 = 0x0000 J0 Rx 4 = 0x0000
J0 Rx 5 = 0x0000 J0 Rx 6 = 0x0000 J0 Rx 7 = 0x0000 J0 Rx 8 = 0x0000
Current: Status = 0x0082 Status 2 = 0x8003 Status 3 = 0x0048

PCS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8405
PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Base X Status = 0x0000 Base X Control = 0x0000
Base R Status 1 = 0x0004 Base R Status 2 = 0x0000
Base R jitter seed a0 = 0x0000 Base R jitter seed a1 = 0x0000
Base R jitter seed a2 = 0x0000 Base R jitter seed a3 = 0x0000
Base R jitter seed b0 = 0x0000 Base R jitter seed b1 = 0x0000
Base R jitter seed b2 = 0x0000 Base R jitter seed b3 = 0x0000
Base R jitter test control = 0x0000 Base R jitter test counter = 0x0000
Current: Status = 0x0082 Status 2 = 0x8405 Base R 1 = 0x0004 Base R 2 = 0x0000

PHY XS 802.3ae Registers:
=========================
Control = 0x2040 Status = 0x0006
Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Status 2 = 0x8000 PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Lane Status = 0x1c0f Test Control = 0x0000
Current: Status = 0x0006 Status 2 = 0x8000 Lane Status = 0x1c0f

XFP Register Info (MSA):
========================
(Reg 000 = 0x06)  (Reg 001 = 0x00)  (Reg 002 = 0x50)  (Reg 003 = 0x00)
(Reg 004 = 0xf1)  (Reg 005 = 0x00)  (Reg 006 = 0x4b)  (Reg 007 = 0x00)
(Reg 008 = 0xf6)  (Reg 009 = 0x00)  (Reg 010 = 0x00)  (Reg 011 = 0x00)
(Reg 012 = 0x00)  (Reg 013 = 0x00)  (Reg 014 = 0x00)  (Reg 015 = 0x00)
(Reg 016 = 0x00)  (Reg 017 = 0x00)  (Reg 018 = 0xc3)  (Reg 019 = 0x50)
(Reg 020 = 0x00)  (Reg 021 = 0x00)  (Reg 022 = 0x9c)  (Reg 023 = 0x40)
(Reg 024 = 0x00)  (Reg 025 = 0x00)  (Reg 026 = 0x3d)  (Reg 027 = 0xe8)
(Reg 028 = 0x04)  (Reg 029 = 0xea)  (Reg 030 = 0x27)  (Reg 031 = 0x10)
(Reg 032 = 0x07)  (Reg 033 = 0xcb)  (Reg 034 = 0x57)  (Reg 035 = 0x73)
(Reg 036 = 0x00)  (Reg 037 = 0xb5)  (Reg 038 = 0x37)  (Reg 039 = 0x2d)
(Reg 040 = 0x01)  (Reg 041 = 0x20)  (Reg 042 = 0x00)  (Reg 043 = 0x00)
```

```
(Reg 044 = 0x00)  (Reg 045 = 0x00)  (Reg 046 = 0x00)  (Reg 047 = 0x00)
(Reg 048 = 0x00)  (Reg 049 = 0x00)  (Reg 050 = 0x00)  (Reg 051 = 0x00)
(Reg 052 = 0x00)  (Reg 053 = 0x00)  (Reg 054 = 0x00)  (Reg 055 = 0x00)
(Reg 056 = 0x00)  (Reg 057 = 0x00)  (Reg 058 = 0x00)  (Reg 059 = 0x00)
(Reg 060 = 0x00)  (Reg 061 = 0x00)  (Reg 062 = 0x00)  (Reg 063 = 0x00)
(Reg 064 = 0x00)  (Reg 065 = 0x00)  (Reg 066 = 0x00)  (Reg 067 = 0x00)
(Reg 068 = 0x00)  (Reg 069 = 0x00)  (Reg 070 = 0x00)  (Reg 071 = 0x00)
(Reg 072 = 0x00)  (Reg 073 = 0x00)  (Reg 074 = 0x00)  (Reg 075 = 0x00)
(Reg 076 = 0x00)  (Reg 077 = 0x00)  (Reg 078 = 0x00)  (Reg 079 = 0x00)
(Reg 080 = 0x00)  (Reg 081 = 0x40)  (Reg 082 = 0x00)  (Reg 083 = 0x40)
(Reg 084 = 0x1e)  (Reg 085 = 0x00)  (Reg 086 = 0x00)  (Reg 087 = 0x00)
(Reg 088 = 0x00)  (Reg 089 = 0x00)  (Reg 090 = 0x00)  (Reg 091 = 0x00)
(Reg 092 = 0x00)  (Reg 093 = 0x00)  (Reg 094 = 0x00)  (Reg 095 = 0x00)
(Reg 096 = 0x20)  (Reg 097 = 0xdf)  (Reg 098 = 0x00)  (Reg 099 = 0x00)
(Reg 100 = 0x00)  (Reg 101 = 0x00)  (Reg 102 = 0x00)  (Reg 103 = 0x00)
(Reg 104 = 0x00)  (Reg 105 = 0x21)  (Reg 106 = 0x7e)  (Reg 107 = 0x44)
(Reg 108 = 0x00)  (Reg 109 = 0x00)  (Reg 110 = 0x32)  (Reg 111 = 0x18)
(Reg 112 = 0x00)  (Reg 113 = 0x00)  (Reg 114 = 0x00)  (Reg 115 = 0x00)
(Reg 116 = 0x00)  (Reg 117 = 0x00)  (Reg 118 = 0x00)  (Reg 119 = 0x00)
(Reg 120 = 0x00)  (Reg 121 = 0x00)  (Reg 122 = 0x00)  (Reg 123 = 0x00)
(Reg 124 = 0x00)  (Reg 125 = 0x00)  (Reg 126 = 0x00)  (Reg 127 = 0x01)

(Reg 128 = 0x06)  (Reg 129 = 0x58)  (Reg 130 = 0x07)  (Reg 131 = 0x40)
(Reg 132 = 0x00)  (Reg 133 = 0x00)  (Reg 134 = 0x00)  (Reg 135 = 0x40)
(Reg 136 = 0x00)  (Reg 137 = 0x00)  (Reg 138 = 0x00)  (Reg 139 = 0xb0)
(Reg 140 = 0x63)  (Reg 141 = 0x67)  (Reg 142 = 0x0a)  (Reg 143 = 0x00)
(Reg 144 = 0x00)  (Reg 145 = 0x00)  (Reg 146 = 0x00)  (Reg 147 = 0x40)
(Reg 148 = 0x43)  (Reg 149 = 0x49)  (Reg 150 = 0x53)  (Reg 151 = 0x43)
(Reg 152 = 0x4f)  (Reg 153 = 0x2d)  (Reg 154 = 0x53)  (Reg 155 = 0x55)
(Reg 156 = 0x4d)  (Reg 157 = 0x49)  (Reg 158 = 0x54)  (Reg 159 = 0x4f)
(Reg 160 = 0x4d)  (Reg 161 = 0x4f)  (Reg 162 = 0x20)  (Reg 163 = 0x20)
(Reg 164 = 0xc0)  (Reg 165 = 0x00)  (Reg 166 = 0x00)  (Reg 167 = 0x5f)
(Reg 168 = 0x53)  (Reg 169 = 0x58)  (Reg 170 = 0x50)  (Reg 171 = 0x33)
(Reg 172 = 0x31)  (Reg 173 = 0x30)  (Reg 174 = 0x31)  (Reg 175 = 0x4e)
(Reg 176 = 0x56)  (Reg 177 = 0x2d)  (Reg 178 = 0x43)  (Reg 179 = 0x31)
(Reg 180 = 0x20)  (Reg 181 = 0x20)  (Reg 182 = 0x20)  (Reg 183 = 0x20)
(Reg 184 = 0x43)  (Reg 185 = 0x20)  (Reg 186 = 0x66)  (Reg 187 = 0x58)
(Reg 188 = 0x0f)  (Reg 189 = 0xa0)  (Reg 190 = 0x46)  (Reg 191 = 0xbe)
(Reg 192 = 0x7d)  (Reg 193 = 0x96)  (Reg 194 = 0x08)  (Reg 195 = 0x00)
(Reg 196 = 0x45)  (Reg 197 = 0x43)  (Reg 198 = 0x4c)  (Reg 199 = 0x31)
(Reg 200 = 0x32)  (Reg 201 = 0x30)  (Reg 202 = 0x37)  (Reg 203 = 0x30)
(Reg 204 = 0x31)  (Reg 205 = 0x4c)  (Reg 206 = 0x32)  (Reg 207 = 0x20)
(Reg 208 = 0x20)  (Reg 209 = 0x20)  (Reg 210 = 0x20)  (Reg 211 = 0x20)
(Reg 212 = 0x30)  (Reg 213 = 0x38)  (Reg 214 = 0x30)  (Reg 215 = 0x32)
(Reg 216 = 0x32)  (Reg 217 = 0x37)  (Reg 218 = 0x44)  (Reg 219 = 0x30)
(Reg 220 = 0x08)  (Reg 221 = 0x60)  (Reg 222 = 0x70)  (Reg 223 = 0xb7)
(Reg 224 = 0x00)  (Reg 225 = 0x00)  (Reg 226 = 0x0b)  (Reg 227 = 0xd0)
(Reg 228 = 0xb4)  (Reg 229 = 0xd7)  (Reg 230 = 0x01)  (Reg 231 = 0x6d)
(Reg 232 = 0x35)  (Reg 233 = 0xbd)  (Reg 234 = 0x2c)  (Reg 235 = 0x22)
(Reg 236 = 0xe9)  (Reg 237 = 0xe2)  (Reg 238 = 0x49)  (Reg 239 = 0xc8)
(Reg 240 = 0xea)  (Reg 241 = 0x6a)  (Reg 242 = 0x2e)  (Reg 243 = 0x00)
(Reg 244 = 0x00)  (Reg 245 = 0x00)  (Reg 246 = 0x00)  (Reg 247 = 0x00)
(Reg 248 = 0x00)  (Reg 249 = 0x00)  (Reg 250 = 0x00)  (Reg 251 = 0x00)
(Reg 252 = 0xe6)  (Reg 253 = 0x39)  (Reg 254 = 0x8b)  (Reg 255 = 0x6e)
```

The following example shows sample output from the **show controllers TenGigE bert** command:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/6/0/2 bert

BERT status for TenGigE0/6/0/2:

BERT State                      :       DISABLED
Test Pattern                    :       None test pattern
Time Remaining                  :       0
Time Interval                   :       0
```

The following example shows sample output from the **show controllers TenGigE bert** command that is unsupported on the Cisco CRS 14-Port or Cisco CRS 20-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 bert
Thu Oct  7 18:26:01.108 EST
Command not supported on this interface
```

The following example shows sample output from the **show controllers TenGigE control** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 control

Thu Oct  7 18:26:11.815 EST
Management information for interface TenGigE0/1/0/0:

Port number: 0
Bay number: 0
Interface handle: 0x1180200

Config:
    Auto-negotiation: Configuration not supported (Off)
    Carrier delay (up): Not configured
    Carrier delay (down): Not configured
    Speed: Configuration not supported (10Gbps)
    Duplex: Configuration not supported (Full Duplex)
    Flow Control: Not configured (None)
    IPG: Not configured (standard (12))
    Loopback: Not configured (None)
    MTU: Not configured
    Bandwidth: Not configured
    BER-SD Threshold: Configuration not supported
    BER-SD Report: Configuration not supported
    BER-SF Threshold: Configuration not supported
    BER-SF Report: Configuration not supported
    BER-SF Signal Remote Failure: Configuration not supported

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9600 bytes
    Max speed: 10Gbps
    Interface type: TenGigE
    Management interface: No
    Promiscuous mode: Yes
    Default carrier delay up (auto-neg on): 0 ms
    Default carrier delay down (auto-neg on): 0 ms
    Default carrier delay up (auto-neg off): 0 ms
    Default carrier delay down (auto-neg off): 0 ms
    Allowed config mask: 0x27b

Cached driver state:
    MTU: 1522 bytes
    Burnt-in MAC address: 0014.f294.6776

Operational carrier delay:
    Carrier delay (up): 0 ms
    Carrier delay (down): 0 ms

Bundle settings:
    Aggregated: No
    Bundle MTU: 1514 bytes
    Bundle MAC address: 0014.f294.6776

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 not disabled
    Port disabled
    Port tx disabled
    Hardware 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:

0 Unicast Bundle MAC Addresses:

0 Multicast Bundle MAC Addresses:
```

The following example shows sample output from the **show controllers TenGigE internal** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 internal
Thu Oct  7 18:27:01.022 EST

Total Power Available on PLIM for XFP's: 35000 mW
  Power used by Inserted XFP's: 33000 mW
  Power Available: 2000 mW

     Port        Power Used       State
      00          2500 mW         XFP Inserted and Powered On
      01          2500 mW         XFP Inserted and Powered On
      02          1500 mW         XFP Inserted and Powered On
      03          2500 mW         XFP Inserted and Powered On
      04          2500 mW         XFP Inserted and Powered On
      05          1500 mW         XFP Inserted and Powered On
      06          2500 mW         XFP Inserted and Powered On
      07          2500 mW         XFP Inserted and Powered On
      08          2500 mW         XFP Inserted and Powered On
      09          2500 mW         XFP Inserted and Powered On
      10          2500 mW         XFP Inserted and Powered On
      11          2500 mW         XFP Inserted and Powered On
      12          2500 mW         XFP Inserted and Powered On
      13          2500 mW         XFP Inserted and Powered On
```

The following example shows sample output from the **show controllers TenGigE mac** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 mac
Thu Oct  7 18:27:34.289 EST

Operational address: 0014.f294.6776
Burnt-in address: 0014.f294.6776

PLA 0 port 0  MAC enabled  Rx MAC disabled
Administrative state: Forced Remote fault
Operational state: Remote fault

0 HSRP/VRRP MAC addresses

VLAN Ethertype: 0x8100
```

```
QinQ Ethertype: 0x88a8
MTP  Ethertype: 0x88e7

4 VLAN UIDB entries
VLAN1   VLAN2      Packet Type Flags      UIDB Result Flags
   0        0          VLAN                  1 VLAN
   0        0               ARPA             1 ARPA
   0        0                    SAP         1 SAP
   0        0                                1 SNAP
```

The following example shows sample output from the **show controllers TenGigE phy** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 phy
Thu Oct  7 18:27:51.884 EST

802.3ae Sections
================

PMA/PMD
  Previous Alarm Status:
    PMA/PMD NOT Locked to Local Signal
    PMA/PMD Local Fault
    SR Ability
    Loopback Ability
    Rx Local Fault
  Current Alarm Status:
    PMA/PMD NOT Locked to Local Signal
    PMA/PMD Local Fault
    SR Ability
    Loopback Ability
    Rx Local Fault

PCS
  Previous Alarm Status:
    PCS Rx Link DOWN
    PCS Local Fault Detected
    PCS Rx Local Fault Detected
    PCS Rx NOT Block Locked
    PCS Rx Link Status DOWN
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has NO Block Lock
  Current Alarm Status:
    PCS Rx Link DOWN
    PCS Local Fault Detected
    PCS Rx Local Fault Detected
    PCS Rx NOT Block Locked
    PCS Rx Link Status DOWN
    PCS Error'd Block Counts: 0
    PCS BER Counts: 0
    PCS has NO Block Lock

WIS: HW In LAN Mode - No Info


XFP General Info:
=================

UDI Checking: Disabled
PHY/XFP Status: XFP Not UDI Compliant
 XFP is Working as expected
```

```
XFP Info:
=========
Max Power Dissipation: 2500 mW

XFP Type: 10GBASE-LR
Vendor Name: CISCO-SUMITOMO
Vendor Part Number: SXP3101NV-C1
Vendor OUI: 0x00-0x00-0x5f
Vendor Hardware Revision: C
Vendor Serial number: ECL120701L2
Date Code (yy/mm/dd): 08/02/27
Lot Code: D0

Cisco PID: XFP-10GLR-OC192SR
Cisco VID: V02
Cisco PN: 10-1989-02

ID: XFP
Extended ID: 0x58
  TX ref clock input is not required
  CDP is supported
  Power Level 2 (2.5W max. power)
Minimum bit rate is 9900 MBits/s.
Maximum bit rate is 10300 MBits/s.


