

Ethernet Ports

This chapter describes Ethernet ports supported by Arista switches. Sections covered in this chapter include:

- [Section 11.1: Ethernet Ports Introduction](#)
- [Section 11.2: Ethernet Standards](#)
- [Section 11.3: Ethernet Physical Layer](#)
- [Section 11.4: Interfaces](#)
- [Section 11.5: Ethernet Configuration Procedures](#)
- [Section 11.6: Ethernet Configuration Commands](#)

11.1 Ethernet Ports Introduction

Arista switches support a variety of Ethernet network interfaces. This chapter describes the configuration and monitoring options available in Arista switching platforms.

11.2 Ethernet Standards

Ethernet, standardized in IEEE 802.3, is a group of technologies used for communication over local area networks. Ethernet communication divides data streams into frames containing addresses (source and destination), payload, and cyclical redundancy check (CRC) information.

IEEE 802.3 also describes two types of optical fiber: single-mode fiber (SMF) and multi-mode fiber (MMF).

- SMF is more expensive, but can be used over longer distances (over 300 meters).
- MMF is less expensive, but can only be used over distances of less than 300 meters.

11.2.1 100 Gigabit Ethernet

The 100 Gigabit Ethernet (100GbE) standard defines an Ethernet implementation with a nominal data rate of 100 billion bits per second over multiple 10 gigabit lanes. 100 Gigabit Ethernet implements full duplex point to point links connected by network switches. Arista switches support 100GBASE-10SR through MXP ports.

11.2.2 40 Gigabit Ethernet

The 40 Gigabit Ethernet (40GbE) standard defines an Ethernet implementation with a nominal data rate of 40 billion bits per second over multiple 10 gigabit lanes. 40 Gigabit Ethernet implements full duplex point to point links connected by network switches. 40 gigabit Ethernet standards are named **40GBASE-xyz**, as interpreted by [Table 11-1](#).

Table 11-1 40GBASE-xyz Interpretation

x	y	z
Non-fiber media type, or fiber wavelength	PHY encoding	Number of WWDM wavelengths or XAUI Lanes
C = Copper F = Serial SMF K = Backplane L = Long (1310 nm) S = Short (850 nm)	R = LAN PHY (64B/66B)	No value = 1 (serial) 4 = 4 WWDM wavelengths or XAUI Lanes

11.2.3 10 Gigabit Ethernet

The 10 Gigabit Ethernet (10GbE) standard defines an Ethernet implementation with a nominal data rate of 10 billion bits per second. 10 Gigabit Ethernet implements full duplex point to point links connected by network switches. Half duplex operation, hubs and CSMA/CD do not exist in 10GbE. The standard encompasses several PHY standards; a networking device may support different PHY types through pluggable PHY modules. 10GbE standards are named **10GBASE-xyz**, as interpreted by [Table 11-2](#).

Table 11-2 10GBASE-xyz Interpretation

x	y	z
media type or wavelength, if media type is fiber	PHY encoding type	Number of WWDM wavelengths or XAUI Lanes
C = Copper (twin axial) T = Twisted Pair S = Short (850 nm) L = Long (1310 nm) E = Extended (1550 nm) Z = Ultra extended (1550 nm)	R = LAN PHY (64B/66B) X = LAN PHY (8B/10B) W = WAN PHY(*) (64B/66B)	If omitted, value = 1 (serial) 4 = 4 WWDM wavelengths or XAUI Lanes

11.2.4 Gigabit Ethernet

The Gigabit Ethernet (GbE), defined by IEEE 802.3-2008, describes an Ethernet version with a nominal data rate of one billion bits per second. GbE cables and equipment are similar to those used in previous standards. While full-duplex links in switches is the typical implementation, the specification permits half-duplex links connected through hubs.

Gigabit Ethernet physical layer standards that Arista switches support include 1000BASE-X (optical fiber), 1000BASE-T (twisted pair cable), and 1000BASE-CX (balanced copper cable).

- 1000BASE-SX is a fiber optic standard that utilizes multi-mode fiber supporting 770 to 860 nm, near infrared (NIR) light wavelength to transmit data over distances ranging from 220 to 550 meters. 1000BASE-SX is typically used for intra-building links in large office buildings, co-location facilities and carrier neutral Internet exchanges.
- 1000BASE-LX is a fiber standard that utilizes a long wavelength laser (1,270–1,355 nm), with a RMS spectral width of 4 nm to transmit data up to 5 km. 1000BASE-LX can run on all common types of multi-mode fiber with a maximum segment length of 550 m.

- 1000BASE-T is a standard for gigabit Ethernet over copper wiring. Each 1000BASE-T network segment can be a maximum length of 100 meters.

11.2.5 10/100/1000 BASE-T

Arista switches provide 10/100/1000 BASE-T Mbps Ethernet out of band management ports. Auto-negotiation is enabled on these interfaces. Speed (10/100/1000), duplex (half/full), and flow control settings are available using the appropriate **speed forced** and **flowcontrol** commands.

11.2.6 Power over Ethernet (PoE)

Selected Arista switches provide power over Ethernet (PoE) to power connected devices. Arista's PoE implementation is compliant with IEEE standards 802.3af and 802.3at, and includes partial support for 802.3bt. When a standards-compliant powered device (PD) is connected to a PoE-enabled Ethernet port, it is recognized by a specific resistor signature, and its power class is determined by hardware negotiation; more granular power adjustments can then be managed by Link Layer Discovery Protocol (LLDP).

11.2.7 Link Fault Signaling

Link Fault Signaling (LFS) is a mechanism by which remote link faults are transmitted to the peer over the link that is experiencing problems by configuring specific actions. LFS operates between the remote Reconciliation Sublayer (remote RS) and the local Reconciliation Sublayer (local RS). Faults that are detected between the remote RS and the local RS are treated by the local RS as Local Faults.

LFS enables monitoring FCS and Symbol errors on an interface and if they exceed a configured threshold, one of the following three actions are enabled.

- Disable the error on the interface
- Generate system log messages
- Generate a link fault

11.3 Ethernet Physical Layer

The Ethernet physical layer (PHY) includes hardware components connecting a switch's MAC layer to the transceiver, cable, and ultimately a peer link partner. Data exist in digital form at the MAC layer. On the line side of the PHY, data exist as analog signals: light blips on optical fiber or voltage pulses on copper cable. Signals may be distorted while in transit and recovery may require signal processing.

Ethernet physical layer components include a PHY and a transceiver.

11.3.1 PHYs

The PHY provides translation services between the MAC layer and transceiver. It also helps to establish links between the local MAC layer and peer devices by detecting and signaling fault conditions. The PHY line-side interface receives Ethernet frames from the link partner as analog waveforms. The PHY uses signal processing to recover the encoded bits, then sends them to the MAC layer.

PHY line-side interface components and their functions include:

- Physical Medium Attachment (PMA): Framing, octet synchronization, scrambling / descrambling.
- Physical Medium Dependent (PMD): Consists of the transceiver.
- Physical Coding Sublayer (PCS): Performs auto-negotiation and coding (8B/10B or 64B/66B).

The MAC sublayer of the PHY provides a logical connection between the MAC layer and the peer device by initializing, controlling, and managing the connection with the peer.