XFP Detail Info:
================

Temp: 32.223
Tx bias: 0.0 mA
Tx power: 0.0 mW (-40 dBm)
Rx power: 0.33 mW (-24 dBm)
AUX 1: +3.3V Supply Voltage: 0x70
AUX 2: Auxiliary monitoring not implemented: 0x0

XFP Status: enabled.
 laser is enabled
 MOD NR is not ready
 is powered off
 doesn't have interrupt(s)
 has LOS
 data is ready
 TX path is ready
 TX laser is not in fault condition
 TX path CDR is locked
 RX path is not ready
 RX path CDR is not locked

Alarms:
  Low RX power alarm

Warnings:
  Low RX power warning

THRESHOLDS
                      High Alarm     Low Alarm     High Warning      Low Warng
   Temperature     C       80.0          -15.0           75.0           -10.0
   Voltage         V     000.0000        000.0000        000.0000        000.000
   Bias Current   mA     100.0000        000.0000        080.0000        000.000
   Transmit power mW     015.8480        001.2580        010.0000        001.990
   Receive power  mW     022.3870        000.1810        014.1250        000.280
```

The following example shows sample output from the **show controllers TenGigE regs** command:

```
RP/0/RP0/CPU0:router# show controllers GigabitEthernet 0/1/0/1 regs

MAC Registers for port: 1
 GE MAC CFG       (#0954): 704c5e5a
 GPCS Config      (#0147): 00000f08
 GPCS Status      (#0236): 000000ca
 GSERDES Status   (#0237): 0007fe09

RP/0/RP0/CPU0:router# show controllers GigabitEthernet 0/4/0/0 regs

MAC Registers for port: 0
 CONFIG1          (#1034): 03100a1a
 CONFIG2          (#1035): 040c2398
 CONTROL          (#1036): 00000000
 ADDRESS_LOW      (#1037): 53ffa780
 ADDRESS_HIGH     (#1038): 0000001b
 MII_MGMT_CONFIG  (#1039): 00000007
 MII_MGMT_CMD     (#1040): 00000000
 MII_MGMT_ADDRESS (#1041): 00000000
 MII_MGMT_DATA    (#1042): 40000000
 STAT_CONFIG      (#1043): 00000007
 MASK_R           (#1044): 00000000
 MASK_T           (#1045): 00000000
 COMP             (#1046): 00100d24
 MAC_CONFIG       (#1047): ffffffff
 INTERRUPT_C      (#1048): 00000000
```

The following example shows sample output from the **show controllers TenGigE regs** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 regs
Thu Oct  7 18:28:22.640 EST

LASI 802.3ae Registers:
=======================
Previous: LASI Status = 0x000c Rx Alarm Status = 0x0018 Tx Alarm Status = 0x0000
Current: LASI Status = 0x000c Rx Alarm Status = 0x0018 Tx Alarm Status = 0x0000

PMA/PMD 802.3ae Registers:
==========================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0007 Status 2 = 0xb581
Tx Disable = 0x0000 Rx Signal Detect = 0x0000
OUI 0 = 0x0000 OUI 1 = 0x0000
Current: Status = 0x0082 Status 2 = 0xb581

WIS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8003 Status 3 = 0x0048
Test Pattern Error Counter = 0x0000 Far End BLock Error Counter = 0x0000
J1 TX 1 = 0x0000 J1 TX 2 = 0x0000 J1 TX 3 = 0x0000 J1 TX 4 = 0x0000
J1 TX 5 = 0x0000 J1 TX 6 = 0x0000 J1 TX 7 = 0x0000 J1 TX 8 = 0x8900
J1 RX 1 = 0x0000 J1 RX 2 = 0x0000 J1 RX 3 = 0x0000 J1 RX 4 = 0x0000
J1 RX 5 = 0x0000 J1 RX 6 = 0x0000 J1 RX 7 = 0x0000 J1 RX 8 = 0x0000
Far End BIP Error 0 = 0x0000 Far End BIP Error 1 = 0x0000
Line BIP Error 0 = 0x0000 Line BIP Error 1 = 0x0000
Path BIP Error Count = 0x0000 Section BIP Error Count = 0x0000
J0 Tx 1 = 0x0000 J0 Tx 2 = 0x0000 J0 Tx 3 = 0x0000 J0 Tx 4 = 0x0000
J0 Tx 5 = 0x0000 J0 Tx 6 = 0x0000 J0 Tx 7 = 0x0000 J0 Tx 8 = 0x8900
J0 Rx 1 = 0x0000 J0 Rx 2 = 0x0000 J0 Rx 3 = 0x0000 J0 Rx 4 = 0x0000
J0 Rx 5 = 0x0000 J0 Rx 6 = 0x0000 J0 Rx 7 = 0x0000 J0 Rx 8 = 0x0000
```

```
Current: Status = 0x0082 Status 2 = 0x8003 Status 3 = 0x0048

PCS 802.3ae Registers:
======================
Control = 0x2040 Status = 0x0082 Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Control 2 = 0x0000 Status 2 = 0x8405
PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Base X Status = 0x0000 Base X Control = 0x0000
Base R Status 1 = 0x0004 Base R Status 2 = 0x0000
Base R jitter seed a0 = 0x0000 Base R jitter seed a1 = 0x0000
Base R jitter seed a2 = 0x0000 Base R jitter seed a3 = 0x0000
Base R jitter seed b0 = 0x0000 Base R jitter seed b1 = 0x0000
Base R jitter seed b2 = 0x0000 Base R jitter seed b3 = 0x0000
Base R jitter test control = 0x0000 Base R jitter test counter = 0x0000
Current: Status = 0x0082 Status 2 = 0x8405 Base R 1 = 0x0004 Base R 2 = 0x0000

PHY XS 802.3ae Registers:
=========================
Control = 0x2040 Status = 0x0006
Dev ID 0 = 0x0043 Dev ID 1 = 0xa400
Speed Ability = 0x0001 Devices 1 = 0x001e Devices 2 = 0x0000
Status 2 = 0x8000 PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Lane Status = 0x1c0f Test Control = 0x0000
Current: Status = 0x0006 Status 2 = 0x8000 Lane Status = 0x1c0f

XFP Register Info (MSA):
========================
(Reg 000 = 0x06)  (Reg 001 = 0x00)  (Reg 002 = 0x50)  (Reg 003 = 0x00)
(Reg 004 = 0xf1)  (Reg 005 = 0x00)  (Reg 006 = 0x4b)  (Reg 007 = 0x00)
(Reg 008 = 0xf6)  (Reg 009 = 0x00)  (Reg 010 = 0x00)  (Reg 011 = 0x00)
(Reg 012 = 0x00)  (Reg 013 = 0x00)  (Reg 014 = 0x00)  (Reg 015 = 0x00)
(Reg 016 = 0x00)  (Reg 017 = 0x00)  (Reg 018 = 0xc3)  (Reg 019 = 0x50)
(Reg 020 = 0x00)  (Reg 021 = 0x00)  (Reg 022 = 0x9c)  (Reg 023 = 0x40)
(Reg 024 = 0x00)  (Reg 025 = 0x00)  (Reg 026 = 0x3d)  (Reg 027 = 0xe8)
(Reg 028 = 0x04)  (Reg 029 = 0xea)  (Reg 030 = 0x27)  (Reg 031 = 0x10)
(Reg 032 = 0x07)  (Reg 033 = 0xcb)  (Reg 034 = 0x57)  (Reg 035 = 0x73)
(Reg 036 = 0x00)  (Reg 037 = 0xb5)  (Reg 038 = 0x37)  (Reg 039 = 0x2d)
(Reg 040 = 0x01)  (Reg 041 = 0x20)  (Reg 042 = 0x00)  (Reg 043 = 0x00)
(Reg 044 = 0x00)  (Reg 045 = 0x00)  (Reg 046 = 0x00)  (Reg 047 = 0x00)
(Reg 048 = 0x00)  (Reg 049 = 0x00)  (Reg 050 = 0x00)  (Reg 051 = 0x00)
(Reg 052 = 0x00)  (Reg 053 = 0x00)  (Reg 054 = 0x00)  (Reg 055 = 0x00)
(Reg 056 = 0x00)  (Reg 057 = 0x00)  (Reg 058 = 0x00)  (Reg 059 = 0x00)
(Reg 060 = 0x00)  (Reg 061 = 0x00)  (Reg 062 = 0x00)  (Reg 063 = 0x00)
(Reg 064 = 0x00)  (Reg 065 = 0x00)  (Reg 066 = 0x00)  (Reg 067 = 0x00)
(Reg 068 = 0x00)  (Reg 069 = 0x00)  (Reg 070 = 0x00)  (Reg 071 = 0x00)
(Reg 072 = 0x00)  (Reg 073 = 0x00)  (Reg 074 = 0x00)  (Reg 075 = 0x00)
(Reg 076 = 0x00)  (Reg 077 = 0x00)  (Reg 078 = 0x00)  (Reg 079 = 0x00)
(Reg 080 = 0x00)  (Reg 081 = 0x40)  (Reg 082 = 0x00)  (Reg 083 = 0x40)
(Reg 084 = 0x1e)  (Reg 085 = 0x00)  (Reg 086 = 0x00)  (Reg 087 = 0x00)
(Reg 088 = 0x00)  (Reg 089 = 0x00)  (Reg 090 = 0x00)  (Reg 091 = 0x00)
(Reg 092 = 0x00)  (Reg 093 = 0x00)  (Reg 094 = 0x00)  (Reg 095 = 0x00)
(Reg 096 = 0x20)  (Reg 097 = 0xdf)  (Reg 098 = 0x00)  (Reg 099 = 0x00)
(Reg 100 = 0x00)  (Reg 101 = 0x00)  (Reg 102 = 0x00)  (Reg 103 = 0x00)
(Reg 104 = 0x00)  (Reg 105 = 0x21)  (Reg 106 = 0x7e)  (Reg 107 = 0x44)
(Reg 108 = 0x00)  (Reg 109 = 0x00)  (Reg 110 = 0x32)  (Reg 111 = 0x18)
(Reg 112 = 0x00)  (Reg 113 = 0x00)  (Reg 114 = 0x00)  (Reg 115 = 0x00)
(Reg 116 = 0x00)  (Reg 117 = 0x00)  (Reg 118 = 0x00)  (Reg 119 = 0x00)
(Reg 120 = 0x00)  (Reg 121 = 0x00)  (Reg 122 = 0x00)  (Reg 123 = 0x00)
(Reg 124 = 0x00)  (Reg 125 = 0x00)  (Reg 126 = 0x00)  (Reg 127 = 0x01)

(Reg 128 = 0x06)  (Reg 129 = 0x58)  (Reg 130 = 0x07)  (Reg 131 = 0x40)
(Reg 132 = 0x00)  (Reg 133 = 0x00)  (Reg 134 = 0x00)  (Reg 135 = 0x40)
(Reg 136 = 0x00)  (Reg 137 = 0x00)  (Reg 138 = 0x00)  (Reg 139 = 0xb0)
```

```
(Reg 140 = 0x63)  (Reg 141 = 0x67)  (Reg 142 = 0x0a)  (Reg 143 = 0x00)
(Reg 144 = 0x00)  (Reg 145 = 0x00)  (Reg 146 = 0x00)  (Reg 147 = 0x40)
(Reg 148 = 0x43)  (Reg 149 = 0x49)  (Reg 150 = 0x53)  (Reg 151 = 0x43)
(Reg 152 = 0x4f)  (Reg 153 = 0x2d)  (Reg 154 = 0x53)  (Reg 155 = 0x55)
(Reg 156 = 0x4d)  (Reg 157 = 0x49)  (Reg 158 = 0x54)  (Reg 159 = 0x4f)
(Reg 160 = 0x4d)  (Reg 161 = 0x4f)  (Reg 162 = 0x20)  (Reg 163 = 0x20)
(Reg 164 = 0xc0)  (Reg 165 = 0x00)  (Reg 166 = 0x00)  (Reg 167 = 0x5f)
(Reg 168 = 0x53)  (Reg 169 = 0x58)  (Reg 170 = 0x50)  (Reg 171 = 0x33)
(Reg 172 = 0x31)  (Reg 173 = 0x30)  (Reg 174 = 0x31)  (Reg 175 = 0x4e)
(Reg 176 = 0x56)  (Reg 177 = 0x2d)  (Reg 178 = 0x43)  (Reg 179 = 0x31)
(Reg 180 = 0x20)  (Reg 181 = 0x20)  (Reg 182 = 0x20)  (Reg 183 = 0x20)
(Reg 184 = 0x43)  (Reg 185 = 0x20)  (Reg 186 = 0x66)  (Reg 187 = 0x58)
(Reg 188 = 0x0f)  (Reg 189 = 0xa0)  (Reg 190 = 0x46)  (Reg 191 = 0xbe)
(Reg 192 = 0x7d)  (Reg 193 = 0x96)  (Reg 194 = 0x08)  (Reg 195 = 0x00)
(Reg 196 = 0x45)  (Reg 197 = 0x43)  (Reg 198 = 0x4c)  (Reg 199 = 0x31)
(Reg 200 = 0x32)  (Reg 201 = 0x30)  (Reg 202 = 0x37)  (Reg 203 = 0x30)
(Reg 204 = 0x31)  (Reg 205 = 0x4c)  (Reg 206 = 0x32)  (Reg 207 = 0x20)
(Reg 208 = 0x20)  (Reg 209 = 0x20)  (Reg 210 = 0x20)  (Reg 211 = 0x20)
(Reg 212 = 0x30)  (Reg 213 = 0x38)  (Reg 214 = 0x30)  (Reg 215 = 0x32)
(Reg 216 = 0x32)  (Reg 217 = 0x37)  (Reg 218 = 0x44)  (Reg 219 = 0x30)
(Reg 220 = 0x08)  (Reg 221 = 0x60)  (Reg 222 = 0x70)  (Reg 223 = 0xb7)
(Reg 224 = 0x00)  (Reg 225 = 0x00)  (Reg 226 = 0x0b)  (Reg 227 = 0xd0)
(Reg 228 = 0xb4)  (Reg 229 = 0xd7)  (Reg 230 = 0x01)  (Reg 231 = 0x6d)
(Reg 232 = 0x35)  (Reg 233 = 0xbd)  (Reg 234 = 0x2c)  (Reg 235 = 0x22)
(Reg 236 = 0xe9)  (Reg 237 = 0xe2)  (Reg 238 = 0x49)  (Reg 239 = 0xc8)
(Reg 240 = 0xea)  (Reg 241 = 0x6a)  (Reg 242 = 0x2e)  (Reg 243 = 0x00)
(Reg 244 = 0x00)  (Reg 245 = 0x00)  (Reg 246 = 0x00)  (Reg 247 = 0x00)
(Reg 248 = 0x00)  (Reg 249 = 0x00)  (Reg 250 = 0x00)  (Reg 251 = 0x00)
(Reg 252 = 0xe6)  (Reg 253 = 0x39)  (Reg 254 = 0x8b)  (Reg 255 = 0x6e)
```

The following example shows sample output from the **show controllers TenGigE stats** command:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/4/0/0 stats

Statistics for interface TenGigE0/4/0/0 (cached values):

Ingress:
    Input total bytes           = 9614339316
    Input good bytes            = 9614339316

    Input total packets         = 106713557
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 103907216
    Input pkts 65-127 bytes     = 2494185
    Input pkts 128-255 bytes    = 3410
    Input pkts 256-511 bytes    = 3406
    Input pkts 512-1023 bytes   = 2
    Input pkts 1024-1518 bytes  = 0
    Input pkts 1519-Max bytes   = 305338

    Input good pkts             = 106713557
    Input unicast pkts          = 105627141
    Input multicast pkts        = 1086414
    Input broadcast pkts        = 2

    Input drop overrun          = 0
    Input drop abort            = 0
    Input drop unknown 802.1Q   = 0
    Input drop other            = 0

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
```

```
    Input error CRC             = 0
    Input error collisions      = 0
    Input error symbol          = 0
    Input error other           = 0

    Input MIB giant             = 305338
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 15202682421
    Output good bytes           = 15202682421

    Output total packets        = 107534855
    Output 802.1Q frames        = 0
    Output pause frames         = 0
    Output pkts 64 bytes        = 103862713
    Output pkts 65-127 bytes    = 2448054
    Output pkts 128-255 bytes   = 308716
    Output pkts 256-511 bytes   = 6
    Output pkts 512-1023 bytes  = 13
    Output pkts 1024-1518 bytes = 0
    Output pkts 1519-Max bytes  = 915353

    Output good pkts            = 107534855
    Output unicast pkts         = 105321133
    Output multicast pkts       = 1298368
    Output broadcast pkts       = 1

    Output drop underrun        = 0
    Output drop abort           = 0
    Output drop other           = 0

    Output error other          = 0
```

The following example shows sample output from the **show controllers TenGigE stats** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 stats

Thu Oct  7 18:29:16.631 EST
Statistics for interface TenGigE0/1/0/0 (cached values):

Ingress:
    Input total bytes           = 0
    Input good bytes            = 0

    Input total packets         = 0
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 0
    Input pkts 65-127 bytes     = 0
    Input pkts 128-255 bytes    = 0
    Input pkts 256-511 bytes    = 0
    Input pkts 512-1023 bytes   = 0
    Input pkts 1024-1518 bytes  = 0
    Input pkts 1519-Max bytes   = 0

    Input good pkts             = 0
    Input unicast pkts          = 0
    Input multicast pkts        = 0
    Input broadcast pkts        = 0

    Input drop overrun          = 0
```

```
    Input drop abort            = 0
    Input drop invalid VLAN     = 0
    Input drop invalid DMAC     = 0
    Input drop invalid encap    = 0
    Input drop other            = 0

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
    Input error CRC             = 0
    Input error collisions      = 0
    Input error symbol          = 0
    Input error other           = 0

    Input MIB giant             = 0
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 0
    Output good bytes           = 0

    Output total packets        = 0
    Output 802.1Q frames        = 0
    Output pause frames         = 0
    Output pkts 64 bytes        = 0
    Output pkts 65-127 bytes    = 0
    Output pkts 128-255 bytes   = 0
    Output pkts 256-511 bytes   = 0
    Output pkts 512-1023 bytes  = 0
    Output pkts 1024-1518 bytes = 0
    Output pkts 1519-Max bytes  = 0

    Output good pkts            = 0
    Output unicast pkts         = 0
    Output multicast pkts       = 0
    Output broadcast pkts       = 0

    Output drop underrun        = 0
    Output drop abort           = 0
    Output drop other           = 0

    Output error other          = 0
```

The following example shows sample output from the **show controllers TenGigE xgxs** command:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/4/0/0 xgxs

Serdes Registers and info port: 0
  EDC Status    : 000000070 - EDC tracking
  Rx detected   : Yes
  Block lock    : Yes
  Tx aligned    : Yes
```

The following example shows sample output from the **show controllers TenGigE stats** command for the Cisco CRS 14-Port 10-Gigabit Ethernet LAN/WAN-PHY Interface Module:

```
RP/0/RP0/CPU0:router# show controllers TenGigE 0/1/0/0 xgxs

Thu Oct  7 18:30:03.732 EST
DTE XGXS
  Current Alarm Status:
    XGXS Lanes All Synchronized
    XGXS Lanes Aligned
```

```
PHY XGXS
  Previous Alarm Status:
    NO XGXS Local Fault
    TX Link UP
  Current Alarm Status:
    NO XGXS Local Fault
    TX Link UP
```

The following example shows sample output from the **show controllers HundredGigE** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0
Tue Mar 22 06:00:35.411 UTC
Operational data for interface HundredGigE0/3/0/0:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On

Phy:
    Media type: fiber over 4 Lane optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: SXP3101NV-C1
        Serial number: ECL120701L2

MAC address information:
    Operational address: 001d.70b6.6810
    Burnt-in address: 001d.70b6.6810
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 9196
    MRU: 9196
    Inter-packet gap: standard (12)
```

The following example shows sample output from the **show controllers HundredGigE all** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 all
Tue Mar 22 06:00:57.557 UTC
Operational data for interface HundredGigE0/3/0/0:

State:
    Administrative state: enabled
    Operational state: Up
    LED state: Green On

Phy:
    Media type: fiber over 4 Lane optics
    Optics:
        Vendor: CISCO-SUMITOMO
        Part number: FTLC1181RDNS-C1
        Serial number: C22CSLA

MAC address information:
```

```
    Operational address: 001d.70b6.6810
    Burnt-in address: 001d.70b6.6810
    No unicast addresses in filter
    Operating in multicast promiscuous mode

Autonegotiation disabled.

Operational values:
    Speed: 100Gbps
    Duplex: Full Duplex
    Flowcontrol: None
    Loopback: None (or external)
    MTU: 9196
    MRU: 9196
    Inter-packet gap: standard (12)

Statistics for interface HundredGigE0/3/0/0 (cached values):

Ingress:
    Input total bytes           = 71105513310820
    Input good bytes            = 71074510205068

    Input total packets         = 7750770507
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 895
    Input pkts 65-127 bytes     = 5118
    Input pkts 128-255 bytes    = 57
    Input pkts 256-511 bytes    = 2
    Input pkts 512-1023 bytes   = 1
    Input pkts 1024-1518 bytes  = 4
    Input pkts 1519-Max bytes   = 7750764430

    Input good pkts             = 7750770506
    Input unicast pkts          = 7750765816
    Input multicast pkts        = 4689
    Input broadcast pkts        = 1

    Input drop overrun          = 0
    Input drop abort            = 0
    Input drop invalid VLAN     = 0
    Input drop invalid DMAC     = 0
    Input drop invalid encap    = 0
    Input drop other            = 6947

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
    Input error CRC             = 1
    Input error collisions      = 0
    Input error symbol          = 3
    Input error other           = 0

    Input MIB giant             = 0
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 67727813126508
    Output good bytes           = 67698282738660

    Output total packets        = 7382593804
    Output 802.1Q frames        = 0
```

```
    Output pause frames         = 0
    Output pkts 64 bytes        = 702
    Output pkts 65-127 bytes    = 10272
    Output pkts 128-255 bytes   = 267
    Output pkts 256-511 bytes   = 5
    Output pkts 512-1023 bytes  = 0
    Output pkts 1024-1518 bytes = 6
    Output pkts 1519-Max bytes  = 7382582552

    Output good pkts            = 7382593804
    Output unicast pkts         = 7382590409
    Output multicast pkts       = 3391
    Output broadcast pkts       = 6

    Output drop underrun        = 0
    Output drop abort           = 2
    Output drop other           = 2373

    Output error other          = 0

Management information for interface HundredGigE0/3/0/0:

Port number: 0
Bay number: 0
Interface handle: 0x1380040

Config:
    Auto-negotiation: Configuration not supported (Off)
    Carrier delay (up): Not configured
    Carrier delay (down): Not configured
    Speed: Configuration not supported (100Gbps)
    Duplex: Configuration not supported (Full Duplex)
    Flow Control: Not configured (None)
    IPG: Configuration not supported (standard (12))
    Loopback: Not configured (None)
    MTU: 9188 bytes
    Bandwidth: Not configured
    BER-SD Threshold: Configuration not supported
    BER-SD Report: Configuration not supported
    BER-SF Threshold: Configuration not supported
    BER-SF Report: Configuration not supported
    BER-SF Signal Remote Failure: Configuration not supported

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9600 bytes
    Max speed: 100Gbps
    Interface type: HundredGigE
    Management interface: No
    Promiscuous mode: Yes
    Default carrier delay up (auto-neg on): 0 ms
    Default carrier delay down (auto-neg on): 0 ms
    Default carrier delay up (auto-neg off): 0 ms
    Default carrier delay down (auto-neg off): 0 ms
    Allowed config mask: 0x26b

Cached driver state:
    MTU: 9196 bytes
    Burnt-in MAC address: 001d.70b6.6810

Operational carrier delay:
    Carrier delay (up): 0 ms
    Carrier delay (down): 0 ms
```

```
Bundle settings:
    Aggregated: No
    Bundle MTU: 1514 bytes
    Bundle MAC address: 001d.70b6.6810

Port FSM state:
    Port is enabled, link is up
Complete FSM state:
    Admin up
    Bundle admin up
    Client admin up
    Client admin tx not disabled
    Port enabled
    Port tx enabled
    Hardware link up
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:

0 Unicast Bundle MAC Addresses:

0 Multicast Bundle MAC Addresses:


Operational address: 001d.70b6.6810
Burnt-in address: 001d.70b6.6810
MAC state for beluga 0 port 0

0 HSRP/VRRP MAC addresses

VLAN Ethertype: 0x8100
QinQ Ethertype: 0x88a8
MTP  Ethertype: 0x88e7

4 VLAN UIDB entries
VLAN1   VLAN2      Packet Type Flags      UIDB Result Flags
   0        0          VLAN                  1 VLAN
   0        0               ARPA             1 ARPA
   0        0                    SAP         1 SAP
   0        0                                1 SNAP

PLIM 1 Port HundredGigE Internal Information:
shmwin pointer: 0x581d4264
shmwin id     : 0x3c
shmwin initlization: complete
shmwin mac stats pointer: 0x603d3020
shmwin mac stats version: 0x1
shmwin ctx pointer: 0x603db07c
shmwin ctx version: 0x1
HW initilization: completed
Maximum CFP power class supported: 4
Maximum CFP power consumption supported: 30000 mW

802.3ba PCS
  Previous PCS Alarms:
    PCS Link had fault

  Current PCS Status:
```

```
    PCS is able to support 100GBASE-R
    PCS is Block Locked
    PCS Rx Link Status is UP
    PCS Errored Block Counts: 0
    PCS BER (Sync Header Error) Counts: 0

  PCS detailed information:

    RX Service Interface Lane Sync Header Lock Status:

    Lane-0 : Locked           Lane-10 : Locked
    Lane-1 : Locked           Lane-11 : Locked
    Lane-2 : Locked           Lane-12 : Locked
    Lane-3 : Locked           Lane-13 : Locked
    Lane-4 : Locked           Lane-14 : Locked
    Lane-5 : Locked           Lane-15 : Locked
    Lane-6 : Locked           Lane-16 : Locked
    Lane-7 : Locked           Lane-17 : Locked
    Lane-8 : Locked           Lane-18 : Locked
    Lane-9 : Locked           Lane-19 : Locked

    RX Service Interface Lane Marker Lock Status:

    Lane-0 : Locked           Lane-10 : Locked
    Lane-1 : Locked           Lane-11 : Locked
    Lane-2 : Locked           Lane-12 : Locked
    Lane-3 : Locked           Lane-13 : Locked
    Lane-4 : Locked           Lane-14 : Locked
    Lane-5 : Locked           Lane-15 : Locked
    Lane-6 : Locked           Lane-16 : Locked
    Lane-7 : Locked           Lane-17 : Locked
    Lane-8 : Locked           Lane-18 : Locked
    Lane-9 : Locked           Lane-19 : Locked

    Mapping of Service Interface Lane and RX PCS Lane:

    Rx Service Interface Lane 0 = PCS Lane 11
    Rx Service Interface Lane 1 = PCS Lane 1
    Rx Service Interface Lane 2 = PCS Lane 0
    Rx Service Interface Lane 3 = PCS Lane 12
    Rx Service Interface Lane 4 = PCS Lane 10
    Rx Service Interface Lane 5 = PCS Lane 3
    Rx Service Interface Lane 6 = PCS Lane 4
    Rx Service Interface Lane 7 = PCS Lane 14
    Rx Service Interface Lane 8 = PCS Lane 2
    Rx Service Interface Lane 9 = PCS Lane 13
    Rx Service Interface Lane 10 = PCS Lane 15
    Rx Service Interface Lane 11 = PCS Lane 7
    Rx Service Interface Lane 12 = PCS Lane 5
    Rx Service Interface Lane 13 = PCS Lane 16
    Rx Service Interface Lane 14 = PCS Lane 9
    Rx Service Interface Lane 15 = PCS Lane 6
    Rx Service Interface Lane 16 = PCS Lane 8
    Rx Service Interface Lane 17 = PCS Lane 17
    Rx Service Interface Lane 18 = PCS Lane 18
    Rx Service Interface Lane 19 = PCS Lane 19

    PCS Lane BIP Error Counters:

    Lane-0 : 0                Lane-10 : 0
    Lane-1 : 0                Lane-11 : 0
    Lane-2 : 0                Lane-12 : 0
    Lane-3 : 0                Lane-13 : 0
    Lane-4 : 0                Lane-14 : 0
```

```
    Lane-5 : 0                Lane-15 : 0
    Lane-6 : 0                Lane-16 : 0
    Lane-7 : 0                Lane-17 : 0
    Lane-8 : 0                Lane-18 : 0
    Lane-9 : 0                Lane-19 : 0

  Total PCS Lane BIP Error Count : 0
  Total PCS Lane Sync Header Error Count  : 0
  Total PCS Lane Bad 64/66 Code Count     : 3


Serdes section:
===============

None of 10 RX serial inputs detects loss of signal.
All of 10 Tx clock multiplication units are locked.
All of 10 Rx clock/data recovery units are locked.
None of 10 TX FIFO has underflow/overflow condition.
None of 10 RX FIFO has underflow/overflow condition.

CFP section:
==============

CFP General Information:

  Module Identifier:         CFP
  Ethernet Application Code: 100GBASE-LR4
  Module State:              Ready
  Power Class:               3
  Maximum Power Consumption: 23000 mW

CFP Vendor Information:

  Vendor Name:         CISCO-SUMITOMO CORP.
  Vendor PN:           FTLC1181RDNS-C1
  Vendor SN:           C22CSLA
  Vendor OUI:          0x0-0x90-0x65
  Lot Code:            00
  DATE CODE(YYYY/MM/DD): 2010/06/02
  CFP MSA Hardware Version:   1.0
  CFP MSA MDIO Version:       1.2
  Vendor Hardware Version:    1.2
  Vendor Firmware Version:    1.4

CFP UDI Information:

  UDI Compliant: Yes
  Cisco PID: CFP-100G-LR4
  Cisco VID: VES1

CFP Cisco Information:

  Vendor Name: CISCO
  Cisco PN   : 10-2549-01    Rev 01
  Cisco SN   : FNS14221PDX

CFP Detail Information:

  Number of lanes supoorted:

    Number of network lanes: 4
    Number of host lanes   : 10

  Time required by module:
```

```
    Maximum high-power-up time  :  15 s
    Maximum high-power-down time:   0 s
    Maximum tx-turn-on time     :   1 s
    Maximum tx-turn-off time    :   0 ms

  Module general control:

    Soft reset asserted     : No
    Soft low power asserted : No
    Soft tx disable asserted: No
    Soft program control 3 asserted: No
    Soft program control 2 asserted: No
    Soft program control 1 asserted: No
    Soft global alarm test asserted: No

    Tx disable pin asserted: No
    Low power pin asserted : No
    Program control 3 pin asserted: Yes
    Program control 2 pin asserted: Yes
    Program control 1 pin asserted: Yes

  Module Analog A/D value:

    Power supply voltage : 3.1939 V
    Temperature          : 38.5889 degC

  Network lane A/D value:

    Lane 0 Tx power: 1.2829 mW (  1.1 dBm)
    Lane 1 Tx power: 1.3931 mW (  1.4 dBm)
    Lane 2 Tx power: 1.4443 mW (  1.6 dBm)
    Lane 3 Tx power: 1.4791 mW (  1.7 dBm)

    Lane 0 Rx power: 1.1029 mW (  0.4 dBm)
    Lane 1 Rx power: 1.3673 mW (  1.4 dBm)
    Lane 2 Rx power: 1.3457 mW (  1.3 dBm)
    Lane 3 Rx power: 1.4423 mW (  1.6 dBm)

    Total Tx power : 5.5994 mW (  7.5 dBm)
    Total Rx power : 5.2582 mW (  7.2 dBm)

No XGXS present

PCS 802.3ba Registers:
======================
Control 1 = 0x0010
Status 1 = 0x0004
Dev ID 0 = 0x0000 Dev ID 1 = 0x0000
Speed Ability = 0x0008
Devices 1 = 0x0004 Devices 2 = 0x0000
Control 2 = 0x0005
Status 2 = 0x0020
PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Base R Status 1 = 0x1001
Base R Status 2 = 0x8000
BER high order counter = 0x0000
Errored blocks high order counter = 0x8000
Base R test pattern control = 0x0080
Base R test pattern error counter = 0x0000
Multi-lane BASE-R alignment status 1 = 0x10ff
Multi-lane BASE-R alignment status 2 = 0x0fff
Multi-lane BASE-R alignment status 3 = 0x00ff
Multi-lane BASE-R alignment status 4 = 0x0fff
```

```
BIP error counter lane 0 = 0x0000
BIP error counter lane 1 = 0x0000
BIP error counter lane 2 = 0x0000
BIP error counter lane 3 = 0x0000
BIP error counter lane 4 = 0x0000
BIP error counter lane 5 = 0x0000
BIP error counter lane 6 = 0x0000
BIP error counter lane 7 = 0x0000
BIP error counter lane 8 = 0x0000
BIP error counter lane 9 = 0x0000
BIP error counter lane 10 = 0x0000
BIP error counter lane 11 = 0x0000
BIP error counter lane 12 = 0x0000
BIP error counter lane 13 = 0x0000
BIP error counter lane 14 = 0x0000
BIP error counter lane 15 = 0x0000
BIP error counter lane 16 = 0x0000
BIP error counter lane 17 = 0x0000
BIP error counter lane 18 = 0x0000
BIP error counter lane 19 = 0x0000
Lane mapping register 0 = 0x000b
Lane mapping register 1 = 0x0001
Lane mapping register 2 = 0x0000
Lane mapping register 3 = 0x000c
Lane mapping register 4 = 0x000a
Lane mapping register 5 = 0x0003
Lane mapping register 6 = 0x0004
Lane mapping register 7 = 0x000e
Lane mapping register 8 = 0x0002
Lane mapping register 9 = 0x000d
Lane mapping register 10 = 0x000f
Lane mapping register 11 = 0x0007
Lane mapping register 12 = 0x0005
Lane mapping register 13 = 0x0010
Lane mapping register 14 = 0x0009
Lane mapping register 15 = 0x0006
Lane mapping register 16 = 0x0008
Lane mapping register 17 = 0x0011
Lane mapping register 18 = 0x0012
Lane mapping register 19 = 0x0013

Serdes registers:
==================

Chip id register: 0x8154
Chip revision id register: 0x1
Digital control 1 register register:
  serdes0:0x017a, serdes1:0x017a, serdes2:0x017a, serdes3:0x017a, serdes4:0x017a
  serdes5:0x017a, serdes6:0x017a, serdes7:0x017a, serdes8:0x017a, serdes9:0x017a
Digital control 2 register register:
  serdes0:0x0305, serdes1:0x0305, serdes2:0x0305, serdes3:0x0305, serdes4:0x0305
  serdes5:0x0305, serdes6:0x0305, serdes7:0x0305, serdes8:0x0305, serdes9:0x0305
Digital control 3 register register:
  serdes0:0x0d0f, serdes1:0x0d0f, serdes2:0x0d0f, serdes3:0x0d0f, serdes4:0x0d0f
  serdes5:0x0d0f, serdes6:0x0d0f, serdes7:0x0d0f, serdes8:0x0d0f, serdes9:0x0d0f
Digital control 5 register register:
  serdes0:0x6de0, serdes1:0x6de0, serdes2:0x6de0, serdes3:0x6de0, serdes4:0x6de0
  serdes5:0x6de0, serdes6:0x6de0, serdes7:0x6de0, serdes8:0x6de0, serdes9:0x6de0
Digital status 0 register register:
  serdes0:0x303b, serdes1:0x303b, serdes2:0x303b, serdes3:0x303b, serdes4:0x303b
  serdes5:0x303b, serdes6:0x303b, serdes7:0x303b, serdes8:0x303b, serdes9:0x303b
Line PRBS control register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
```