Ethernet frames transmitted by the switch are received by the PHY system-side interface as a sequence of digital bits. The PHY encodes them into a media-specific waveform for transmission through the line-side interface and transceiver to the link peer. This encoding may include signal processing, such as signal pre-distortion and forward error correction.

PHY system-side interface components and their functions include:

- 10 Gigabit Attachment Unit Interface (XAUI): Connects an Ethernet MAC to a 10 G PHY.
- Serial Gigabit Media Independent Attachment (SGMII): Connects an Ethernet MAC to a 1G PHY.

11.3.2 Transceivers

A transceiver connects the PHY to an external cable (optical fiber or twisted-pair copper) and through a physical connector (LC jack for fiber or RJ-45 jack for copper).

- Optical transceivers convert the PHY signal into light pulses that are sent through optical fiber.
- Copper transceivers connect the PHY to twisted-pair copper cabling.

Arista Small Form-Factor Pluggable (SFP+) and Quad Small Form Factor Pluggable (QSFP+) modules and cables provide high-density, low-power Ethernet connectivity over fiber and copper media. Arista offers transceivers that span data rates, media types, and transmission distances.

Arista 10 Gigabit Ethernet SFP+ Modules:

- 10GBASE-SR (Short Reach)
 - Link length maximum 300 meters over multi-mode fiber.
 - Optical interoperability with 10GBASE-SRL.
- 10GBASE-SRL (Short Reach Lite)
 - Link length maximum 100 meters over multi-mode fiber.
 - Optical interoperability with 10GBASE-SR.

- 10GBASE-LRL (Long Reach Lite)
 - Link length maximum 1 km over single-mode fiber.
 - Optical interoperability with 10GBASE-LR (1 km maximum).
- 10GBASE-LR (Long Reach)
 - Link length maximum 10 km over single-mode fiber.
 - Optical interoperability with 10GBASE-LRL (1 km maximum).
- 10GBASE-LRM (Long Reach Multimode)
 - Link length maximum 220 meters over multi-mode fiber (50 um and 62.5 um).
- 10GBASE-ER (Extended Reach)
 - Link length maximum 40 km over single-mode fiber.
- 10GBASE-ZR (Ultra-Extended Reach)
 - Link length maximum 80 km over single-mode fiber.
- 10GBASE-DWDM (Dense Wavelength Division Multiplexing)
 - Link length maximum 80 km over single-mode fiber (40 color options).
 - Tunable SFP+ Optics Module, Full C-Band 50 GHz ITU Grid, up to 80km over duplex SMF.

Arista 10 Gigabit Ethernet CR Cable Modules:

- 10GBASE-CR SFP+ to SFP+ Cables
 - Link lengths of 0.5, 1, 1.5, 2, 2.5, 3, 5 and 7 meters over twinax copper cable
 - Includes SFP+ connectors on both ends
- 4 x 10GbE QSFP+ to 4 x SFP+ twinax copper cables
 - Link lengths of 0.5, 1, 2, 3, and 5 meters over twinax copper cable

Arista 25 Gigabit Ethernet Modules:

- 25GBASE-CR SFP28 Cable
 - Capable of 10G/25G with link length of 1 to 5 meters
- AOC-S-S-25G SFP28 to SFP28 25GbE Active Optical Cable
 - Link length of 3 to 30 meters
- SFP-25G-SR SFP28 Optics Module
 - Link length up to 70m over OM3 MMF or 100m over OM4 MMF
- SFP-25G-LR SFP28 Optics Module
 - Link length up to 10 kilometers over duplex SMF

Arista 40 Gigabit Ethernet QSFP+ Cables and Optics:

- 40GBASE-SR4 QSFP+ Transceiver
 - Link length maximum 100 meters over parallel OM3 or 150 meters over OM4 MMF
 - Optical interoperability with 40GBASE-XSR4 (100/150 meter maximum)
- 40GBASE-XSR4 QSFP+ Transceiver
 - Link length maximum 300 meters over parallel OM3 or 450 meters over OM4 MMF
 - Optical interoperability with 40GBASE-SR4 (100/150 meter maximum)
- 40GBASE-LR4 QSFP+
 - Link length maximum 10 km over duplex single-mode fiber

- 40GBASE-CR4 QSFP+ to QSFP+ twinax copper cables
 - Link lengths of 1, 2, 3, 5 and 7 meters over twinax copper cable
- 40G-SRBD Bidirectional QSFP+ Optic
 - Link length maximum up to 100 meters over parallel OM3 or 150 meters over OM4 MMF
- 40G Univ QSFP+ Optic
 - Link length maximum up to 150 meters over duplex OM3/OM4 and 500 meters over duplex SMF
- 40GBASE-LRL QSFP+ Optic
 - Link length maximum up to 1 kilometer over duplex SMF
- 40GBASE-PLRL4 QSFP+ Optic
 - Link length maximum up to 1 kilometer over parallel SMF (4x10G LR up to 1 km)
- 40GBASE-PLR4 QSFP+ Optic
 - Link length maximum up to 1 kilometer over parallel SMF (4x10G LR up to 1 km)
- 40GBASE-ER QSFP+ Optic
 - Link length maximum up to 40 kilometers duplex SMF

Arista Gigabit Ethernet SFP Options:

- 1000BASE-SX (Short Haul)
 - Multi-mode fiber
 - Link length maximum 550 meter
- 1000BASE-LX (Long Haul)
 - Single-mode fiber
 - Link length maximum 10 km (single mode)
- 1000BASE-T (RJ-45 Copper)
 - Category 5 cabling
 - Full duplex 1000Mbps connectivity

Arista 100 Gigabit Ethernet QSFP Modules:

- 100GBASE-SR4 QSFP transceiver
 - Link length up to 70 meters over parallel OM3 or 100 meters over OM4 multi-mode fiber.
- 100GBASE-SWDM4 QSFP transceiver
 - Link length up to 70 meters over OM3 or 100 meters over OM4 duplex multi-mode fiber.
- 100GBASE-SRBD BIDI QSFP transceiver
 - Link length up to 70 meters over OM3 or 100 meters over OM4 duplex multi-mode fiber.
- 100GBASE-PSM4 40G/100G dual speed QSFP Optics Module
 - Link length up to 500 meters over parallel single-mode fiber.
- 100GBASE-CWDM4 40G/100G dual speed QSFP Optics Module
 - Link length up to 2 km over duplex single-mode fiber.
- 100GBASE-LRL4 QSFP Optics Module
 - Link length up to 2 km over duplex single-mode fiber.
- 100GBASE-LR4 QSFP Optics Module
 - Link length up to 10 km over duplex single-mode fiber.

- 100GBASE-ERL4 QSFP Optics Module
 - Link length up to 40 km over duplex single-mode fiber.
- 100G DWDM QSFP transceiver
 - Link length up to 80 km over single-mode fiber.
- 100GBASE-CR4 QSFP to QSFP Twinax Copper Cable
 - Link length of 1 to 5 meters
- 100GBASE-CR4 QSFP to 4 x 25GbE SFP Twinax Copper Cable
 - Link length of 1 to 5 meters

Internal ports

Several Arista switches include internal ports that connect directly to an external cable through an RJ-45 jack. Internal ports available on Arista switches include:

- 100/1000BASE-T (7048T-A)
- 100/1000/10GBASE-T (7050-T)

AOC cables

- AOC-Q-Q-100G QSFP 100GbE Active Optical Cable
 - Link length of 3 to 30 meters
- AOC-Q-Q-40G QSFP+ to QSFP+ 40GbE Active Optical Cable
 - Link length of 3 to 100 meters
- AOC-S-S-25G SFP28 to SFP28 25GbE Active Optical Cable
 - Link length of 3 to 30 meters

11.3.3 MXP Ports

MXP ports provide embedded optics that operate in one of three modes: 10GbE (12 ports), 40GbE (3 ports), and 100GbE (1 port). Each mode requires a specified cable is implemented through configuration commands. MXP ports utilize multi-mode fiber to provide support over 150 meters.

- 100GbE mode requires an MTP-24 to MTP-24 cable, which uses 20 of 24 fibers to carry 100Gbe across 10 send and 10 receive channels. When connecting two 100GbE MXP ports, the TX lanes must be crossed with the RX lanes.
- 40GbE mode requires an MTP cable that provides a split into three MTP-12 ends. The cable splits the MXP port into three MTP-12 ends, each compatible with standards based 40GBASE-SR4 ports over OM3 or OM4 fiber up to 100m or 150m.
- 10GbE mode requires an MTP cable that provides a split into 12x10G with LC connectors to adapt the MXP port into 12x10GbE. The cable splits the MXP port into twelve LC ends for using SR or SRL optics over multimode OM3/OM4 cables.

11.4 Interfaces

Arista switches provide two physical interface types that receive, process, and transmit Ethernet frames: Ethernet interfaces and Management interfaces.

Each Ethernet interface is assigned a 48-bit MAC address and communicates with other interfaces by exchanging data packets. Each packet contains the MAC address of its source and destination interface. Ethernet interfaces establish link level connections by exchanging packets. Interfaces do not typically accept packets with a destination address of a different interface.

Ethernet data packets are frames. A frame begins with preamble and start fields, followed by an Ethernet header that includes source and destination MAC addresses. The middle section contains payload data, including headers for other protocols carried in the frame. The frame ends with a 32-bit cyclic redundancy check (CRC) field that interfaces use to detect data corrupted during transmission.

11.4.1 Ethernet Interfaces

Ethernet speed and duplex configuration options depend on the media type of the interface:

- 40G QSFP+: Default operation is as four 10G ports. **Speed forced** command options support configuration as a single 40G port.
- 10GBASE-T: Mode is **autonegotiate** by default, offering 10G and 1G full duplex and 100M. Default setting is 10G. Half duplex and 10M are not supported. Adjustments may be made using **speed forced** commands.
- 10GBASE (SFP+): Port operates as a single 10G port. **Speed forced** commands do not affect configuration.
- 1000BASE-T (copper): Mode is **autonegotiate** by default, offering 1G full and 100M; default setting is 1G full. Autonegotiation that offers only 100M is available through **speed auto 100full** command. Half duplex and 10M are not supported.
- 100G CFP: Default operation is 100G. It cannot be split, and its speed cannot be changed.
- 100G MXP: Default operation is as a single 100G port on the 7500 and 7280 platforms, and as three 40G ports on the 7050 platform. On the 7500 and 7280 platforms, available speed/duplex settings are a single 100G port, three 40G ports, or twelve 10G ports. On the 7050 platform, available speed/duplex settings are three 40G ports or twelve 10G ports. Adjustments are made with **speed forced** commands.
- 100G QSFP100: Available speeds are transceiver-dependent. The QSFP100 transceiver supports a single 100G port, four 25G ports, or two 50G ports; the QSFP+ transceiver supports one 40G port or four 10G ports; the CWDM transceiver supports all five configurations. Adjustments are made using **speed forced** commands. **Note:** 7500 and 7280 families do not currently support 25G or 50G speeds.
- The **SFP-1G-T** transceivers advertise one speed at a time only. Hence, the desired speed and negotiation must be configured explicitly using the following commands:
 - **speed auto**: auto-negotiated 1Gbps (this is because no speed is specified and we are defaulting to advertise 1G).
 - **speed auto 1G full/ speed 1G**: auto-negotiated 1Gbps (note that per BASE-T standard, 1G must be negotiated)
 - **speed auto 100full**: auto-negotiated 100Mbps
 - **speed 100full**: non-negotiated/true-forced 100Mbps

For information relating to transceivers, please see [Transceivers](#).

11.4.2 Subinterfaces

Subinterfaces divide a single ethernet or port channel interface into multiple logical L3 interfaces based on the 802.1q tag (VLAN ID) of incoming traffic. Subinterfaces are commonly used in the L2/L3 boundary device, but they can also be used to isolate traffic with 802.1q tags between L3 peers by assigning each subinterface to a different VRF.

While subinterfaces can be configured on a port channel interface (the virtual interface associated with a port channel), the following restrictions apply:

- An L3 interface with subinterfaces configured on it should not be made a member of a port channel.
- An interface that is a member of a port channel should not have subinterfaces configured on it.
- A subinterface cannot be made a member of a port channel.

Subinterfaces on multiple ports can be assigned the same VLAN ID, but there is no bridging between subinterfaces (or between subinterfaces and SVIs), and each subinterface is considered to be in a separate bridge domain.

The following features are supported on subinterfaces:

- Unicast and multicast routing
- BGP, OSPF, ISIS, PIM
- ACL
- VRF
- VRRP
- SNMP
- Subinterface counters (on some platforms)
- VXLAN (on some platforms)
- MPLS (on some platforms)
- GRE (on some platforms)
- PBR (on some platforms)
- QoS (on some platforms)
- Inheriting QoS settings (trust mode and default DSCP) from the parent interface
- Inheriting MTU setting from parent interface

The following are *not* supported on subinterfaces:

- Per-subinterface MTU setting
- Per-subinterface SFLOW settings
- Per-subinterface mirroring settings

11.4.3 Agile Ports

Agile Ports are a feature of the 7150S Series that allows the user to configure adjacent blocks of 4 x SFP+ interfaces as a single 40G link. The set of interfaces that can be combined to form a higher speed port is restricted by the hardware configuration. Only interfaces that pass through a common PHY component can be combined. One interface within a combinable set is designated as the primary port. When the primary interface is configured as a higher speed port, all configuration statements are performed on that interface. All other interfaces in the set are subsumed and not individually configurable when the primary interface is configured as the higher speed port. This feature allows the 7150S-24 to behave as a 4x40G switch (using 16 SFP+) and the remaining SFP+ provide 8 x 10G

ports. On the 7150S-52 this allows up to 13x 40G (all 52 ports grouped as 40G) and on the 7150S-64 Agile Ports allows the switch to be deployed with up to 16 native 40G interfaces - 4 are QSFP+ and the remaining 12 as 4xSFP+ groups.

[Section 11.5.11](#) describes the configuration of agile ports.

11.4.4 Management Interfaces

The management interface is a layer 3 host port that is typically connected to a PC for performing out of band switch management tasks. Each switch has one or two management interfaces. Only one port is needed to manage the switch; the second port, when available, provides redundancy.

Management interfaces are 10/100/1000 BASE-T interfaces. By default, auto-negotiation is enabled on management interfaces. All combinations of speed 10/100/1000 and full or half duplex is enforceable on these interfaces through **speed** commands.

Management ports are enabled by default. The switch cannot route packets between management ports and network (Ethernet interface) ports because they are in separate routing domains. When the PC is multiple hops from the management port, packet exchanges through layer 3 devices between the management port and PC may require the enabling of routing protocols.