```
Line PRBS status register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
System PRBS control register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
System PRBS status register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
PRBS status 2 register register:
  serdes0:0x8008, serdes1:0x8008, serdes2:0x8008, serdes3:0x8008, serdes4:0x8008
  serdes5:0x8008, serdes6:0x8008, serdes7:0x8008, serdes8:0x8008, serdes9:0x8008
TX control 1 register register:
  serdes0:0x1884, serdes1:0x1884, serdes2:0x1884, serdes3:0x1884, serdes4:0x1884
  serdes5:0x1884, serdes6:0x1884, serdes7:0x1884, serdes8:0x1884, serdes9:0x1884
TX control 2 register register:
  serdes0:0x00a0, serdes1:0x00a0, serdes2:0x00a0, serdes3:0x00a0, serdes4:0x00a0
  serdes5:0x00a0, serdes6:0x00a0, serdes7:0x00a0, serdes8:0x00a0, serdes9:0x00a0
TX control 4 register register:
  serdes0:0x2412, serdes1:0x2412, serdes2:0x2412, serdes3:0x2412, serdes4:0x2412
  serdes5:0x2412, serdes6:0x2412, serdes7:0x2412, serdes8:0x2412, serdes9:0x2412
TX control 7 register register:
  serdes0:0x1077, serdes1:0x1077, serdes2:0x1077, serdes3:0x1077, serdes4:0x1077
  serdes5:0x1077, serdes6:0x1077, serdes7:0x1077, serdes8:0x1077, serdes9:0x1077
TX control 8 register register:
  serdes0:0xb800, serdes1:0xb800, serdes2:0xb800, serdes3:0xb800, serdes4:0xb800
  serdes5:0xb800, serdes6:0xb800, serdes7:0xb800, serdes8:0xb800, serdes9:0xb800
TX LVDS contrl 1 register register:
  serdes0:0x6050, serdes1:0x6050, serdes2:0x6050, serdes3:0x6050, serdes4:0x6050
  serdes5:0x6050, serdes6:0x6050, serdes7:0x6050, serdes8:0x6050, serdes9:0x6050
TX LVDS contrl 2 register register:
  serdes0:0x3bb1, serdes1:0x3ba1, serdes2:0x3ba9, serdes3:0x3ba9, serdes4:0x3bb1
  serdes5:0x3ba9, serdes6:0x3ba9, serdes7:0x3ba9, serdes8:0x3bb1, serdes9:0x3ba9
TX LVDS contrl 3 register register:
  serdes0:0x3bb1, serdes1:0x3ba1, serdes2:0x3ba9, serdes3:0x3ba9, serdes4:0x3bb1
  serdes5:0x3ba9, serdes6:0x3ba9, serdes7:0x3ba9, serdes8:0x3bb1, serdes9:0x3ba9
RX control 2 register register:
  serdes0:0x2220, serdes1:0x2220, serdes2:0x2224, serdes3:0x2224, serdes4:0x2222
  serdes5:0x2224, serdes6:0x2220, serdes7:0x2224, serdes8:0x2220, serdes9:0x2224
RX control 3 register register:
  serdes0:0x1631, serdes1:0x1631, serdes2:0x1631, serdes3:0x1631, serdes4:0x1631
  serdes5:0x1631, serdes6:0x1631, serdes7:0x1631, serdes8:0x1631, serdes9:0x1631
RX control 4 register register:
  serdes0:0x60c8, serdes1:0x40c8, serdes2:0x50c8, serdes3:0x50c8, serdes4:0x60c8
  serdes5:0x50c8, serdes6:0x50c8, serdes7:0x50c8, serdes8:0x60c8, serdes9:0x50c8
RX control 6 register register:
  serdes0:0x081a, serdes1:0x081a, serdes2:0x081a, serdes3:0x081a, serdes4:0x081a
  serdes5:0x081a, serdes6:0x081a, serdes7:0x081a, serdes8:0x081a, serdes9:0x081a
RX control 7 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX control 8 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX control 9 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX LVDS contrl 1 register register:
  serdes0:0x0bfa, serdes1:0x0bba, serdes2:0x0bba, serdes3:0x0bba, serdes4:0x0bba
  serdes5:0x0bba, serdes6:0x0bba, serdes7:0x0bba, serdes8:0x0bba, serdes9:0x0bba

CFP Registers:
================
```

```
NVR 1 Registers:

(Reg 0x8000=0x0e) (Reg 0x8001=0x95) (Reg 0x8002=0x01) (Reg 0x8003=0x01)
(Reg 0x8004=0x00) (Reg 0x8005=0x00) (Reg 0x8006=0x00) (Reg 0x8007=0x00)
(Reg 0x8008=0x08) (Reg 0x8009=0x4a) (Reg 0x800a=0x11) (Reg 0x800b=0x81)
(Reg 0x800c=0x34) (Reg 0x800d=0x0a) (Reg 0x800e=0x00) (Reg 0x800f=0x00)
(Reg 0x8010=0x01) (Reg 0x8011=0x04) (Reg 0x8012=0xca) (Reg 0x8013=0x45)
(Reg 0x8014=0xcc) (Reg 0x8015=0xb8) (Reg 0x8016=0x08) (Reg 0x8017=0x34)
(Reg 0x8018=0x21) (Reg 0x8019=0x44) (Reg 0x801a=0x40) (Reg 0x801b=0x70)
(Reg 0x801c=0x1c) (Reg 0x801d=0x73) (Reg 0x801e=0x64) (Reg 0x801f=0x46)
(Reg 0x8020=0x00) (Reg 0x8021=0x46) (Reg 0x8022=0x49) (Reg 0x8023=0x4e)
(Reg 0x8024=0x49) (Reg 0x8025=0x53) (Reg 0x8026=0x41) (Reg 0x8027=0x52)
(Reg 0x8028=0x20) (Reg 0x8029=0x43) (Reg 0x802a=0x4f) (Reg 0x802b=0x52)
(Reg 0x802c=0x50) (Reg 0x802d=0x2e) (Reg 0x802e=0x20) (Reg 0x802f=0x20)
(Reg 0x8030=0x20) (Reg 0x8031=0x00) (Reg 0x8032=0x90) (Reg 0x8033=0x65)
(Reg 0x8034=0x46) (Reg 0x8035=0x54) (Reg 0x8036=0x4c) (Reg 0x8037=0x43)
(Reg 0x8038=0x31) (Reg 0x8039=0x31) (Reg 0x803a=0x38) (Reg 0x803b=0x31)
(Reg 0x803c=0x52) (Reg 0x803d=0x44) (Reg 0x803e=0x4e) (Reg 0x803f=0x53)
(Reg 0x8040=0x2d) (Reg 0x8041=0x43) (Reg 0x8042=0x31) (Reg 0x8043=0x20)
(Reg 0x8044=0x43) (Reg 0x8045=0x32) (Reg 0x8046=0x32) (Reg 0x8047=0x43)
(Reg 0x8048=0x53) (Reg 0x8049=0x4c) (Reg 0x804a=0x41) (Reg 0x804b=0x20)
(Reg 0x804c=0x20) (Reg 0x804d=0x20) (Reg 0x804e=0x20) (Reg 0x804f=0x20)
(Reg 0x8050=0x20) (Reg 0x8051=0x20) (Reg 0x8052=0x20) (Reg 0x8053=0x20)
(Reg 0x8054=0x32) (Reg 0x8055=0x30) (Reg 0x8056=0x31) (Reg 0x8057=0x30)
(Reg 0x8058=0x30) (Reg 0x8059=0x36) (Reg 0x805a=0x30) (Reg 0x805b=0x32)
(Reg 0x805c=0x30) (Reg 0x805d=0x30) (Reg 0x805e=0x49) (Reg 0x805f=0x50)
(Reg 0x8060=0x55) (Reg 0x8061=0x49) (Reg 0x8062=0x42) (Reg 0x8063=0x48)
(Reg 0x8064=0x43) (Reg 0x8065=0x52) (Reg 0x8066=0x41) (Reg 0x8067=0x41)
(Reg 0x8068=0x0a) (Reg 0x8069=0x0c) (Reg 0x806a=0x01) (Reg 0x806b=0x02)
(Reg 0x806c=0x01) (Reg 0x806d=0x04) (Reg 0x806e=0x0c) (Reg 0x806f=0x03)
(Reg 0x8070=0x0f) (Reg 0x8071=0x68) (Reg 0x8072=0x0f) (Reg 0x8073=0x01)
(Reg 0x8074=0x01) (Reg 0x8075=0x00) (Reg 0x8076=0x00) (Reg 0x8077=0x00)
(Reg 0x8078=0x00) (Reg 0x8079=0x00) (Reg 0x807a=0x00) (Reg 0x807b=0x00)
(Reg 0x807c=0x00) (Reg 0x807d=0x00) (Reg 0x807e=0x00) (Reg 0x807f=0x1a)

NVR 2 Registers:

(Reg 0x8080=0x46) (Reg 0x8081=0x00) (Reg 0x8082=0x44) (Reg 0x8083=0x00)
(Reg 0x8084=0x02) (Reg 0x8085=0x00) (Reg 0x8086=0x00) (Reg 0x8087=0x00)
(Reg 0x8088=0x87) (Reg 0x8089=0x5a) (Reg 0x808a=0x86) (Reg 0x808b=0x10)
(Reg 0x808c=0x7b) (Reg 0x808d=0xc0) (Reg 0x808e=0x7a) (Reg 0x808f=0x75)
(Reg 0x8090=0x00) (Reg 0x8091=0x00) (Reg 0x8092=0x00) (Reg 0x8093=0x00)
(Reg 0x8094=0x00) (Reg 0x8095=0x00) (Reg 0x8096=0x00) (Reg 0x8097=0x00)
(Reg 0x8098=0x00) (Reg 0x8099=0x00) (Reg 0x809a=0x00) (Reg 0x809b=0x00)
(Reg 0x809c=0x00) (Reg 0x809d=0x00) (Reg 0x809e=0x00) (Reg 0x809f=0x00)
(Reg 0x80a0=0x00) (Reg 0x80a1=0x00) (Reg 0x80a2=0x00) (Reg 0x80a3=0x00)
(Reg 0x80a4=0x00) (Reg 0x80a5=0x00) (Reg 0x80a6=0x00) (Reg 0x80a7=0x00)
(Reg 0x80a8=0xea) (Reg 0x80a9=0x60) (Reg 0x80aa=0xe0) (Reg 0x80ab=0x9c)
(Reg 0x80ac=0x44) (Reg 0x80ad=0x5c) (Reg 0x80ae=0x3a) (Reg 0x80af=0x98)
(Reg 0x80b0=0x6e) (Reg 0x80b1=0x17) (Reg 0x80b2=0x62) (Reg 0x80b3=0x1e)
(Reg 0x80b4=0x10) (Reg 0x80b5=0x48) (Reg 0x80b6=0x0e) (Reg 0x80b7=0x83)
(Reg 0x80b8=0x37) (Reg 0x80b9=0x00) (Reg 0x80ba=0x35) (Reg 0x80bb=0x00)
(Reg 0x80bc=0x1b) (Reg 0x80bd=0x00) (Reg 0x80be=0x19) (Reg 0x80bf=0x00)
(Reg 0x80c0=0x6e) (Reg 0x80c1=0x17) (Reg 0x80c2=0x62) (Reg 0x80c3=0x1e)
(Reg 0x80c4=0x01) (Reg 0x80c5=0xf5) (Reg 0x80c6=0x00) (Reg 0x80c7=0xfb)
(Reg 0x80c8=0x00) (Reg 0x80c9=0x00) (Reg 0x80ca=0x00) (Reg 0x80cb=0x00)
(Reg 0x80cc=0x00) (Reg 0x80cd=0x00) (Reg 0x80ce=0x00) (Reg 0x80cf=0x00)
(Reg 0x80d0=0x00) (Reg 0x80d1=0x00) (Reg 0x80d2=0x00) (Reg 0x80d3=0x00)
(Reg 0x80d4=0x00) (Reg 0x80d5=0x00) (Reg 0x80d6=0x00) (Reg 0x80d7=0x00)
(Reg 0x80d8=0x00) (Reg 0x80d9=0x00) (Reg 0x80da=0x00) (Reg 0x80db=0x00)
(Reg 0x80dc=0x00) (Reg 0x80dd=0x00) (Reg 0x80de=0x00) (Reg 0x80df=0x00)
(Reg 0x80e0=0x00) (Reg 0x80e1=0x00) (Reg 0x80e2=0x00) (Reg 0x80e3=0x00)
(Reg 0x80e4=0x00) (Reg 0x80e5=0x00) (Reg 0x80e6=0x00) (Reg 0x80e7=0x00)
(Reg 0x80e8=0x00) (Reg 0x80e9=0x00) (Reg 0x80ea=0x00) (Reg 0x80eb=0x00)
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(Reg 0x80ec=0x00) (Reg 0x80ed=0x00) (Reg 0x80ee=0x00) (Reg 0x80ef=0x00)
(Reg 0x80f0=0x00) (Reg 0x80f1=0x00) (Reg 0x80f2=0x00) (Reg 0x80f3=0x00)
(Reg 0x80f4=0x00) (Reg 0x80f5=0x00) (Reg 0x80f6=0x00) (Reg 0x80f7=0x00)
(Reg 0x80f8=0x00) (Reg 0x80f9=0x00) (Reg 0x80fa=0x00) (Reg 0x80fb=0x00)
(Reg 0x80fc=0x00) (Reg 0x80fd=0x00) (Reg 0x80fe=0x00) (Reg 0x80ff=0xe9)

NVR 3 Registers:

(Reg 0x8100=0x00) (Reg 0x8101=0x00) (Reg 0x8102=0x00) (Reg 0x8103=0x00)
(Reg 0x8104=0x00) (Reg 0x8105=0x00) (Reg 0x8106=0x00) (Reg 0x8107=0x00)
(Reg 0x8108=0x00) (Reg 0x8109=0x00) (Reg 0x810a=0x00) (Reg 0x810b=0x00)
(Reg 0x810c=0x00) (Reg 0x810d=0x00) (Reg 0x810e=0x00) (Reg 0x810f=0x00)
(Reg 0x8110=0x00) (Reg 0x8111=0x00) (Reg 0x8112=0x00) (Reg 0x8113=0x00)
(Reg 0x8114=0x00) (Reg 0x8115=0x00) (Reg 0x8116=0x00) (Reg 0x8117=0x00)
(Reg 0x8118=0x00) (Reg 0x8119=0x00) (Reg 0x811a=0x00) (Reg 0x811b=0x00)
(Reg 0x811c=0x00) (Reg 0x811d=0x00) (Reg 0x811e=0x00) (Reg 0x811f=0x00)
(Reg 0x8120=0x00) (Reg 0x8121=0x00) (Reg 0x8122=0x00) (Reg 0x8123=0x00)
(Reg 0x8124=0x00) (Reg 0x8125=0x00) (Reg 0x8126=0x00) (Reg 0x8127=0x00)
(Reg 0x8128=0x00) (Reg 0x8129=0x00) (Reg 0x812a=0x00) (Reg 0x812b=0x00)
(Reg 0x812c=0x00) (Reg 0x812d=0x00) (Reg 0x812e=0x00) (Reg 0x812f=0x00)
(Reg 0x8130=0x00) (Reg 0x8131=0x00) (Reg 0x8132=0x00) (Reg 0x8133=0x00)
(Reg 0x8134=0x00) (Reg 0x8135=0x00) (Reg 0x8136=0x00) (Reg 0x8137=0x00)
(Reg 0x8138=0x00) (Reg 0x8139=0x00) (Reg 0x813a=0x00) (Reg 0x813b=0x00)
(Reg 0x813c=0x00) (Reg 0x813d=0x00) (Reg 0x813e=0x00) (Reg 0x813f=0x00)
(Reg 0x8140=0x00) (Reg 0x8141=0x00) (Reg 0x8142=0x00) (Reg 0x8143=0x00)
(Reg 0x8144=0x00) (Reg 0x8145=0x00) (Reg 0x8146=0x00) (Reg 0x8147=0x00)
(Reg 0x8148=0x00) (Reg 0x8149=0x00) (Reg 0x814a=0x00) (Reg 0x814b=0x00)
(Reg 0x814c=0x00) (Reg 0x814d=0x00) (Reg 0x814e=0x00) (Reg 0x814f=0x00)
(Reg 0x8150=0x00) (Reg 0x8151=0x00) (Reg 0x8152=0x00) (Reg 0x8153=0x00)
(Reg 0x8154=0x00) (Reg 0x8155=0x00) (Reg 0x8156=0x00) (Reg 0x8157=0x00)
(Reg 0x8158=0x00) (Reg 0x8159=0x00) (Reg 0x815a=0x00) (Reg 0x815b=0x00)
(Reg 0x815c=0x00) (Reg 0x815d=0x00) (Reg 0x815e=0x00) (Reg 0x815f=0x00)
(Reg 0x8160=0x00) (Reg 0x8161=0x00) (Reg 0x8162=0x00) (Reg 0x8163=0x00)
(Reg 0x8164=0x00) (Reg 0x8165=0x00) (Reg 0x8166=0x00) (Reg 0x8167=0x00)
(Reg 0x8168=0x00) (Reg 0x8169=0x00) (Reg 0x816a=0x00) (Reg 0x816b=0x00)
(Reg 0x816c=0x00) (Reg 0x816d=0x00) (Reg 0x816e=0x00) (Reg 0x816f=0x00)
(Reg 0x8170=0x00) (Reg 0x8171=0x00) (Reg 0x8172=0x00) (Reg 0x8173=0x00)
(Reg 0x8174=0x00) (Reg 0x8175=0x00) (Reg 0x8176=0x00) (Reg 0x8177=0x00)
(Reg 0x8178=0x00) (Reg 0x8179=0x00) (Reg 0x817a=0x00) (Reg 0x817b=0x00)
(Reg 0x817c=0x00) (Reg 0x817d=0x00) (Reg 0x817e=0x00) (Reg 0x817f=0x00)

NVR 4 Registers:

(Reg 0x8180=0x00)

Vendor NVR1 Registers

(Reg 0x8400=0x00) (Reg 0x8401=0x00) (Reg 0x8402=0x00) (Reg 0x8403=0x00)
(Reg 0x8404=0x00) (Reg 0x8405=0x00) (Reg 0x8406=0x00) (Reg 0x8407=0x00)
(Reg 0x8408=0x00) (Reg 0x8409=0x00) (Reg 0x840a=0x00) (Reg 0x840b=0x00)
(Reg 0x840c=0x00) (Reg 0x840d=0x00) (Reg 0x840e=0x00) (Reg 0x840f=0x00)
(Reg 0x8410=0x43) (Reg 0x8411=0x49) (Reg 0x8412=0x53) (Reg 0x8413=0x43)
(Reg 0x8414=0x4f) (Reg 0x8415=0x20) (Reg 0x8416=0x20) (Reg 0x8417=0x20)
(Reg 0x8418=0x20) (Reg 0x8419=0x20) (Reg 0x841a=0x20) (Reg 0x841b=0x20)
(Reg 0x841c=0x20) (Reg 0x841d=0x20) (Reg 0x841e=0x20) (Reg 0x841f=0x20)
(Reg 0x8420=0x43) (Reg 0x8421=0x46) (Reg 0x8422=0x50) (Reg 0x8423=0x2d)
(Reg 0x8424=0x31) (Reg 0x8425=0x30) (Reg 0x8426=0x30) (Reg 0x8427=0x47)
(Reg 0x8428=0x2d) (Reg 0x8429=0x4c) (Reg 0x842a=0x52) (Reg 0x842b=0x34)
(Reg 0x842c=0x20) (Reg 0x842d=0x20) (Reg 0x842e=0x20) (Reg 0x842f=0x20)
(Reg 0x8430=0x56) (Reg 0x8431=0x45) (Reg 0x8432=0x53) (Reg 0x8433=0x31)
(Reg 0x8434=0x32) (Reg 0x8435=0x46) (Reg 0x8436=0x4e) (Reg 0x8437=0x53)
(Reg 0x8438=0x31) (Reg 0x8439=0x34) (Reg 0x843a=0x32) (Reg 0x843b=0x32)
(Reg 0x843c=0x31) (Reg 0x843d=0x50) (Reg 0x843e=0x44) (Reg 0x843f=0x58)
(Reg 0x8440=0x31) (Reg 0x8441=0x30) (Reg 0x8442=0x2d) (Reg 0x8443=0x32)
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(Reg 0x8444=0x35) (Reg 0x8445=0x34) (Reg 0x8446=0x39) (Reg 0x8447=0x2d)
(Reg 0x8448=0x30) (Reg 0x8449=0x31) (Reg 0x844a=0x20) (Reg 0x844b=0x20)
(Reg 0x844c=0x30) (Reg 0x844d=0x31) (Reg 0x844e=0x20) (Reg 0x844f=0x20)
(Reg 0x8450=0x00) (Reg 0x8451=0x00) (Reg 0x8452=0x00) (Reg 0x8453=0x00)
(Reg 0x8454=0x00) (Reg 0x8455=0x00) (Reg 0x8456=0x00) (Reg 0x8457=0x00)
(Reg 0x8458=0x00) (Reg 0x8459=0x00) (Reg 0x845a=0x00) (Reg 0x845b=0x00)
(Reg 0x845c=0x00) (Reg 0x845d=0x00) (Reg 0x845e=0x00) (Reg 0x845f=0x00)
(Reg 0x8460=0x00) (Reg 0x8461=0x00) (Reg 0x8462=0x00) (Reg 0x8463=0x00)
(Reg 0x8464=0x00) (Reg 0x8465=0x00) (Reg 0x8466=0x00) (Reg 0x8467=0x00)
(Reg 0x8468=0x00) (Reg 0x8469=0x00) (Reg 0x846a=0x00) (Reg 0x846b=0x00)
(Reg 0x846c=0x00) (Reg 0x846d=0x00) (Reg 0x846e=0x00) (Reg 0x846f=0x00)
(Reg 0x8470=0x00) (Reg 0x8471=0x00) (Reg 0x8472=0x00) (Reg 0x8473=0x00)
(Reg 0x8474=0x00) (Reg 0x8475=0x00) (Reg 0x8476=0x00) (Reg 0x8477=0x00)
(Reg 0x8478=0x00) (Reg 0x8479=0x00) (Reg 0x847a=0x00) (Reg 0x847b=0x00)
(Reg 0x847c=0x00) (Reg 0x847d=0x00) (Reg 0x847e=0x00) (Reg 0x847f=0x1d)

VR 1 Registers:

(Reg 0xa000=0x0000) (Reg 0xa001=0x0000) (Reg 0xa002=0x0000) (Reg 0xa003=0x0000)
(Reg 0xa004=0x0000) (Reg 0xa005=0x0003) (Reg 0xa006=0x0002) (Reg 0xa007=0x0001)
(Reg 0xa008=0x0003) (Reg 0xa009=0x0002) (Reg 0xa00a=0x0001) (Reg 0xa00b=0x0000)
(Reg 0xa00c=0x0000) (Reg 0xa00d=0x0000) (Reg 0xa00e=0x0000) (Reg 0xa00f=0x0000)
(Reg 0xa010=0x000e) (Reg 0xa011=0x0200) (Reg 0xa012=0x0000) (Reg 0xa013=0x0000)
(Reg 0xa014=0x0000) (Reg 0xa015=0x0000) (Reg 0xa016=0x0020) (Reg 0xa017=0x0000)
(Reg 0xa018=0x0000) (Reg 0xa019=0x0000) (Reg 0xa01a=0x0000) (Reg 0xa01b=0x0000)
(Reg 0xa01c=0x0000) (Reg 0xa01d=0x0003) (Reg 0xa01e=0x0000) (Reg 0xa01f=0x0000)
(Reg 0xa020=0x0000) (Reg 0xa021=0x0000) (Reg 0xa022=0x0000) (Reg 0xa023=0x0000)
(Reg 0xa024=0x0000) (Reg 0xa025=0x0000) (Reg 0xa026=0x0000) (Reg 0xa027=0x0000)
(Reg 0xa028=0x0040) (Reg 0xa029=0x8070) (Reg 0xa02a=0x0062) (Reg 0xa02b=0x0999)
(Reg 0xa02c=0x0099) (Reg 0xa02d=0x0000) (Reg 0xa02e=0x0000) (Reg 0xa02f=0x26a6)
(Reg 0xa030=0x7cc3) (Reg 0xa031=0x0000) (Reg 0xa032=0x0000) (Reg 0xa033=0x0000)
(Reg 0xa034=0x0000) (Reg 0xa035=0x0000) (Reg 0xa036=0x0000) (Reg 0xa037=0x0000)
(Reg 0xa038=0x0000) (Reg 0xa039=0x0000) (Reg 0xa03a=0x0000)

NETWORK LANE VR 1 Registers:

(Reg 0xa200=0x0000) (Reg 0xa201=0x0000) (Reg 0xa202=0x0000) (Reg 0xa203=0x0000)
(Reg 0xa204=0x0000) (Reg 0xa205=0x0000) (Reg 0xa206=0x0000) (Reg 0xa207=0x0000)
(Reg 0xa208=0x0000) (Reg 0xa209=0x0000) (Reg 0xa20a=0x0000) (Reg 0xa20b=0x0000)
(Reg 0xa20c=0x0000) (Reg 0xa20d=0x0000) (Reg 0xa20e=0x0000) (Reg 0xa20f=0x0000)
(Reg 0xa210=0x0000) (Reg 0xa211=0x0000) (Reg 0xa212=0x0000) (Reg 0xa213=0x0000)
(Reg 0xa214=0x0000) (Reg 0xa215=0x0000) (Reg 0xa216=0x0000) (Reg 0xa217=0x0000)
(Reg 0xa218=0x0000) (Reg 0xa219=0x0000) (Reg 0xa21a=0x0000) (Reg 0xa21b=0x0000)
(Reg 0xa21c=0x0000) (Reg 0xa21d=0x0000) (Reg 0xa21e=0x0000) (Reg 0xa21f=0x0000)
(Reg 0xa220=0x0000) (Reg 0xa221=0x0000) (Reg 0xa222=0x0000) (Reg 0xa223=0x0000)
(Reg 0xa224=0x0000) (Reg 0xa225=0x0000) (Reg 0xa226=0x0000) (Reg 0xa227=0x0000)
(Reg 0xa228=0x0000) (Reg 0xa229=0x0000) (Reg 0xa22a=0x0000) (Reg 0xa22b=0x0000)
(Reg 0xa22c=0x0000) (Reg 0xa22d=0x0000) (Reg 0xa22e=0x0000) (Reg 0xa22f=0x0000)
(Reg 0xa230=0x0000) (Reg 0xa231=0x0000) (Reg 0xa232=0x0000) (Reg 0xa233=0x0000)
(Reg 0xa234=0x0000) (Reg 0xa235=0x0000) (Reg 0xa236=0x0000) (Reg 0xa237=0x0000)
(Reg 0xa238=0x0000) (Reg 0xa239=0x0000) (Reg 0xa23a=0x0000) (Reg 0xa23b=0x0000)
(Reg 0xa23c=0x0000) (Reg 0xa23d=0x0000) (Reg 0xa23e=0x0000) (Reg 0xa23f=0x0000)
(Reg 0xa240=0x9999) (Reg 0xa241=0x9999) (Reg 0xa242=0x9999) (Reg 0xa243=0x9999)
(Reg 0xa244=0x0000) (Reg 0xa245=0x0000) (Reg 0xa246=0x0000) (Reg 0xa247=0x0000)
(Reg 0xa248=0x0000) (Reg 0xa249=0x0000) (Reg 0xa24a=0x0000) (Reg 0xa24b=0x0000)
(Reg 0xa24c=0x0000) (Reg 0xa24d=0x0000) (Reg 0xa24e=0x0000) (Reg 0xa24f=0x0000)
(Reg 0xa250=0xe058) (Reg 0xa251=0xe058) (Reg 0xa252=0xe058) (Reg 0xa253=0xe058)
(Reg 0xa254=0x0000) (Reg 0xa255=0x0000) (Reg 0xa256=0x0000) (Reg 0xa257=0x0000)
(Reg 0xa258=0x0000) (Reg 0xa259=0x0000) (Reg 0xa25a=0x0000) (Reg 0xa25b=0x0000)
(Reg 0xa25c=0x0000) (Reg 0xa25d=0x0000) (Reg 0xa25e=0x0000) (Reg 0xa25f=0x0000)
(Reg 0xa260=0x0000)

NETWORK LANE VR 2 Registers:
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(Reg 0xa280=0x0000) (Reg 0xa281=0x0000) (Reg 0xa282=0x0000) (Reg 0xa283=0x0000)
(Reg 0xa284=0x0000) (Reg 0xa285=0x0000) (Reg 0xa286=0x0000) (Reg 0xa287=0x0000)
(Reg 0xa288=0x0000) (Reg 0xa289=0x0000) (Reg 0xa28a=0x0000) (Reg 0xa28b=0x0000)
(Reg 0xa28c=0x0000) (Reg 0xa28d=0x0000) (Reg 0xa28e=0x0000) (Reg 0xa28f=0x0000)
(Reg 0xa290=0x0000) (Reg 0xa291=0x0000) (Reg 0xa292=0x0000) (Reg 0xa293=0x0000)
(Reg 0xa294=0x0000) (Reg 0xa295=0x0000) (Reg 0xa296=0x0000) (Reg 0xa297=0x0000)
(Reg 0xa298=0x0000) (Reg 0xa299=0x0000) (Reg 0xa29a=0x0000) (Reg 0xa29b=0x0000)
(Reg 0xa29c=0x0000) (Reg 0xa29d=0x0000) (Reg 0xa29e=0x0000) (Reg 0xa29f=0x0000)
(Reg 0xa2a0=0xb766) (Reg 0xa2a1=0x98aa) (Reg 0xa2a2=0x922b) (Reg 0xa2a3=0x882c)
(Reg 0xa2a4=0x0000) (Reg 0xa2a5=0x0000) (Reg 0xa2a6=0x0000) (Reg 0xa2a7=0x0000)
(Reg 0xa2a8=0x0000) (Reg 0xa2a9=0x0000) (Reg 0xa2aa=0x0000) (Reg 0xa2ab=0x0000)
(Reg 0xa2ac=0x0000) (Reg 0xa2ad=0x0000) (Reg 0xa2ae=0x0000) (Reg 0xa2af=0x0000)
(Reg 0xa2b0=0x3238) (Reg 0xa2b1=0x364a) (Reg 0xa2b2=0x38b5) (Reg 0xa2b3=0x39c7)
(Reg 0xa2b4=0x0000) (Reg 0xa2b5=0x0000) (Reg 0xa2b6=0x0000) (Reg 0xa2b7=0x0000)
(Reg 0xa2b8=0x0000) (Reg 0xa2b9=0x0000) (Reg 0xa2ba=0x0000) (Reg 0xa2bb=0x0000)
(Reg 0xa2bc=0x0000) (Reg 0xa2bd=0x0000) (Reg 0xa2be=0x0000) (Reg 0xa2bf=0x0000)
(Reg 0xa2c0=0x2fc0) (Reg 0xa2c1=0x2fae) (Reg 0xa2c2=0x2fc0) (Reg 0xa2c3=0x2fd1)
(Reg 0xa2c4=0x0000) (Reg 0xa2c5=0x0000) (Reg 0xa2c6=0x0000) (Reg 0xa2c7=0x0000)
(Reg 0xa2c8=0x0000) (Reg 0xa2c9=0x0000) (Reg 0xa2ca=0x0000) (Reg 0xa2cb=0x0000)
(Reg 0xa2cc=0x0000) (Reg 0xa2cd=0x0000) (Reg 0xa2ce=0x0000) (Reg 0xa2cf=0x0000)
(Reg 0xa2d0=0x2b06) (Reg 0xa2d1=0x3579) (Reg 0xa2d2=0x3462) (Reg 0xa2d3=0x3867)
(Reg 0xa2d4=0x0000) (Reg 0xa2d5=0x0000) (Reg 0xa2d6=0x0000) (Reg 0xa2d7=0x0000)
(Reg 0xa2d8=0x0000) (Reg 0xa2d9=0x0000) (Reg 0xa2da=0x0000) (Reg 0xa2db=0x0000)
(Reg 0xa2dc=0x0000) (Reg 0xa2dd=0x0000) (Reg 0xa2de=0x0000) (Reg 0xa2df=0x0000)
(Reg 0xa2e0=0x0000)

HOST LANE VR 1 Registers:

(Reg 0xa400=0x0000) (Reg 0xa401=0x0000) (Reg 0xa402=0x0000) (Reg 0xa403=0x0000)
(Reg 0xa404=0x0000) (Reg 0xa405=0x0000) (Reg 0xa406=0x0000) (Reg 0xa407=0x0000)
(Reg 0xa408=0x0000) (Reg 0xa409=0x0000) (Reg 0xa40a=0x0000) (Reg 0xa40b=0x0000)
(Reg 0xa40c=0x0000) (Reg 0xa40d=0x0000) (Reg 0xa40e=0x0000) (Reg 0xa40f=0x0000)
(Reg 0xa410=0x0000) (Reg 0xa411=0x0000) (Reg 0xa412=0x0000) (Reg 0xa413=0x0000)
(Reg 0xa414=0x0000) (Reg 0xa415=0x0000) (Reg 0xa416=0x0000) (Reg 0xa417=0x0000)
(Reg 0xa418=0x0000) (Reg 0xa419=0x0000) (Reg 0xa41a=0x0000) (Reg 0xa41b=0x0000)
(Reg 0xa41c=0x0000) (Reg 0xa41d=0x0000) (Reg 0xa41e=0x0000) (Reg 0xa41f=0x0000)
(Reg 0xa420=0x0001) (Reg 0xa421=0x0001) (Reg 0xa422=0x0001) (Reg 0xa423=0x0001)
(Reg 0xa424=0x0001) (Reg 0xa425=0x0001) (Reg 0xa426=0x0001) (Reg 0xa427=0x0001)
(Reg 0xa428=0x0001) (Reg 0xa429=0x0001) (Reg 0xa42a=0x0000) (Reg 0xa42b=0x0000)
(Reg 0xa42c=0x0000) (Reg 0xa42d=0x0000) (Reg 0xa42e=0x0000) (Reg 0xa42f=0x0000)
(Reg 0xa430=0x0000) (Reg 0xa431=0x0000) (Reg 0xa432=0x0000) (Reg 0xa433=0x0000)
(Reg 0xa434=0x0000) (Reg 0xa435=0x0000) (Reg 0xa436=0x0000) (Reg 0xa437=0x0000)
(Reg 0xa438=0x0000) (Reg 0xa439=0x0000) (Reg 0xa43a=0x0000) (Reg 0xa43b=0x0000)
(Reg 0xa43c=0x0000) (Reg 0xa43d=0x0000) (Reg 0xa43e=0x0000) (Reg 0xa43f=0x0000)
(Reg 0xa440=0x0001) (Reg 0xa441=0x0001) (Reg 0xa442=0x0001) (Reg 0xa443=0x0001)
(Reg 0xa444=0x0001) (Reg 0xa445=0x0001) (Reg 0xa446=0x0001) (Reg 0xa447=0x0001)
(Reg 0xa448=0x0001) (Reg 0xa449=0x0001) (Reg 0xa44a=0x0000) (Reg 0xa44b=0x0000)
(Reg 0xa44c=0x0000) (Reg 0xa44d=0x0000) (Reg 0xa44e=0x0000) (Reg 0xa44f=0x0000)
(Reg 0xa450=0x0000)
```

The following example shows sample output from the **show controllers HundredGigE bert** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 bert
Tue Mar 22 06:01:53.201 UTC
Command not supported on this interface
```

The following example shows sample output from the **show controllers HundredGigE control** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 control
Tue Mar 22 06:02:02.882 UTC
Management information for interface HundredGigE0/3/0/0:

Port number: 0
```

```
Bay number: 0
Interface handle: 0x1380040

Config:
    Auto-negotiation: Configuration not supported (Off)
    Carrier delay (up): Not configured
    Carrier delay (down): Not configured
    Speed: Configuration not supported (100Gbps)
    Duplex: Configuration not supported (Full Duplex)
    Flow Control: Not configured (None)
    IPG: Configuration not supported (standard (12))
    Loopback: Not configured (None)
    MTU: 9188 bytes
    Bandwidth: Not configured
    BER-SD Threshold: Configuration not supported
    BER-SD Report: Configuration not supported
    BER-SF Threshold: Configuration not supported
    BER-SF Report: Configuration not supported
    BER-SF Signal Remote Failure: Configuration not supported