The Ethernet management ports are accessed remotely over a common network or locally through a directly connected PC. An IP address and static route to the default gateway must be configured to access the switch through a remote connection.

11.4.5 Tunable SFP

Tuning of DWDM 10G SFP+ transceivers (10GBASE-DWDM) includes:

- Tuning transceiver wavelength/frequency by channel number
- Showing wavelengths/frequencies for specified channels supported by the transceiver
- Showing current wavelength/frequency settings of the transceiver interface

For information relating to tuning the transceiver wavelength/frequency by channel number, refer to the command [transceiver channel](#). To show the current wavelength/frequency settings for specified channels, refer to the command [show interfaces transceiver channels](#). To show the current wavelength/frequency settings of an interface, refer to the command [show interfaces transceiver hardware](#).

11.5 Ethernet Configuration Procedures

These sections describe Ethernet and Management interface configuration procedures:

- [Section 11.5.1: Physical Interface Configuration Modes](#)
- [Section 11.5.2: Assigning a MAC Address to an Interface](#)
- [Section 11.5.3: Port Groups \(QSFP+ and SFP+ Interface Selection\)](#)
- [Section 11.5.4: Referencing Modular Ports](#)
- [Section 11.5.5: Referencing Multi-lane Ports](#)
- [Section 11.5.6: QSFP+ Ethernet Port Configuration](#)
- [Section 11.5.7: QSFP100 Ethernet Port Configuration](#)
- [Section 11.5.8: CFP2 Ethernet Port Configuration](#)
- [Section 11.5.9: MXP Ethernet Port Configuration](#)
- [Section 11.5.10: Port Speed Capabilities](#)
- [Section 11.5.11: Agile Ports](#)
- [Section 11.5.12: Subinterface Configuration](#)
- [Section 11.5.13: Autonegotiated Settings](#)
- [Section 11.5.14: Displaying Ethernet Port Properties](#)
- [Section 11.5.15: Ingress Counters](#)
- [Section 11.5.16: Configuring Ingress Traffic-Class Counters](#)
- [Section 11.5.17: Configuring Power over Ethernet \(PoE\)](#)
- [Section 11.5.18: Configuring Link Fault Signaling](#)
- [Section 11.5.19: Configuring Hardware TCAM](#)

11.5.1 Physical Interface Configuration Modes

The switch provides two configuration modes for modifying Ethernet parameters:

- Interface-Ethernet mode configures parameters for specified Ethernet interfaces.
- Interface-Management mode configures parameters for specified management Ethernet interfaces.

Physical interfaces cannot be created or removed.

Multiple interfaces can be simultaneously configured. Commands are available for configuring Ethernet specific, layer 2, layer 3, and application layer parameters. Commands that modify protocol specific settings in Ethernet configuration mode are listed in the protocol chapters.

- The `interface ethernet` command places the switch in Ethernet-interface configuration mode.
- The `interface management` command places the switch in management configuration mode.

Examples

- This command places the switch in Ethernet-interface mode for Ethernet interfaces 5-7 and 10.

```
switch(config)#interface ethernet 5-7,10
switch(config-if-Et5-7,10)#
```
- This command places the switch in management-interface mode for management interface 1.

```
switch(config)#interface management 1
switch(config-if-Ma1)#
```

11.5.2 Assigning a MAC Address to an Interface

Ethernet and Management interfaces are assigned a MAC address when manufactured. This address is the **burn-in address**. The `mac-address` command assigns a MAC address to the configuration mode interface in place of the burn-in address. The `no mac-address` command reverts the interface's current MAC address to its burn-in address.

Examples

- This command assigns the MAC address of **001c.2804.17e1** to Ethernet interface 7.
`switch(config-if-Et7) #mac-address 001c.2804.17e1`
- This command displays the MAC address of Ethernet interface 7. The active MAC address is **001c.2804.17e1**. The burn-in address is **001c.7312.02e2**.

```
switch(config-if-Et7) #show interface ethernet 7
Ethernet7 is up, line protocol is up (connected)
Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)
Description: b.e45
```

<-----OUTPUT OMITTED FROM EXAMPLE----->

```
switch(config-if-Et7) #
```

11.5.3 Port Groups (QSFP+ and SFP+ Interface Selection)

Several of Arista's fixed switches limit the number of 10G data lanes in operation through the use of port groups. A port group is a set of interfaces that can be configured as four SFP+ interfaces or a single QSFP+ interface. When configured in SFP+ mode, the port group enables 4 standalone 10GbE interfaces using SFP+ optics. When configured in QSFP+ mode, the port group enables a single QSFP+ interface (in addition to the dedicated QSFP+ ports), which can operate as a single 40GbE port, or as four 10GbE ports with the appropriate breakout cabling.

Hardware port groups are used on the following systems:

- DCS-7050Q-16
- DCS-7050QX-32S

Use the `hardware port-group` command to select the interface mode for the specified port group.

Important! The `hardware port-group` command restarts the forwarding agent, which disrupts traffic on all switch ports.

Example

- These commands configure the DCS-7050-Q16 switch to enable four SFP+ interfaces and one extra QSFP+ interface by enabling the SFP+ interfaces in port group 1 and the QSFP+ interface in port group 2.

```
switch(config) #hardware port-group 1 select Et17-20
switch(config) #hardware port-group 2 select Et16/1-4
```

The `show hardware port-group` command displays the status of ports in the port groups.

Example

- This command displays the status of the flexible ports within the two port groups on a DCS-7050Q-16 switch.

```
switch#show hardware port-group
```

```
Portgroup: 1      Active Ports: Et17-20
Port              State
-----
Ethernet17        Active
Ethernet18        Active
Ethernet19        Active
Ethernet20        Active
Ethernet15/1      ErrDisabled
Ethernet15/2      ErrDisabled
Ethernet15/3      ErrDisabled
Ethernet15/4      ErrDisabled

Portgroup: 2      Active Ports: Et16/1-4
Port              State
-----
Ethernet16/1      Active
Ethernet16/2      Active
Ethernet16/3      Active
Ethernet16/4      Active
Ethernet21        ErrDisabled
Ethernet22        ErrDisabled
Ethernet23        ErrDisabled
Ethernet24        ErrDisabled
```

11.5.3.1 DCS-7050Q-16

The DCS-7050Q-16 has 14 dedicated QSFP+ ports, plus two port groups. The port groups support either two additional QSFP+ ports or eight SFP+ ports as shown in [Table 11-3](#).

Table 11-3 DCS-7050Q-16 Port Groups

Port Group 1		Port Group 2	
Active Interface(s)		Active Interface(s)	
In SFP+ Mode	In QSFP+ Mode (Default)	In SFP+ Mode	In QSFP+ Mode (Default)
Et17-20	Et15/1-4	Et21-24	Et16/1-4
(four SFP+ ports)	(one QSFP+ port)	(four SFP+ ports)	(one QSFP+ port)

11.5.3.2 DCS-7050QX-32S

The DCS-7050QX-32S has 31 dedicated QSFP+ ports, plus one port group. The port group supports either one additional QSFP+ port or four SFP+ ports as shown in [Table 11-4](#).

Table 11-4 DCS-7050QX-32S Port Groups

Port Group 1 Active Interface(s)	
In SFP+ Mode	In QSFP+ Mode (Default)
Et1-4	Et5/1-4
(four SFP+ ports)	(one QSFP+ port)

11.5.4 Referencing Modular Ports

Arista modular switches provide port access through installed line cards. The maximum number of line cards on a modular switch varies with the switch series and model.

Several CLI commands modify modular parameters for all ports on a specified line card or controlled by a specified chip. This manual uses these conventions to reference modular components:

- *card_x* refers to a line card.
- *module_y* refers to a QSFP+ module.
- *port_z* refers to a line card or module port.

Commands that display Ethernet port status use the following conventions:

- SFP ports: : *card_x/port_z* to label the line card-port location of modular ports
- QSFP ports: *card_x/module_y/port_z* to label the line card-port location of modular ports

[Section 11.5.6](#) describe QSFP+ module usage.

Example

- This command displays the status of interfaces 1 to 9 on line card 4:

```
switch>show interface ethernet 4/1-9 status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Et4/1		connected	1	full	10G	Not Present
Et4/2		connected	1	full	10G	Not Present
Et4/3		connected	1	full	10G	Not Present
Et4/4		connected	1	full	10G	Not Present
Et4/5		connected	1	full	10G	Not Present
Et4/6		connected	1	full	10G	Not Present
Et4/7		connected	1	full	10G	Not Present
Et4/8		connected	1	full	10G	Not Present
Et4/9		connected	1	full	10G	Not Present

```
switch>
```

11.5.5 Referencing Multi-lane Ports

EOS supports two types of Ethernet ports:

- single-lane (also called fixed-lane)
- multi-lane (also called flexible-lane)

Single-lane (or “fixed-lane”) ports are always modeled as a single interface within EOS. While the speed of the interface may be configurable, the physical port can never be broken out into multiple lower-speed interfaces. Single-lane ports use the following naming scheme:

- Ethernet <port #> (for fixed switches)
- Ethernet <module #>/<port #> (for modular switches)

Multi-lane (or “flexible lane”) ports are made up of multiple parallel lanes, each served by its own laser. Multi-lane ports can be configured to combine the lanes and operate as a single native high-speed interface (a 40GbE or 100GbE interface), or to operate each lower-speed interface independently (four 10GbE or 25GbE interfaces). Multi-lane ports use the following naming scheme:

- Ethernet <port #>/<lane #> (for fixed switches)
- Ethernet <module #>/<port #>/<lane #> (for modular switches)

The operational state displayed for each lane of a multi-lane port is determined by the configuration applied to the primary lane(s), as shown in [Table 11-5](#). When broken out into multiple lower-speed interfaces, all lanes will be active in parallel, and each will display its operational state as **connected** or **not connected**. In high-speed mode, only the primary lane(s) will be displayed as active, with the remaining lanes showing as **errdisabled**. The exception is the CFP2 module: when it is configured as a single 100GbE port, the primary lane is displayed as active in the CLI while the other lanes are hidden.

Table 11-5 Lane States

Parent Port Configured Mode	Primary Lane(s)	Secondary Lanes
single high-speed interface	active (connected/not connected)	inactive (errdisabled)
multi-interface breakout	active (connected/not connected)	active (connected/not connected)

A multi-lane port is configured as a single high-speed interface or multiple breakout interfaces by using the **speed** command on the primary lane(s) of the port. For specific configuration instructions and details regarding the primary lane(s) of a specific interface, refer to the configuration section for the appropriate interface type:

- [QSFP+ Ethernet Port Configuration](#)
- [QSFP100 Ethernet Port Configuration](#)
- [CFP2 Ethernet Port Configuration](#)
- [MXP Ethernet Port Configuration](#)

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

11.5.6 QSFP+ Ethernet Port Configuration

Each QSFP+ module contains four data lanes which can be used individually or combined to form a single, higher-speed interface. This allows a QSFP+ Ethernet port to be configured as a single 40GbE interface or as four 10GbE interfaces.

When the four lanes are combined to form a 40GbE interface, display commands will show lane /1 as **connected** or **not connected**, and will show lanes /2 through /4 as **errdisabled**.

The following sections describe the configuration of QSFP+ ports.

11.5.6.1 Configuring a QSFP+ Module as a Single 40GbE Interface

To configure the port as a single 40GbE interface, combine the module's four data lanes by using the `speed` command (**speed forced 40g full**) on the port's /1 lane (the primary lane).

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP+ Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 40gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 40gfull
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	40G	40GBASE-SR4	
Et5/1/2		errdisabled	1	unconf	unconf	40GBASE-SR4	
Et5/1/3		errdisabled	1	unconf	unconf	40GBASE-SR4	
Et5/1/4		errdisabled	1	unconf	unconf	40GBASE-SR4	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.6.2 Configuring a QSFP+ Module as Four 10GbE Interfaces

To configure the port as four 10GbE interfaces, use the `speed` command (**speed forced 10000full**) on the port's /1 lane (the primary lane).

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP+ Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 10000full** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 10000full
```


Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	10G	40GBASE-SR4	
Et5/1/2		connected	1	full	10G	40GBASE-SR4	
Et5/1/3		connected	1	full	10G	40GBASE-SR4	
Et5/1/4		connected	1	full	10G	40GBASE-SR4	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.7 QSFP100 Ethernet Port Configuration

Each QSFP100 module contains four data lanes which can be used individually or combined to form a single, higher-speed interface. This allows a QSFP100 Ethernet port to be configured as a single 100GbE interface, a single 40GbE interface, or four 10GbE interfaces. The default mode is a single 100GbE interface.

The 7060X, 7260X and 7320X platforms also allow a QSFP100 port to be configured as two 50GbE interfaces or four 25GbE interfaces.

When the lanes are combined to form a higher-speed interface, display commands will show the primary lane(s) as **connected** or **not connected**, and will show the other lanes as **errdisabled**.

The following sections describe the configuration of QSFP+ ports.

11.5.7.1 Configuring a QSFP100 Module as a Single 100GbE Interface

By default, the QSFP100 module operates as a single 100GbE interface; using the **default speed** or **no speed** command on the primary lane restores the default behavior.

To explicitly configure the port as a single 100GbE interface, combine the module's four data lanes by using the `speed` command (**speed forced 100gfull**) on the port's /1 lane (the primary lane).

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP100 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 100gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 100gfull
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	100G	100GBASE-SR4	
Et5/1/2		errdisabled	1	unconf	unconf	100GBASE-SR4	
Et5/1/3		errdisabled	1	unconf	unconf	100GBASE-SR4	
Et5/1/4		errdisabled	1	unconf	unconf	100GBASE-SR4	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.7.2 Configuring a QSFP100 Module as Two 50GbE Interfaces

To configure the port as a two 50GbE interfaces, configure the module's four data lanes by using the **speed** command (**speed forced 50gfull**) on the port's /1 and /3 lanes. This configuration is available on 7060X, 7260X and 7320X platforms.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP100 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 50gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 50gfull
```

Step 3 Repeat the above steps for lane /3.