Driver constraints:
    Min MTU: 64 bytes
    Max MTU: 9600 bytes
    Max speed: 100Gbps
    Interface type: HundredGigE
    Management interface: No
    Promiscuous mode: Yes
    Default carrier delay up (auto-neg on): 0 ms
    Default carrier delay down (auto-neg on): 0 ms
    Default carrier delay up (auto-neg off): 0 ms
    Default carrier delay down (auto-neg off): 0 ms
    Allowed config mask: 0x26b

Cached driver state:
    MTU: 9196 bytes
    Burnt-in MAC address: 001d.70b6.6810

Operational carrier delay:
    Carrier delay (up): 0 ms
    Carrier delay (down): 0 ms

Bundle settings:
    Aggregated: No
    Bundle MTU: 1514 bytes
    Bundle MAC address: 001d.70b6.6810

Port FSM state:
    Port is enabled, link is up
Complete FSM state:
    Admin up
    Bundle admin up
    Client admin up
    Client admin tx not disabled
    Port enabled
    Port tx enabled
    Hardware link up
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:

0 Unicast Bundle MAC Addresses:

0 Multicast Bundle MAC Addresses:
```

The following example shows sample output from the **show controllers HundredGigE internal** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 internal
Tue Mar 22 06:02:47.254 UTC
PLIM 1 Port HundredGigE Internal Information:
shmwin pointer: 0x581d4264
shmwin id     : 0x3c
shmwin initlization: complete
shmwin mac stats pointer: 0x603d3020
shmwin mac stats version: 0x1
shmwin ctx pointer: 0x603db07c
shmwin ctx version: 0x1
HW initilization: completed
Maximum CFP power class supported: 4
Maximum CFP power consumption supported: 30000 mW
```

The following example shows sample output from the **show controllers HundredGigE mac** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 mac
Tue Mar 22 06:02:56.722 UTC

Operational address: 001d.70b6.6810
Burnt-in address: 001d.70b6.6810
MAC state for beluga 0 port 0

0 HSRP/VRRP MAC addresses

VLAN Ethertype: 0x8100
QinQ Ethertype: 0x88a8
MTP  Ethertype: 0x88e7

4 VLAN UIDB entries
VLAN1   VLAN2      Packet Type Flags      UIDB Result Flags
   0        0          VLAN                  1 VLAN
   0        0               ARPA             1 ARPA
   0        0                    SAP         1 SAP
   0        0                                1 SNAP
```

The following example shows sample output from the **show controllers HundredGigE phy** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 phy
Tue Mar 22 06:03:04.371 UTC

802.3ba PCS
  Previous PCS Alarms:
    None

  Current PCS Status:
    PCS is able to support 100GBASE-R
    PCS is Block Locked
    PCS Rx Link Status is UP
    PCS Errored Block Counts: 0
    PCS BER (Sync Header Error) Counts: 0

PCS detailed information:
```

```
RX Service Interface Lane Sync Header Lock Status:

  Lane-0 : Locked           Lane-10 : Locked
  Lane-1 : Locked           Lane-11 : Locked
  Lane-2 : Locked           Lane-12 : Locked
  Lane-3 : Locked           Lane-13 : Locked
  Lane-4 : Locked           Lane-14 : Locked
  Lane-5 : Locked           Lane-15 : Locked
  Lane-6 : Locked           Lane-16 : Locked
  Lane-7 : Locked           Lane-17 : Locked
  Lane-8 : Locked           Lane-18 : Locked
  Lane-9 : Locked           Lane-19 : Locked

RX Service Interface Lane Marker Lock Status:

  Lane-0 : Locked           Lane-10 : Locked
  Lane-1 : Locked           Lane-11 : Locked
  Lane-2 : Locked           Lane-12 : Locked
  Lane-3 : Locked           Lane-13 : Locked
  Lane-4 : Locked           Lane-14 : Locked
  Lane-5 : Locked           Lane-15 : Locked
  Lane-6 : Locked           Lane-16 : Locked
  Lane-7 : Locked           Lane-17 : Locked
  Lane-8 : Locked           Lane-18 : Locked
  Lane-9 : Locked           Lane-19 : Locked

Mapping of Service Interface Lane and RX PCS Lane:

  Rx Service Interface Lane 0 = PCS Lane 11
  Rx Service Interface Lane 1 = PCS Lane 1
  Rx Service Interface Lane 2 = PCS Lane 0
  Rx Service Interface Lane 3 = PCS Lane 12
  Rx Service Interface Lane 4 = PCS Lane 10
  Rx Service Interface Lane 5 = PCS Lane 3
  Rx Service Interface Lane 6 = PCS Lane 4
  Rx Service Interface Lane 7 = PCS Lane 14
  Rx Service Interface Lane 8 = PCS Lane 2
  Rx Service Interface Lane 9 = PCS Lane 13
  Rx Service Interface Lane 10 = PCS Lane 15
  Rx Service Interface Lane 11 = PCS Lane 7
  Rx Service Interface Lane 12 = PCS Lane 5
  Rx Service Interface Lane 13 = PCS Lane 16
  Rx Service Interface Lane 14 = PCS Lane 9
  Rx Service Interface Lane 15 = PCS Lane 6
  Rx Service Interface Lane 16 = PCS Lane 8
  Rx Service Interface Lane 17 = PCS Lane 17
  Rx Service Interface Lane 18 = PCS Lane 18
  Rx Service Interface Lane 19 = PCS Lane 19

PCS Lane BIP Error Counters:

  Lane-0 : 0                Lane-10 : 0
  Lane-1 : 0                Lane-11 : 0
  Lane-2 : 0                Lane-12 : 0
  Lane-3 : 0                Lane-13 : 0
  Lane-4 : 0                Lane-14 : 0
  Lane-5 : 0                Lane-15 : 0
  Lane-6 : 0                Lane-16 : 0
  Lane-7 : 0                Lane-17 : 0
  Lane-8 : 0                Lane-18 : 0
  Lane-9 : 0                Lane-19 : 0

Total PCS Lane BIP Error Count : 0
Total PCS Lane Sync Header Error Count  : 0
```

```
  Total PCS Lane Bad 64/66 Code Count     : 3


Serdes section:
===============

None of 10 RX serial inputs detects loss of signal.
All of 10 Tx clock multiplication units are locked.
All of 10 Rx clock/data recovery units are locked.
None of 10 TX FIFO has underflow/overflow condition.
None of 10 RX FIFO has underflow/overflow condition.

CFP section:
==============

CFP General Information:

  Module Identifier:         CFP
  Ethernet Application Code: 100GBASE-LR4
  Module State:              Ready
  Power Class:               3
  Maximum Power Consumption: 23000 mW

CFP Vendor Information:

  Vendor Name:         CISCO-SUMITOMO
  Vendor PN:           FTLC1181RDNS-C1
  Vendor SN:           C22CSLA
  Vendor OUI:          0x0-0x90-0x65
  Lot Code:            00
  DATE CODE(YYYY/MM/DD): 2010/06/02
  CFP MSA Hardware Version:   1.0
  CFP MSA MDIO Version:       1.2
  Vendor Hardware Version:    1.2
  Vendor Firmware Version:    1.4

CFP UDI Information:

  UDI Compliant: Yes
  Cisco PID: CFP-100G-LR4
  Cisco VID: VES1

CFP Cisco Information:

  Vendor Name: CISCO
  Cisco PN   : 10-2549-01    Rev 01
  Cisco SN   : FNS14221PDX

CFP Detail Information:

  Number of lanes supoorted:

    Number of network lanes: 4
    Number of host lanes   : 10

  Time required by module:

    Maximum high-power-up time  :  15 s
    Maximum high-power-down time:   0 s
    Maximum tx-turn-on time     :   1 s
    Maximum tx-turn-off time    :   0 ms

  Module general control:
```

```
    Soft reset asserted     : No
    Soft low power asserted : No
    Soft tx disable asserted: No
    Soft program control 3 asserted: No
    Soft program control 2 asserted: No
    Soft program control 1 asserted: No
    Soft global alarm test asserted: No

    Tx disable pin asserted: No
    Low power pin asserted : No
    Program control 3 pin asserted: Yes
    Program control 2 pin asserted: Yes
    Program control 1 pin asserted: Yes

  Module Analog A/D value:

    Power supply voltage : 3.1969 V
    Temperature          : 38.4290 degC

  Network lane A/D value:

    Lane 0 Tx power: 1.2776 mW (  1.1 dBm)
    Lane 1 Tx power: 1.3995 mW (  1.5 dBm)
    Lane 2 Tx power: 1.4517 mW (  1.6 dBm)
    Lane 3 Tx power: 1.4856 mW (  1.7 dBm)

    Lane 0 Rx power: 1.1044 mW (  0.4 dBm)
    Lane 1 Rx power: 1.3834 mW (  1.4 dBm)
    Lane 2 Rx power: 1.3426 mW (  1.3 dBm)
    Lane 3 Rx power: 1.4456 mW (  1.6 dBm)

    Total Tx power : 5.6144 mW (  7.5 dBm)
    Total Rx power : 5.2760 mW (  7.2 dBm)
```

The following example shows sample output from the **show controllers HundredGigE regs** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 regs
Tue Mar 22 06:03:25.597 UTC

PCS 802.3ba Registers:
======================
Control 1 = 0x0010
Status 1 = 0x0004
Dev ID 0 = 0x0000 Dev ID 1 = 0x0000
Speed Ability = 0x0008
Devices 1 = 0x0004 Devices 2 = 0x0000
Control 2 = 0x0005
Status 2 = 0x0020
PKG ID 0 = 0x0000 PKG ID 1 = 0x0000
Base R Status 1 = 0x1001
Base R Status 2 = 0x8000
BER high order counter = 0x0000
Errored blocks high order counter = 0x8000
Base R test pattern control = 0x0080
Base R test pattern error counter = 0x0000
Multi-lane BASE-R alignment status 1 = 0x10ff
Multi-lane BASE-R alignment status 2 = 0x0fff
Multi-lane BASE-R alignment status 3 = 0x00ff
Multi-lane BASE-R alignment status 4 = 0x0fff
BIP error counter lane 0 = 0x0000
BIP error counter lane 1 = 0x0000
BIP error counter lane 2 = 0x0000
BIP error counter lane 3 = 0x0000
```

```
BIP error counter lane 4 = 0x0000
BIP error counter lane 5 = 0x0000
BIP error counter lane 6 = 0x0000
BIP error counter lane 7 = 0x0000
BIP error counter lane 8 = 0x0000
BIP error counter lane 9 = 0x0000
BIP error counter lane 10 = 0x0000
BIP error counter lane 11 = 0x0000
BIP error counter lane 12 = 0x0000
BIP error counter lane 13 = 0x0000
BIP error counter lane 14 = 0x0000
BIP error counter lane 15 = 0x0000
BIP error counter lane 16 = 0x0000
BIP error counter lane 17 = 0x0000
BIP error counter lane 18 = 0x0000
BIP error counter lane 19 = 0x0000
Lane mapping register 0 = 0x000b
Lane mapping register 1 = 0x0001
Lane mapping register 2 = 0x0000
Lane mapping register 3 = 0x000c
Lane mapping register 4 = 0x000a
Lane mapping register 5 = 0x0003
Lane mapping register 6 = 0x0004
Lane mapping register 7 = 0x000e
Lane mapping register 8 = 0x0002
Lane mapping register 9 = 0x000d
Lane mapping register 10 = 0x000f
Lane mapping register 11 = 0x0007
Lane mapping register 12 = 0x0005
Lane mapping register 13 = 0x0010
Lane mapping register 14 = 0x0009
Lane mapping register 15 = 0x0006
Lane mapping register 16 = 0x0008
Lane mapping register 17 = 0x0011
Lane mapping register 18 = 0x0012
Lane mapping register 19 = 0x0013

Serdes registers:
==================

Chip id register: 0x8154
Chip revision id register: 0x1
Digital control 1 register register:
  serdes0:0x017a, serdes1:0x017a, serdes2:0x017a, serdes3:0x017a, serdes4:0x017a
  serdes5:0x017a, serdes6:0x017a, serdes7:0x017a, serdes8:0x017a, serdes9:0x017a
Digital control 2 register register:
  serdes0:0x0305, serdes1:0x0305, serdes2:0x0305, serdes3:0x0305, serdes4:0x0305
  serdes5:0x0305, serdes6:0x0305, serdes7:0x0305, serdes8:0x0305, serdes9:0x0305
Digital control 3 register register:
  serdes0:0x0d0f, serdes1:0x0d0f, serdes2:0x0d0f, serdes3:0x0d0f, serdes4:0x0d0f
  serdes5:0x0d0f, serdes6:0x0d0f, serdes7:0x0d0f, serdes8:0x0d0f, serdes9:0x0d0f
Digital control 5 register register:
  serdes0:0x6de0, serdes1:0x6de0, serdes2:0x6de0, serdes3:0x6de0, serdes4:0x6de0
  serdes5:0x6de0, serdes6:0x6de0, serdes7:0x6de0, serdes8:0x6de0, serdes9:0x6de0
Digital status 0 register register:
  serdes0:0x303b, serdes1:0x303b, serdes2:0x303b, serdes3:0x303b, serdes4:0x303b
  serdes5:0x303b, serdes6:0x303b, serdes7:0x303b, serdes8:0x303b, serdes9:0x303b
Line PRBS control register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
Line PRBS status register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
System PRBS control register register:
```

```
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
System PRBS status register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
PRBS status 2 register register:
  serdes0:0x8008, serdes1:0x8008, serdes2:0x8008, serdes3:0x8008, serdes4:0x8008
  serdes5:0x8008, serdes6:0x8008, serdes7:0x8008, serdes8:0x8008, serdes9:0x8008
TX control 1 register register:
  serdes0:0x1884, serdes1:0x1884, serdes2:0x1884, serdes3:0x1884, serdes4:0x1884
  serdes5:0x1884, serdes6:0x1884, serdes7:0x1884, serdes8:0x1884, serdes9:0x1884
TX control 2 register register:
  serdes0:0x00a0, serdes1:0x00a0, serdes2:0x00a0, serdes3:0x00a0, serdes4:0x00a0
  serdes5:0x00a0, serdes6:0x00a0, serdes7:0x00a0, serdes8:0x00a0, serdes9:0x00a0
TX control 4 register register:
  serdes0:0x2412, serdes1:0x2412, serdes2:0x2412, serdes3:0x2412, serdes4:0x2412
  serdes5:0x2412, serdes6:0x2412, serdes7:0x2412, serdes8:0x2412, serdes9:0x2412
TX control 7 register register:
  serdes0:0x1077, serdes1:0x1077, serdes2:0x1077, serdes3:0x1077, serdes4:0x1077
  serdes5:0x1077, serdes6:0x1077, serdes7:0x1077, serdes8:0x1077, serdes9:0x1077
TX control 8 register register:
  serdes0:0xb800, serdes1:0xb800, serdes2:0xb800, serdes3:0xb800, serdes4:0xb800
  serdes5:0xb800, serdes6:0xb800, serdes7:0xb800, serdes8:0xb800, serdes9:0xb800
TX LVDS contrl 1 register register:
  serdes0:0x6050, serdes1:0x6050, serdes2:0x6050, serdes3:0x6050, serdes4:0x6050
  serdes5:0x6050, serdes6:0x6050, serdes7:0x6050, serdes8:0x6050, serdes9:0x6050
TX LVDS contrl 2 register register:
  serdes0:0x3bb1, serdes1:0x3ba1, serdes2:0x3ba9, serdes3:0x3ba9, serdes4:0x3bb1
  serdes5:0x3ba9, serdes6:0x3ba9, serdes7:0x3ba9, serdes8:0x3bb1, serdes9:0x3ba9
TX LVDS contrl 3 register register:
  serdes0:0x3bb1, serdes1:0x3ba1, serdes2:0x3ba9, serdes3:0x3ba9, serdes4:0x3bb1
  serdes5:0x3ba9, serdes6:0x3ba9, serdes7:0x3ba9, serdes8:0x3bb1, serdes9:0x3ba9
RX control 2 register register:
  serdes0:0x2220, serdes1:0x2220, serdes2:0x2224, serdes3:0x2224, serdes4:0x2222
  serdes5:0x2224, serdes6:0x2220, serdes7:0x2224, serdes8:0x2220, serdes9:0x2224
RX control 3 register register:
  serdes0:0x1631, serdes1:0x1631, serdes2:0x1631, serdes3:0x1631, serdes4:0x1631
  serdes5:0x1631, serdes6:0x1631, serdes7:0x1631, serdes8:0x1631, serdes9:0x1631
RX control 4 register register:
  serdes0:0x60c8, serdes1:0x40c8, serdes2:0x50c8, serdes3:0x50c8, serdes4:0x60c8
  serdes5:0x50c8, serdes6:0x50c8, serdes7:0x50c8, serdes8:0x60c8, serdes9:0x50c8
RX control 6 register register:
  serdes0:0x081a, serdes1:0x081a, serdes2:0x081a, serdes3:0x081a, serdes4:0x081a
  serdes5:0x081a, serdes6:0x081a, serdes7:0x081a, serdes8:0x081a, serdes9:0x081a
RX control 7 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX control 8 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX control 9 register register:
  serdes0:0x0000, serdes1:0x0000, serdes2:0x0000, serdes3:0x0000, serdes4:0x0000
  serdes5:0x0000, serdes6:0x0000, serdes7:0x0000, serdes8:0x0000, serdes9:0x0000
RX LVDS contrl 1 register register:
  serdes0:0x0bfa, serdes1:0x0bba, serdes2:0x0bba, serdes3:0x0bba, serdes4:0x0bba
  serdes5:0x0bba, serdes6:0x0bba, serdes7:0x0bba, serdes8:0x0bba, serdes9:0x0bba

CFP Registers:
==============

NVR 1 Registers:

(Reg 0x8000=0x0e) (Reg 0x8001=0x95) (Reg 0x8002=0x01) (Reg 0x8003=0x01)
(Reg 0x8004=0x00) (Reg 0x8005=0x00) (Reg 0x8006=0x00) (Reg 0x8007=0x00)
```

```
(Reg 0x8008=0x08) (Reg 0x8009=0x4a) (Reg 0x800a=0x11) (Reg 0x800b=0x81)
(Reg 0x800c=0x34) (Reg 0x800d=0x0a) (Reg 0x800e=0x00) (Reg 0x800f=0x00)
(Reg 0x8010=0x01) (Reg 0x8011=0x04) (Reg 0x8012=0xca) (Reg 0x8013=0x45)
(Reg 0x8014=0xcc) (Reg 0x8015=0xb8) (Reg 0x8016=0x08) (Reg 0x8017=0x34)
(Reg 0x8018=0x21) (Reg 0x8019=0x44) (Reg 0x801a=0x40) (Reg 0x801b=0x70)
(Reg 0x801c=0x1c) (Reg 0x801d=0x73) (Reg 0x801e=0x64) (Reg 0x801f=0x46)
(Reg 0x8020=0x00) (Reg 0x8021=0x46) (Reg 0x8022=0x49) (Reg 0x8023=0x4e)
(Reg 0x8024=0x49) (Reg 0x8025=0x53) (Reg 0x8026=0x41) (Reg 0x8027=0x52)
(Reg 0x8028=0x20) (Reg 0x8029=0x43) (Reg 0x802a=0x4f) (Reg 0x802b=0x52)
(Reg 0x802c=0x50) (Reg 0x802d=0x2e) (Reg 0x802e=0x20) (Reg 0x802f=0x20)
(Reg 0x8030=0x20) (Reg 0x8031=0x00) (Reg 0x8032=0x90) (Reg 0x8033=0x65)
(Reg 0x8034=0x46) (Reg 0x8035=0x54) (Reg 0x8036=0x4c) (Reg 0x8037=0x43)
(Reg 0x8038=0x31) (Reg 0x8039=0x31) (Reg 0x803a=0x38) (Reg 0x803b=0x31)
(Reg 0x803c=0x52) (Reg 0x803d=0x44) (Reg 0x803e=0x4e) (Reg 0x803f=0x53)
(Reg 0x8040=0x2d) (Reg 0x8041=0x43) (Reg 0x8042=0x31) (Reg 0x8043=0x20)
(Reg 0x8044=0x43) (Reg 0x8045=0x32) (Reg 0x8046=0x32) (Reg 0x8047=0x43)
(Reg 0x8048=0x53) (Reg 0x8049=0x4c) (Reg 0x804a=0x41) (Reg 0x804b=0x20)
(Reg 0x804c=0x20) (Reg 0x804d=0x20) (Reg 0x804e=0x20) (Reg 0x804f=0x20)
(Reg 0x8050=0x20) (Reg 0x8051=0x20) (Reg 0x8052=0x20) (Reg 0x8053=0x20)
(Reg 0x8054=0x32) (Reg 0x8055=0x30) (Reg 0x8056=0x31) (Reg 0x8057=0x30)
(Reg 0x8058=0x30) (Reg 0x8059=0x36) (Reg 0x805a=0x30) (Reg 0x805b=0x32)
(Reg 0x805c=0x30) (Reg 0x805d=0x30) (Reg 0x805e=0x49) (Reg 0x805f=0x50)
(Reg 0x8060=0x55) (Reg 0x8061=0x49) (Reg 0x8062=0x42) (Reg 0x8063=0x48)
(Reg 0x8064=0x43) (Reg 0x8065=0x52) (Reg 0x8066=0x41) (Reg 0x8067=0x41)
(Reg 0x8068=0x0a) (Reg 0x8069=0x0c) (Reg 0x806a=0x01) (Reg 0x806b=0x02)
(Reg 0x806c=0x01) (Reg 0x806d=0x04) (Reg 0x806e=0x0c) (Reg 0x806f=0x03)
(Reg 0x8070=0x0f) (Reg 0x8071=0x68) (Reg 0x8072=0x0f) (Reg 0x8073=0x01)
(Reg 0x8074=0x01) (Reg 0x8075=0x00) (Reg 0x8076=0x00) (Reg 0x8077=0x00)
(Reg 0x8078=0x00) (Reg 0x8079=0x00) (Reg 0x807a=0x00) (Reg 0x807b=0x00)
(Reg 0x807c=0x00) (Reg 0x807d=0x00) (Reg 0x807e=0x00) (Reg 0x807f=0x1a)

NVR 2 Registers:

(Reg 0x8080=0x46) (Reg 0x8081=0x00) (Reg 0x8082=0x44) (Reg 0x8083=0x00)
(Reg 0x8084=0x02) (Reg 0x8085=0x00) (Reg 0x8086=0x00) (Reg 0x8087=0x00)
(Reg 0x8088=0x87) (Reg 0x8089=0x5a) (Reg 0x808a=0x86) (Reg 0x808b=0x10)
(Reg 0x808c=0x7b) (Reg 0x808d=0xc0) (Reg 0x808e=0x7a) (Reg 0x808f=0x75)
(Reg 0x8090=0x00) (Reg 0x8091=0x00) (Reg 0x8092=0x00) (Reg 0x8093=0x00)
(Reg 0x8094=0x00) (Reg 0x8095=0x00) (Reg 0x8096=0x00) (Reg 0x8097=0x00)
(Reg 0x8098=0x00) (Reg 0x8099=0x00) (Reg 0x809a=0x00) (Reg 0x809b=0x00)
(Reg 0x809c=0x00) (Reg 0x809d=0x00) (Reg 0x809e=0x00) (Reg 0x809f=0x00)
(Reg 0x80a0=0x00) (Reg 0x80a1=0x00) (Reg 0x80a2=0x00) (Reg 0x80a3=0x00)
(Reg 0x80a4=0x00) (Reg 0x80a5=0x00) (Reg 0x80a6=0x00) (Reg 0x80a7=0x00)
(Reg 0x80a8=0xea) (Reg 0x80a9=0x60) (Reg 0x80aa=0xe0) (Reg 0x80ab=0x9c)
(Reg 0x80ac=0x44) (Reg 0x80ad=0x5c) (Reg 0x80ae=0x3a) (Reg 0x80af=0x98)
(Reg 0x80b0=0x6e) (Reg 0x80b1=0x17) (Reg 0x80b2=0x62) (Reg 0x80b3=0x1e)
(Reg 0x80b4=0x10) (Reg 0x80b5=0x48) (Reg 0x80b6=0x0e) (Reg 0x80b7=0x83)
(Reg 0x80b8=0x37) (Reg 0x80b9=0x00) (Reg 0x80ba=0x35) (Reg 0x80bb=0x00)
(Reg 0x80bc=0x1b) (Reg 0x80bd=0x00) (Reg 0x80be=0x19) (Reg 0x80bf=0x00)
(Reg 0x80c0=0x6e) (Reg 0x80c1=0x17) (Reg 0x80c2=0x62) (Reg 0x80c3=0x1e)
(Reg 0x80c4=0x01) (Reg 0x80c5=0xf5) (Reg 0x80c6=0x00) (Reg 0x80c7=0xfb)
(Reg 0x80c8=0x00) (Reg 0x80c9=0x00) (Reg 0x80ca=0x00) (Reg 0x80cb=0x00)
(Reg 0x80cc=0x00) (Reg 0x80cd=0x00) (Reg 0x80ce=0x00) (Reg 0x80cf=0x00)
(Reg 0x80d0=0x00) (Reg 0x80d1=0x00) (Reg 0x80d2=0x00) (Reg 0x80d3=0x00)
(Reg 0x80d4=0x00) (Reg 0x80d5=0x00) (Reg 0x80d6=0x00) (Reg 0x80d7=0x00)
(Reg 0x80d8=0x00) (Reg 0x80d9=0x00) (Reg 0x80da=0x00) (Reg 0x80db=0x00)
(Reg 0x80dc=0x00) (Reg 0x80dd=0x00) (Reg 0x80de=0x00) (Reg 0x80df=0x00)
(Reg 0x80e0=0x00) (Reg 0x80e1=0x00) (Reg 0x80e2=0x00) (Reg 0x80e3=0x00)
(Reg 0x80e4=0x00) (Reg 0x80e5=0x00) (Reg 0x80e6=0x00) (Reg 0x80e7=0x00)
(Reg 0x80e8=0x00) (Reg 0x80e9=0x00) (Reg 0x80ea=0x00) (Reg 0x80eb=0x00)
(Reg 0x80ec=0x00) (Reg 0x80ed=0x00) (Reg 0x80ee=0x00) (Reg 0x80ef=0x00)
(Reg 0x80f0=0x00) (Reg 0x80f1=0x00) (Reg 0x80f2=0x00) (Reg 0x80f3=0x00)
(Reg 0x80f4=0x00) (Reg 0x80f5=0x00) (Reg 0x80f6=0x00) (Reg 0x80f7=0x00)
(Reg 0x80f8=0x00) (Reg 0x80f9=0x00) (Reg 0x80fa=0x00) (Reg 0x80fb=0x00)
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(Reg 0x80fc=0x00) (Reg 0x80fd=0x00) (Reg 0x80fe=0x00) (Reg 0x80ff=0xe9)

NVR 3 Registers:

(Reg 0x8100=0x00) (Reg 0x8101=0x00) (Reg 0x8102=0x00) (Reg 0x8103=0x00)
(Reg 0x8104=0x00) (Reg 0x8105=0x00) (Reg 0x8106=0x00) (Reg 0x8107=0x00)
(Reg 0x8108=0x00) (Reg 0x8109=0x00) (Reg 0x810a=0x00) (Reg 0x810b=0x00)
(Reg 0x810c=0x00) (Reg 0x810d=0x00) (Reg 0x810e=0x00) (Reg 0x810f=0x00)
(Reg 0x8110=0x00) (Reg 0x8111=0x00) (Reg 0x8112=0x00) (Reg 0x8113=0x00)
(Reg 0x8114=0x00) (Reg 0x8115=0x00) (Reg 0x8116=0x00) (Reg 0x8117=0x00)
(Reg 0x8118=0x00) (Reg 0x8119=0x00) (Reg 0x811a=0x00) (Reg 0x811b=0x00)
(Reg 0x811c=0x00) (Reg 0x811d=0x00) (Reg 0x811e=0x00) (Reg 0x811f=0x00)
(Reg 0x8120=0x00) (Reg 0x8121=0x00) (Reg 0x8122=0x00) (Reg 0x8123=0x00)
(Reg 0x8124=0x00) (Reg 0x8125=0x00) (Reg 0x8126=0x00) (Reg 0x8127=0x00)
(Reg 0x8128=0x00) (Reg 0x8129=0x00) (Reg 0x812a=0x00) (Reg 0x812b=0x00)
(Reg 0x812c=0x00) (Reg 0x812d=0x00) (Reg 0x812e=0x00) (Reg 0x812f=0x00)
(Reg 0x8130=0x00) (Reg 0x8131=0x00) (Reg 0x8132=0x00) (Reg 0x8133=0x00)
(Reg 0x8134=0x00) (Reg 0x8135=0x00) (Reg 0x8136=0x00) (Reg 0x8137=0x00)
(Reg 0x8138=0x00) (Reg 0x8139=0x00) (Reg 0x813a=0x00) (Reg 0x813b=0x00)
(Reg 0x813c=0x00) (Reg 0x813d=0x00) (Reg 0x813e=0x00) (Reg 0x813f=0x00)
(Reg 0x8140=0x00) (Reg 0x8141=0x00) (Reg 0x8142=0x00) (Reg 0x8143=0x00)
(Reg 0x8144=0x00) (Reg 0x8145=0x00) (Reg 0x8146=0x00) (Reg 0x8147=0x00)
(Reg 0x8148=0x00) (Reg 0x8149=0x00) (Reg 0x814a=0x00) (Reg 0x814b=0x00)
(Reg 0x814c=0x00) (Reg 0x814d=0x00) (Reg 0x814e=0x00) (Reg 0x814f=0x00)
(Reg 0x8150=0x00) (Reg 0x8151=0x00) (Reg 0x8152=0x00) (Reg 0x8153=0x00)
(Reg 0x8154=0x00) (Reg 0x8155=0x00) (Reg 0x8156=0x00) (Reg 0x8157=0x00)
(Reg 0x8158=0x00) (Reg 0x8159=0x00) (Reg 0x815a=0x00) (Reg 0x815b=0x00)
(Reg 0x815c=0x00) (Reg 0x815d=0x00) (Reg 0x815e=0x00) (Reg 0x815f=0x00)
(Reg 0x8160=0x00) (Reg 0x8161=0x00) (Reg 0x8162=0x00) (Reg 0x8163=0x00)
(Reg 0x8164=0x00) (Reg 0x8165=0x00) (Reg 0x8166=0x00) (Reg 0x8167=0x00)
(Reg 0x8168=0x00) (Reg 0x8169=0x00) (Reg 0x816a=0x00) (Reg 0x816b=0x00)
(Reg 0x816c=0x00) (Reg 0x816d=0x00) (Reg 0x816e=0x00) (Reg 0x816f=0x00)
(Reg 0x8170=0x00) (Reg 0x8171=0x00) (Reg 0x8172=0x00) (Reg 0x8173=0x00)
(Reg 0x8174=0x00) (Reg 0x8175=0x00) (Reg 0x8176=0x00) (Reg 0x8177=0x00)
(Reg 0x8178=0x00) (Reg 0x8179=0x00) (Reg 0x817a=0x00) (Reg 0x817b=0x00)
(Reg 0x817c=0x00) (Reg 0x817d=0x00) (Reg 0x817e=0x00) (Reg 0x817f=0x00)

NVR 4 Registers:

(Reg 0x8180=0x00)

Vendor NVR1 Registers

(Reg 0x8400=0x00) (Reg 0x8401=0x00) (Reg 0x8402=0x00) (Reg 0x8403=0x00)
(Reg 0x8404=0x00) (Reg 0x8405=0x00) (Reg 0x8406=0x00) (Reg 0x8407=0x00)
(Reg 0x8408=0x00) (Reg 0x8409=0x00) (Reg 0x840a=0x00) (Reg 0x840b=0x00)
(Reg 0x840c=0x00) (Reg 0x840d=0x00) (Reg 0x840e=0x00) (Reg 0x840f=0x00)
(Reg 0x8410=0x43) (Reg 0x8411=0x49) (Reg 0x8412=0x53) (Reg 0x8413=0x43)
(Reg 0x8414=0x4f) (Reg 0x8415=0x20) (Reg 0x8416=0x20) (Reg 0x8417=0x20)
(Reg 0x8418=0x20) (Reg 0x8419=0x20) (Reg 0x841a=0x20) (Reg 0x841b=0x20)
(Reg 0x841c=0x20) (Reg 0x841d=0x20) (Reg 0x841e=0x20) (Reg 0x841f=0x20)
(Reg 0x8420=0x43) (Reg 0x8421=0x46) (Reg 0x8422=0x50) (Reg 0x8423=0x2d)
(Reg 0x8424=0x31) (Reg 0x8425=0x30) (Reg 0x8426=0x30) (Reg 0x8427=0x47)
(Reg 0x8428=0x2d) (Reg 0x8429=0x4c) (Reg 0x842a=0x52) (Reg 0x842b=0x34)
(Reg 0x842c=0x20) (Reg 0x842d=0x20) (Reg 0x842e=0x20) (Reg 0x842f=0x20)
(Reg 0x8430=0x56) (Reg 0x8431=0x45) (Reg 0x8432=0x53) (Reg 0x8433=0x31)
(Reg 0x8434=0x32) (Reg 0x8435=0x46) (Reg 0x8436=0x4e) (Reg 0x8437=0x53)
(Reg 0x8438=0x31) (Reg 0x8439=0x34) (Reg 0x843a=0x32) (Reg 0x843b=0x32)
(Reg 0x843c=0x31) (Reg 0x843d=0x50) (Reg 0x843e=0x44) (Reg 0x843f=0x58)
(Reg 0x8440=0x31) (Reg 0x8441=0x30) (Reg 0x8442=0x2d) (Reg 0x8443=0x32)
(Reg 0x8444=0x35) (Reg 0x8445=0x34) (Reg 0x8446=0x39) (Reg 0x8447=0x2d)
(Reg 0x8448=0x30) (Reg 0x8449=0x31) (Reg 0x844a=0x20) (Reg 0x844b=0x20)
(Reg 0x844c=0x30) (Reg 0x844d=0x31) (Reg 0x844e=0x20) (Reg 0x844f=0x20)
(Reg 0x8450=0x00) (Reg 0x8451=0x00) (Reg 0x8452=0x00) (Reg 0x8453=0x00)
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(Reg 0x8454=0x00) (Reg 0x8455=0x00) (Reg 0x8456=0x00) (Reg 0x8457=0x00)
(Reg 0x8458=0x00) (Reg 0x8459=0x00) (Reg 0x845a=0x00) (Reg 0x845b=0x00)
(Reg 0x845c=0x00) (Reg 0x845d=0x00) (Reg 0x845e=0x00) (Reg 0x845f=0x00)
(Reg 0x8460=0x00) (Reg 0x8461=0x00) (Reg 0x8462=0x00) (Reg 0x8463=0x00)
(Reg 0x8464=0x00) (Reg 0x8465=0x00) (Reg 0x8466=0x00) (Reg 0x8467=0x00)
(Reg 0x8468=0x00) (Reg 0x8469=0x00) (Reg 0x846a=0x00) (Reg 0x846b=0x00)
(Reg 0x846c=0x00) (Reg 0x846d=0x00) (Reg 0x846e=0x00) (Reg 0x846f=0x00)
(Reg 0x8470=0x00) (Reg 0x8471=0x00) (Reg 0x8472=0x00) (Reg 0x8473=0x00)
(Reg 0x8474=0x00) (Reg 0x8475=0x00) (Reg 0x8476=0x00) (Reg 0x8477=0x00)
(Reg 0x8478=0x00) (Reg 0x8479=0x00) (Reg 0x847a=0x00) (Reg 0x847b=0x00)
(Reg 0x847c=0x00) (Reg 0x847d=0x00) (Reg 0x847e=0x00) (Reg 0x847f=0x1d)