```
switch(config-if-Et5/1/1)#interface ethernet 5/1/3
switch(config-if-Et5/1/3)#speed forced 50gfull
```

Step 4 Use the **show interfaces status** command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	50G	100GBASE-SR4	
Et5/1/2		errdisabled	1	unconf	unconf	100GBASE-SR4	
Et5/1/3		connected	1	full	50G	100GBASE-SR4	
Et5/1/4		errdisabled	1	unconf	unconf	100GBASE-SR4	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.7.3 Configuring a QSFP100 Module as a Single 40GbE Interface

To configure the port as a single 40GbE interface, combine the module's four data lanes by using the **speed** command (**speed forced 40gfull**) on the port's /1 lane (the primary lane).

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP100 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 40gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 40gfull
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
Port      Name      Status      Vlan      Duplex  Speed  Type      Flags
Et1
<-----OUTPUT OMITTED FROM EXAMPLE----->
Et5/1/1    connected  1          full      40G     100GBASE-SR4
Et5/1/2    errdisabled 1          unconf   unconf  100GBASE-SR4
Et5/1/3    errdisabled 1          unconf   unconf  100GBASE-SR4
Et5/1/4    errdisabled 1          unconf   unconf  100GBASE-SR4
<-----OUTPUT OMITTED FROM EXAMPLE----->
```

11.5.7.4 Configuring a QSFP100 Module as Four 25GbE Interfaces

To configure the port as four 25GbE interfaces, use the `speed` command (**speed forced 25gfull**) on the port's /1 lane (the primary lane). This configuration is available on 7060X, 7260X and 7320X platforms.

Important! Use of the `speed` command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the `speed` command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP100 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the `speed forced 25gfull` command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 25gfull
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
Port      Name      Status      Vlan      Duplex  Speed  Type      Flags
Et1
<-----OUTPUT OMITTED FROM EXAMPLE----->
Et5/1/1    connected  1          full      25G     100GBASE-SR4
Et5/1/2    errdisabled 1          unconf   unconf  100GBASE-SR4
Et5/1/3    errdisabled 1          unconf   unconf  100GBASE-SR4
Et5/1/4    errdisabled 1          unconf   unconf  100GBASE-SR4
<-----OUTPUT OMITTED FROM EXAMPLE----->
```

11.5.7.5 Configuring a QSFP100 Module as Four 10GbE Interfaces

To configure the port as four 10GbE interfaces, use the `speed` command (**speed forced 10000full**) on the port's /1 lane (the primary lane).

Important! Use of the `speed` command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the `speed` command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the QSFP100 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 10000full** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 10000full
```

Step 3 Use the **show interfaces status** command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	10G	100GBASE-SR4	
Et5/1/2		connected	1	full	10G	100GBASE-SR4	
Et5/1/3		connected	1	full	10G	100GBASE-SR4	
Et5/1/4		connected	1	full	10G	100GBASE-SR4	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.8 CFP2 Ethernet Port Configuration

Each CFP2 module contains ten data lanes. The configuration options available on the port depend on the optic inserted:

- **CFP2-100G-LR4** optics operate only in 100GbE mode.
- **CF2-100G-ER4** optics operate only 100GbE mode.
- **CFP2-100G-XSR10** optics can be configured as a single 100GbE interface or as ten 10GbE interfaces.

When the port is configured as ten 10GbE interface, each lane is active and visible in CLI display commands. When the lanes are combined to form a single 100GbE interface, display commands will show the primary lane as **connected** or **not connected**; all other lanes will be hidden.

The following sections describe the configuration of CFP2 ports.

11.5.8.1 Configuring a CFP2 Module a as a Single100GbE Interface

To configure the port as a single 100GbE interface (the default configuration), combine the module's ten data lanes by using the **speed** command (**speed forced 100gfull**) on the port's /1 lane (the primary lane).

This configuration is available for all pluggable optics.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the CFP2 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 100gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 100gfull
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
Port      Name      Status      Vlan      Duplex  Speed  Type      Flags
Et1
<-----OUTPUT OMITTED FROM EXAMPLE----->
Et5/1/1    connected  1          full      100G    100G   100GBASE-SR1
Et5/2/1    connected  1          full      100G    100G   100GBASE-SR1
<-----OUTPUT OMITTED FROM EXAMPLE----->
```

11.5.8.2 Configuring a CFP2 Module as Ten 10GbE Interfaces

To configure the port as four 10GbE interfaces, use the `speed` command (**speed forced 10000full**) on the port's /1 lane (the primary lane).

This configuration is available only for CFP2-100G-XSR10 optics.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the CFP2 Ethernet interface.

```
switch(config)#interface ethernet 5/1/1
```

Step 2 Enter the **speed forced 10000full** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/1/1)#speed forced 10000full
```

Step 3 Use the `show interfaces status` command to confirm the change in configuration.

```
switch(config-if-Et5/1/1)#show interfaces status
Port      Name      Status      Vlan      Duplex  Speed  Type      Flags
Et1
<-----OUTPUT OMITTED FROM EXAMPLE----->
Et5/1/1    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/2    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/3    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/4    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/5    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/6    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/7    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/8    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/9    connected  1          full      10G     10G    100GBASE-SR1
Et5/1/10   connected  1          full      10G     10G    100GBASE-SR1
<-----OUTPUT OMITTED FROM EXAMPLE----->
```

11.5.9 MXP Ethernet Port Configuration

Each MXP module contains twelve data lanes which can be used individually or combined to form one or more higher-speed interfaces. This allows an MXP Ethernet port to be configured as a single 100GbE interface, up to twelve 10GbE interfaces, or a mixture of 40GbE and 10GbE ports.

MXP ports do not use pluggable optics: instead, an MTP-24 ribbon is inserted directly into the port. The remote end of the MTP 24 ribbon must then be broken out using a splitter cable or cartridge based on the operational mode and speed of the MXP port.

When four lanes of an MXP interface are combined to form a 40GbE port, CLI commands will show the primary lane of that group as **connected or not connected** and the other three lanes as **errdisabled**.

The following sections describe the configuration of MXP interfaces.

11.5.9.1 Configuring an MXP Module as a Single 100GbE Interface

To configure the port as a single 100GbE interface (the default configuration), enter the **speed** command (**speed forced 100gfull**) on the port's /1 lane (the primary lane). This combines lanes 1-10 and disables lanes 11 and 12.

Under this configuration, CLI display commands will show lane /1 as **connected** or **not connected**, and show lanes /2-/12 as **errdisabled**.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the MXP Ethernet interface.

```
switch(config)#interface ethernet 5/49/1
```

Step 2 Enter the **speed forced 100gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/49/1)#speed forced 100gfull
```

Step 3 Use the **show interfaces status** command to confirm the change in configuration.

```
switch(config-if-Et5/49/1)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/49/1		connected	1	full	100G	100GBASE-SR1	
Et5/49/2		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/3		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/4		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/5		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/6		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/7		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/8		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/9		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/10		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/11		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/12		errdisabled	1	unconf	unconf	100GBASE-SR1	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.9.2 Configuring an MXP Module With 40GbE Interfaces

Each set of four lanes on the MXP module is independently configurable as a single 40GbE interface or four 10GbE interfaces. To configure four lanes as a single 40GbE interface, enter the **speed** command (**speed forced 40gfull**) on the group's primary lane (/1, /5, or /9). To revert a group of four lanes to functioning as four independent 10GbE interfaces, enter the **speed forced 10000full** command on the primary lane of the group.