VR 1 Registers:

(Reg 0xa000=0x0000) (Reg 0xa001=0x0000) (Reg 0xa002=0x0000) (Reg 0xa003=0x0000)
(Reg 0xa004=0x0000) (Reg 0xa005=0x0003) (Reg 0xa006=0x0002) (Reg 0xa007=0x0001)
(Reg 0xa008=0x0003) (Reg 0xa009=0x0002) (Reg 0xa00a=0x0001) (Reg 0xa00b=0x0000)
(Reg 0xa00c=0x0000) (Reg 0xa00d=0x0000) (Reg 0xa00e=0x0000) (Reg 0xa00f=0x0000)
(Reg 0xa010=0x000e) (Reg 0xa011=0x0200) (Reg 0xa012=0x0000) (Reg 0xa013=0x0000)
(Reg 0xa014=0x0000) (Reg 0xa015=0x0000) (Reg 0xa016=0x0020) (Reg 0xa017=0x0000)
(Reg 0xa018=0x0000) (Reg 0xa019=0x0000) (Reg 0xa01a=0x0000) (Reg 0xa01b=0x0000)
(Reg 0xa01c=0x0000) (Reg 0xa01d=0x0003) (Reg 0xa01e=0x0000) (Reg 0xa01f=0x0000)
(Reg 0xa020=0x0000) (Reg 0xa021=0x0000) (Reg 0xa022=0x0000) (Reg 0xa023=0x0000)
(Reg 0xa024=0x0000) (Reg 0xa025=0x0000) (Reg 0xa026=0x0000) (Reg 0xa027=0x0000)
(Reg 0xa028=0x0040) (Reg 0xa029=0x8070) (Reg 0xa02a=0x0062) (Reg 0xa02b=0x0999)
(Reg 0xa02c=0x0099) (Reg 0xa02d=0x0000) (Reg 0xa02e=0x0000) (Reg 0xa02f=0x265f)
(Reg 0xa030=0x7cc3) (Reg 0xa031=0x0000) (Reg 0xa032=0x0000) (Reg 0xa033=0x0000)
(Reg 0xa034=0x0000) (Reg 0xa035=0x0000) (Reg 0xa036=0x0000) (Reg 0xa037=0x0000)
(Reg 0xa038=0x0000) (Reg 0xa039=0x0000) (Reg 0xa03a=0x0000)

NETWORK LANE VR 1 Registers:

(Reg 0xa200=0x0000) (Reg 0xa201=0x0000) (Reg 0xa202=0x0000) (Reg 0xa203=0x0000)
(Reg 0xa204=0x0000) (Reg 0xa205=0x0000) (Reg 0xa206=0x0000) (Reg 0xa207=0x0000)
(Reg 0xa208=0x0000) (Reg 0xa209=0x0000) (Reg 0xa20a=0x0000) (Reg 0xa20b=0x0000)
(Reg 0xa20c=0x0000) (Reg 0xa20d=0x0000) (Reg 0xa20e=0x0000) (Reg 0xa20f=0x0000)
(Reg 0xa210=0x0000) (Reg 0xa211=0x0000) (Reg 0xa212=0x0000) (Reg 0xa213=0x0000)
(Reg 0xa214=0x0000) (Reg 0xa215=0x0000) (Reg 0xa216=0x0000) (Reg 0xa217=0x0000)
(Reg 0xa218=0x0000) (Reg 0xa219=0x0000) (Reg 0xa21a=0x0000) (Reg 0xa21b=0x0000)
(Reg 0xa21c=0x0000) (Reg 0xa21d=0x0000) (Reg 0xa21e=0x0000) (Reg 0xa21f=0x0000)
(Reg 0xa220=0x0000) (Reg 0xa221=0x0000) (Reg 0xa222=0x0000) (Reg 0xa223=0x0000)
(Reg 0xa224=0x0000) (Reg 0xa225=0x0000) (Reg 0xa226=0x0000) (Reg 0xa227=0x0000)
(Reg 0xa228=0x0000) (Reg 0xa229=0x0000) (Reg 0xa22a=0x0000) (Reg 0xa22b=0x0000)
(Reg 0xa22c=0x0000) (Reg 0xa22d=0x0000) (Reg 0xa22e=0x0000) (Reg 0xa22f=0x0000)
(Reg 0xa230=0x0000) (Reg 0xa231=0x0000) (Reg 0xa232=0x0000) (Reg 0xa233=0x0000)
(Reg 0xa234=0x0000) (Reg 0xa235=0x0000) (Reg 0xa236=0x0000) (Reg 0xa237=0x0000)
(Reg 0xa238=0x0000) (Reg 0xa239=0x0000) (Reg 0xa23a=0x0000) (Reg 0xa23b=0x0000)
(Reg 0xa23c=0x0000) (Reg 0xa23d=0x0000) (Reg 0xa23e=0x0000) (Reg 0xa23f=0x0000)
(Reg 0xa240=0x9999) (Reg 0xa241=0x9999) (Reg 0xa242=0x9999) (Reg 0xa243=0x9999)
(Reg 0xa244=0x0000) (Reg 0xa245=0x0000) (Reg 0xa246=0x0000) (Reg 0xa247=0x0000)
(Reg 0xa248=0x0000) (Reg 0xa249=0x0000) (Reg 0xa24a=0x0000) (Reg 0xa24b=0x0000)
(Reg 0xa24c=0x0000) (Reg 0xa24d=0x0000) (Reg 0xa24e=0x0000) (Reg 0xa24f=0x0000)
(Reg 0xa250=0xe058) (Reg 0xa251=0xe058) (Reg 0xa252=0xe058) (Reg 0xa253=0xe058)
(Reg 0xa254=0x0000) (Reg 0xa255=0x0000) (Reg 0xa256=0x0000) (Reg 0xa257=0x0000)
(Reg 0xa258=0x0000) (Reg 0xa259=0x0000) (Reg 0xa25a=0x0000) (Reg 0xa25b=0x0000)
(Reg 0xa25c=0x0000) (Reg 0xa25d=0x0000) (Reg 0xa25e=0x0000) (Reg 0xa25f=0x0000)
(Reg 0xa260=0x0000)

NETWORK LANE VR 2 Registers:

(Reg 0xa280=0x0000) (Reg 0xa281=0x0000) (Reg 0xa282=0x0000) (Reg 0xa283=0x0000)
(Reg 0xa284=0x0000) (Reg 0xa285=0x0000) (Reg 0xa286=0x0000) (Reg 0xa287=0x0000)
(Reg 0xa288=0x0000) (Reg 0xa289=0x0000) (Reg 0xa28a=0x0000) (Reg 0xa28b=0x0000)
(Reg 0xa28c=0x0000) (Reg 0xa28d=0x0000) (Reg 0xa28e=0x0000) (Reg 0xa28f=0x0000)
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(Reg 0xa290=0x0000) (Reg 0xa291=0x0000) (Reg 0xa292=0x0000) (Reg 0xa293=0x0000)
(Reg 0xa294=0x0000) (Reg 0xa295=0x0000) (Reg 0xa296=0x0000) (Reg 0xa297=0x0000)
(Reg 0xa298=0x0000) (Reg 0xa299=0x0000) (Reg 0xa29a=0x0000) (Reg 0xa29b=0x0000)
(Reg 0xa29c=0x0000) (Reg 0xa29d=0x0000) (Reg 0xa29e=0x0000) (Reg 0xa29f=0x0000)
(Reg 0xa2a0=0xb766) (Reg 0xa2a1=0x98ea) (Reg 0xa2a2=0x91eb) (Reg 0xa2a3=0x882c)
(Reg 0xa2a4=0x0000) (Reg 0xa2a5=0x0000) (Reg 0xa2a6=0x0000) (Reg 0xa2a7=0x0000)
(Reg 0xa2a8=0x0000) (Reg 0xa2a9=0x0000) (Reg 0xa2aa=0x0000) (Reg 0xa2ab=0x0000)
(Reg 0xa2ac=0x0000) (Reg 0xa2ad=0x0000) (Reg 0xa2ae=0x0000) (Reg 0xa2af=0x0000)
(Reg 0xa2b0=0x321d) (Reg 0xa2b1=0x36cb) (Reg 0xa2b2=0x38da) (Reg 0xa2b3=0x3a08)
(Reg 0xa2b4=0x0000) (Reg 0xa2b5=0x0000) (Reg 0xa2b6=0x0000) (Reg 0xa2b7=0x0000)
(Reg 0xa2b8=0x0000) (Reg 0xa2b9=0x0000) (Reg 0xa2ba=0x0000) (Reg 0xa2bb=0x0000)
(Reg 0xa2bc=0x0000) (Reg 0xa2bd=0x0000) (Reg 0xa2be=0x0000) (Reg 0xa2bf=0x0000)
(Reg 0xa2c0=0x2fc0) (Reg 0xa2c1=0x2fd1) (Reg 0xa2c2=0x2fd1) (Reg 0xa2c3=0x2fd1)
(Reg 0xa2c4=0x0000) (Reg 0xa2c5=0x0000) (Reg 0xa2c6=0x0000) (Reg 0xa2c7=0x0000)
(Reg 0xa2c8=0x0000) (Reg 0xa2c9=0x0000) (Reg 0xa2ca=0x0000) (Reg 0xa2cb=0x0000)
(Reg 0xa2cc=0x0000) (Reg 0xa2cd=0x0000) (Reg 0xa2ce=0x0000) (Reg 0xa2cf=0x0000)
(Reg 0xa2d0=0x2b33) (Reg 0xa2d1=0x360a) (Reg 0xa2d2=0x3453) (Reg 0xa2d3=0x37f2)
(Reg 0xa2d4=0x0000) (Reg 0xa2d5=0x0000) (Reg 0xa2d6=0x0000) (Reg 0xa2d7=0x0000)
(Reg 0xa2d8=0x0000) (Reg 0xa2d9=0x0000) (Reg 0xa2da=0x0000) (Reg 0xa2db=0x0000)
(Reg 0xa2dc=0x0000) (Reg 0xa2dd=0x0000) (Reg 0xa2de=0x0000) (Reg 0xa2df=0x0000)
(Reg 0xa2e0=0x0000)

HOST LANE VR 1 Registers:

(Reg 0xa400=0x0000) (Reg 0xa401=0x0000) (Reg 0xa402=0x0000) (Reg 0xa403=0x0000)
(Reg 0xa404=0x0000) (Reg 0xa405=0x0000) (Reg 0xa406=0x0000) (Reg 0xa407=0x0000)
(Reg 0xa408=0x0000) (Reg 0xa409=0x0000) (Reg 0xa40a=0x0000) (Reg 0xa40b=0x0000)
(Reg 0xa40c=0x0000) (Reg 0xa40d=0x0000) (Reg 0xa40e=0x0000) (Reg 0xa40f=0x0000)
(Reg 0xa410=0x0000) (Reg 0xa411=0x0000) (Reg 0xa412=0x0000) (Reg 0xa413=0x0000)
(Reg 0xa414=0x0000) (Reg 0xa415=0x0000) (Reg 0xa416=0x0000) (Reg 0xa417=0x0000)
(Reg 0xa418=0x0000) (Reg 0xa419=0x0000) (Reg 0xa41a=0x0000) (Reg 0xa41b=0x0000)
(Reg 0xa41c=0x0000) (Reg 0xa41d=0x0000) (Reg 0xa41e=0x0000) (Reg 0xa41f=0x0000)
(Reg 0xa420=0x0001) (Reg 0xa421=0x0001) (Reg 0xa422=0x0001) (Reg 0xa423=0x0001)
(Reg 0xa424=0x0001) (Reg 0xa425=0x0001) (Reg 0xa426=0x0001) (Reg 0xa427=0x0001)
(Reg 0xa428=0x0001) (Reg 0xa429=0x0001) (Reg 0xa42a=0x0000) (Reg 0xa42b=0x0000)
(Reg 0xa42c=0x0000) (Reg 0xa42d=0x0000) (Reg 0xa42e=0x0000) (Reg 0xa42f=0x0000)
(Reg 0xa430=0x0000) (Reg 0xa431=0x0000) (Reg 0xa432=0x0000) (Reg 0xa433=0x0000)
(Reg 0xa434=0x0000) (Reg 0xa435=0x0000) (Reg 0xa436=0x0000) (Reg 0xa437=0x0000)
(Reg 0xa438=0x0000) (Reg 0xa439=0x0000) (Reg 0xa43a=0x0000) (Reg 0xa43b=0x0000)
(Reg 0xa43c=0x0000) (Reg 0xa43d=0x0000) (Reg 0xa43e=0x0000) (Reg 0xa43f=0x0000)
(Reg 0xa440=0x0001) (Reg 0xa441=0x0001) (Reg 0xa442=0x0001) (Reg 0xa443=0x0001)
(Reg 0xa444=0x0001) (Reg 0xa445=0x0001) (Reg 0xa446=0x0001) (Reg 0xa447=0x0001)
(Reg 0xa448=0x0001) (Reg 0xa449=0x0001) (Reg 0xa44a=0x0000) (Reg 0xa44b=0x0000)
(Reg 0xa44c=0x0000) (Reg 0xa44d=0x0000) (Reg 0xa44e=0x0000) (Reg 0xa44f=0x0000)
(Reg 0xa450=0x0000)
```

The following example shows sample output from the **show controllers HundredGigE stats** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 stats
Tue Mar 22 06:04:08.484 UTC
Statistics for interface HundredGigE0/3/0/0 (cached values):

Ingress:
    Input total bytes           = 73475628362976
    Input good bytes            = 73443591856352

    Input total packets         = 8009121965
    Input 802.1Q frames         = 0
    Input pause frames          = 0
    Input pkts 64 bytes         = 925
    Input pkts 65-127 bytes     = 5220
    Input pkts 128-255 bytes    = 59
    Input pkts 256-511 bytes    = 2
```

```
    Input pkts 512-1023 bytes   = 1
    Input pkts 1024-1518 bytes  = 4
    Input pkts 1519-Max bytes   = 8009115754

    Input good pkts             = 8009121964
    Input unicast pkts          = 8009117183
    Input multicast pkts        = 4780
    Input broadcast pkts        = 1

    Input drop overrun          = 0
    Input drop abort            = 0
    Input drop invalid VLAN     = 0
    Input drop invalid DMAC     = 0
    Input drop invalid encap    = 0
    Input drop other            = 6947

    Input error giant           = 0
    Input error runt            = 0
    Input error jabbers         = 0
    Input error fragments       = 0
    Input error CRC             = 1
    Input error collisions      = 0
    Input error symbol          = 3
    Input error other           = 0

    Input MIB giant             = 0
    Input MIB jabber            = 0
    Input MIB CRC               = 0

Egress:
    Output total bytes          = 70097928185720
    Output good bytes           = 70067364389772

    Output total packets        = 7640945487
    Output 802.1Q frames        = 0
    Output pause frames         = 0
    Output pkts 64 bytes        = 725
    Output pkts 65-127 bytes    = 10602
    Output pkts 128-255 bytes   = 275
    Output pkts 256-511 bytes   = 5
    Output pkts 512-1023 bytes  = 0
    Output pkts 1024-1518 bytes = 6
    Output pkts 1519-Max bytes  = 7640933874

    Output good pkts            = 7640945487
    Output unicast pkts         = 7640941982
    Output multicast pkts       = 3501
    Output broadcast pkts       = 6

    Output drop underrun        = 0
    Output drop abort           = 2
    Output drop other           = 2373

    Output error other          = 0
```

The following example shows sample output from the **show controllers HundredGigE xgxs** command for the Cisco CRS 1-Port 100-Gigabit Ethernet Interface Module:

```
RP/0/RP0/CPU0:router# show controllers HundredGigE 0/3/0/0 xgxs
Tue Mar 22 06:04:19.546 UTC
No XGXS present
```

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 4.2.3	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/RP0/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/RP0/CPU0:router# show lldp
Wed Apr 13 06:42:48.221 DST
% LLDP is not enabled
```

Related Commands

Command	Description
lldp, on page 12	Enables LLDP globally for both transmit and receive operation on the system.
lldp timer, on page 17	Specifies the LLDP packet rate.
lldp holdtime, on page 15	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 16	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 4.2.3	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/RP0/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 12	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 4.2.3	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/RP0/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 12	Enables LLDP globally for both transmit and receive operation on the system.
show lldp traffic, on page 89	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 4.2.3	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/RP0/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 12	Enables LLDP globally for both transmit and receive operation on the system.
lldp (interface), on page 13	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 4.2.3	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/RP0/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/RP0/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 12	Enables LLDP globally for both transmit and receive operation on the system.
clear lldp, on page 4	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 4.2.3	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/RP0/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 12	Enables LLDP globally for both transmit and receive operation on the system.
clear lldp, on page 4	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* **bundle-ether***bundle-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** , **bundle-ether**.
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 3.0	This command was introduced.
Release 4.3.2	The **bundle-ether** keyword was included.

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/RP0/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 6	Clears MAC accounting statistics for an interface.
mac-accounting, on page 20	Generates accounting information for IP traffic based on the source and destination MAC addresses on LAN interfaces.