When four lanes of an MXP interface are combined to form a 40GbE port, CLI commands will show the primary lane of that group as **connected** or **not connected** and the other three lanes as **errdisabled**. In groups of four lanes which are configured as four independent 10GbE interfaces, each lane will be displayed in the CLI as **connected** or **not connected**.

Note that a **speed forced 100gfull** command entered on the /1 lane takes precedence over **speed forced 40gfull** commands on the /5 and /9 lanes.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

The example below shows the steps for configuring an MXP module as three 40GbE interfaces.

Step 1 Enter interface Ethernet configuration mode for lane /1 of the MXP Ethernet interface.

```
switch(config)#interface ethernet 5/49/1
```

Step 2 Enter the **speed forced 40gfull** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/49/1)#speed forced 40gfull
```

Step 3 Repeat the above steps for lanes /5 and /9.

```
switch(config-if-Et5/49/1)#interface ethernet 5/49/5
switch(config-if-Et5/49/5)#speed forced 40gfull
switch(config-if-Et5/49/5)#interface ethernet 5/49/9
switch(config-if-Et5/49/9)#speed forced 40gfull
```

Step 4 Use the **show interfaces status** command to confirm the change in configuration.

```
switch(config-if-Et5/49/9)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/49/1		connected	1	full	40G	100GBASE-SR1	
Et5/49/2		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/3		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/4		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/5		connected	1	full	40G	100GBASE-SR1	
Et5/49/6		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/7		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/8		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/9		connected	1	full	40G	100GBASE-SR1	
Et5/49/10		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/11		errdisabled	1	unconf	unconf	100GBASE-SR1	
Et5/49/12		errdisabled	1	unconf	unconf	100GBASE-SR1	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.9.3 Configuring an MXP Module as Twelve 10GbE Interfaces

Each lane of an MXP port functions as a 10GbE interface when it is not included in a higher-speed interface configuration (either actively or as an **errdisabled** port).

To explicitly configure the port as twelve 10GbE interfaces, use the **speed** command (**speed forced 10000full**) on all twelve lanes of the port.

When each lane is configured as an independent 10GbE interface, CLI display commands show each lane as **connected** or **not connected**.

Important! Use of the **speed** command to configure a multi-lane port is hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, this command restarts the forwarding agent, which will result in traffic disruption. On 7160 series platforms, use of the **speed** command is hitless, but if the command changes the number of port lanes, packets may be dropped on unrelated ports.

Step 1 Enter interface Ethernet configuration mode for all twelve lanes of the MXP Ethernet interface.

```
switch(config)#interface ethernet 5/49/1-12
```

Step 2 Enter the **speed forced 10000full** command. Depending on the platform, this command may restart the forwarding agent, disrupting traffic on all ports for 60 seconds or more.

```
switch(config-if-Et5/49/1-12)#speed forced 10000full
```

Step 3 Use the **show interfaces status** command to confirm the change in configuration.

```
switch(config-if-Et5/49/1-12)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type	Flags
Et1		connected	2	full	1G	10GBASE-T	
<-----OUTPUT OMITTED FROM EXAMPLE----->							
Et5/1/1		connected	1	full	10G	100GBASE-SR1	
Et5/1/2		connected	1	full	10G	100GBASE-SR1	
Et5/1/3		connected	1	full	10G	100GBASE-SR1	
Et5/1/4		connected	1	full	10G	100GBASE-SR1	
Et5/1/5		connected	1	full	10G	100GBASE-SR1	
Et5/1/6		connected	1	full	10G	100GBASE-SR1	
Et5/1/7		connected	1	full	10G	100GBASE-SR1	
Et5/1/8		connected	1	full	10G	100GBASE-SR1	
Et5/1/9		connected	1	full	10G	100GBASE-SR1	
Et5/1/10		connected	1	full	10G	100GBASE-SR1	
<-----OUTPUT OMITTED FROM EXAMPLE----->							

11.5.10 Port Speed Capabilities

The supported speeds supported on each Arista platform per interface type are described in [Table 11-6](#).

Table 11-6 Supported Speeds (GbE)

Platform	SFP+	SFP28	QSFP+	QSFP100	MXP	CFP2
7050	100M, 1, 10	N/A	1, 10, 40	N/A	N/A	N/A
7050X	100M, 1, 10	N/A	1, 10, 40	N/A	10, 40	N/A
7050X2	100M, 1, 10	N/A	1, 10, 40	N/A	N/A	N/A
7050X3	100M, 1, 10	1, 10, 25	N/A	10, 25, 40, 50, 100	N/A	N/A
7250X	N/A	N/A	1, 10, 40	N/A	N/A	N/A
7060X	100M, 1, 10	N/A	N/A	10, 25, 40, 50, 100	N/A	N/A
7060X2	100M, 1, 10	1, 10, 25	N/A	10, 25, 40, 50, 100	N/A	N/A
7260X3	100M, 1, 10	N/A	N/A	10, 25, 40, 50, 100	N/A	N/A
7300X	100M, 1, 10	N/A	1, 10, 40	N/A	N/A	N/A

Table 11-6 Supported Speeds (GbE)

Platform	SFP+	SFP28	QSFP+	QSFP100	MXP	CFP2
7300X3	N/A	1, 10, 25	N/A	10, 25, 40, 50, 100	N/A	N/A
7320X	N/A	N/A	N/A	10, 25, 40, 50, 100	N/A	N/A
7150S	1, 10	N/A	1, 10, 40	N/A	N/A	N/A
7048T	1, 10	N/A	N/A	N/A	N/A	N/A
7500	1, 10	N/A	1, 10, 40	N/A	N/A	N/A
7500E	1, 10	N/A	1, 10, 40	10, 40, 100	10, 40, 100	100
7500R	1, 10	1, 10, 25	1, 10, 40	10, 25, 40, 50, 100	N/A	N/A
7280SE	1, 10	N/A	1, 10, 40	10, 40, 100	10, 40, 100	N/A
7280QR	N/A	N/A	1, 10, 40	10, 25, 40, 50, 100	N/A	N/A
7280SR (R2)	1, 10	1, 10, 25	N/A	10, 25, 40, 50, 100	N/A	100, 200
7280CR	N/A	N/A	N/A	10, 25, 40, 50, 100	N/A	N/A
7010T	100M, 1, 10	N/A	N/A	N/A	N/A	N/A

11.5.11 Agile Ports

An agile port is an interface that can function as a 10G port or can subsume a predefined set of 10G interfaces to form an interface with higher speed capabilities.

The set of interfaces that can be combined to form a higher speed port is restricted by the hardware configuration. Only interfaces that pass through a common PHY component can be combined. One interface within a combinable set is designated as the primary port.

- To view the set of available agile ports and the subsumable interfaces that comprise them, enter [show platform fm6000 agileport map](#).
- To configure the primary port as a higher speed port, enter [speed forced 40gfull](#) or [speed auto 40gfull](#).
- To revert the primary port and its subsumed ports to 10G interfaces, enter [no speed](#).

Example

- These commands displays the agile port map for the switch, then configures ethernet interface 13 as a 40G port.

```
switch#show platform fm6000 agileport map
```

```
-----
Agile Ports      |      Interfaces subsumed in 40G link
-----
Ethernet1        |  Ethernet3      Ethernet5      Ethernet7
Ethernet2        |  Ethernet4      Ethernet6      Ethernet8
Ethernet13       |  Ethernet15     Ethernet17     Ethernet19
Ethernet14       |  Ethernet16     Ethernet18     Ethernet20
```

```
switch#config
```

```
switch(config)#interface ethernet 13
```

```
switch(config-if-Et13)#speed forced 40gfull
```

```
WARNING!  Executing this command will cause the forwarding agent
to be restarted. All interfaces will briefly drop links
and forwarding on all interfaces will momentarily stop.
```

```
Do you wish to proceed with this command? [y/N]
```

```
Ethernet17 configured for 40G.
```

```
Ethernet15, Ethernet17 and Ethernet19 are now subsumed.
```

```
switch(config-if-Et13)#
```

```
This command reverts the agile 40G port to a 10G port and frees its subsumed ports
as individual 10G ports.
```

```
switch(config-if-Et13)#no speed
```

```
WARNING!  Executing this command will cause the forwarding agent
to be restarted. All interfaces will briefly drop links
and forwarding on all interfaces will momentarily stop.
```

```
Do you wish to proceed with this command? [y/N]
```

```
Ethernet13 no longer configured for 40G.
```

```
Ethernet15, Ethernet17 and Ethernet19 are now free.
```

```
switch(config-if-Et13)#
```

11.5.12 Subinterface Configuration

For a subinterface to be operational on an Ethernet or port channel interface, the parent interface must be configured as a routed port and be administratively up, and a VLAN must be configured on the subinterface. If the parent interface goes down, all subinterfaces automatically go down as well, but will come back up with the same configuration once the parent interface is up.

Note that a port channel should not contain Ethernet interfaces with subinterfaces configured on them, and that subinterfaces cannot be members of a port channel.

Subinterfaces are named by adding a period followed by a unique subinterface number to the name of the parent interface. Note that the subinterface number has no relation to the ID of the VLAN corresponding to the subinterface.

Subinterfaces are available on the following platforms:

- DCS-7050X

- DCS-7060X
- DCS-7250X
- DCS-7260X
- DCS-7280E
- DCS-7300X
- DCS-7320X
- DCS-7500E

11.5.12.1 Creating a Subinterface

To create a subinterface on an Ethernet or port channel interface:

Step 1 Bring up the parent interface and ensure that it is configured as a routed port.

```
switch(config)#interface Ethernet1/1
switch(config-if-Et1/1)#no switchport
switch(config-if-Et1/1)#no shutdown
```

Step 2 Configure a VLAN on the subinterface. The `encapsulation dot1q vlan` command is also used for VLAN translation, but in this context it associates a VLAN with the subinterface.

```
switch(config-if-Et1/1)#interface Ethernet1/1.1
switch(config-if-Et1/1.1)#encapsulation dot1q vlan 100
```

Step 3 Configure an IP address on the subinterface (optional) and ensure that it is up.

```
switch(config-if-Et1/1)#ip address 10.0.0.1/24
switch(config-if-Et1/1)#no shutdown
switch(config-if-Et1/1)#
```

11.5.12.2 Creating a Range of Subinterfaces

A range of subinterfaces can also be configured simultaneously. The following example configures subinterfaces 1 to 100 on Ethernet interface 1/1, and assigns VLANs 501 through 600 to them. Note that the range of interfaces must be the same size as the range of VLAN IDs.

Example

```
switch(config)#interface eth1/1.1-100
switch(config-if-Et1/1.1-100)no shutdown
switch(config-if-Et1/1.1-100)encapsulation dot1q vlan {501,600}
switch(config-if-Et1/1.1-100)exit
switch(config)#
```

11.5.12.3 Parent Interface Configuration

For subinterfaces to function, the parent interface must be administratively up and configured as a routed port.

Some settings are inherited by subinterfaces from the parent interface. These include QoS (trust mode and default DSCP) and MTU.

Additionally, on the DCS-7050X, DCS-7250X, and DCS-7300X platforms, the parent interface may be configured with an IP address. In this case, untagged packets are treated as incoming traffic on the parent interface

11.5.12.4 Configuring Routing Features on a Subinterface

Once a subinterface is created, the following features can be configured on it:

- Unicast and multicast routing
- BGP, OSPF, ISIS, PIM
- VRF
- VRRP
- SNMP
- Inheritance of QoS (trust mode and default DSCP) and MTU settings from the parent interface

Additionally, these features can be configured on subinterfaces on Arad (DCS-7500E and DCS-7280E) platforms:

- Subinterface counters on ingress
- VXLAN
- MPLS
- GRE
- PBR
- QoS

11.5.12.5 Displaying Subinterface Information

Subinterface information is displayed using the same show commands as for other interfaces.

Examples

This command displays summary information for all IP interfaces on the switch, including subinterfaces.

```
switch>show ip interfaces brief
Interface      IP Address      Status    Protocol    MTU
Ethernet1/1    10.1.1.1/24     up        up          1500
Ethernet1/1.1  10.0.0.1/24     up        up          1500
Ethernet1/2    unassigned      up        up          1500
```

This command displays information for subinterface Ethernet 1/1.1.

```
switch>show interface ethernet 1/1.1
Ethernet1/1.1 is down, line protocol is lowerlayerdown (notconnect)
  Hardware is Subinterface, address is 001c.735d.65dc
  Internet address is 10.0.0.1/24
  Broadcast address is 255.255.255.255
  Address determined by manual configuration
  IP MTU 1500 bytes , BW 10000000 kbit
  Down 59 seconds
switch>
```

This command displays status information for all subinterfaces configured on the switch.

```
switch>show interfaces status sub-interfaces
Port      Name      Status      Vlan      Duplex Speed  Type      Flags
Et1.1     Name      connect     101       full   10G     dot1q-encapsulation
Et1.2     Name      connect     102       full   10G     dot1q-encapsulation
Et1.3     Name      connect     103       full   10G     dot1q-encapsulation
Et1.4     Name      connect     103       full   10G     dot1q-encapsulation
switch>
```

11.5.13 Autonegotiated Settings

In autonegotiation, the transmission speed, duplex setting, and flow control parameters used for Ethernet-based communication can be automatically negotiated between connected devices to establish optimized common settings.

11.5.13.1 Speed and Duplex

The **speed** command affects the transmission speed and duplex setting for the configuration mode interface. When a **speed forced** command is in effect on an interface, autonegotiation of speed and duplex settings is disabled for the interface; to enable autonegotiation, use the **speed auto** command.

The scope and effect of the **speed** command depends on the interface type; see [Ethernet Interfaces](#) and [Ethernet Configuration Procedures](#) for detailed information on the speed settings for different interfaces.

11.5.13.2 Flow Control

Flow control is a data transmission option that temporarily stops a device from sending data because of a peer data overflow condition. If a device sends data faster than the receiver can accept it, the receiver's buffer can overflow. The receiving device then sends a PAUSE frame, instructing the sending device to halt transmission for a specified period.

Flow control commands configure administrative settings for flow control packets.

- The **flowcontrol receive** command configures the port's ability to receive flow control pause frames.
 - **off**: port does not process pause frames that it receives.
 - **on**: port processes pause frames that it receives.
 - **desired**: port autonegotiates; processes pause frames if peer is set to **send** or **desired**.
- The **flowcontrol send** command configures the port's ability to transmit flow control pause frames.
 - **off**: port does not send pause frames.
 - **on**: port sends pause frames.
 - **desired**: port autonegotiates; sends pause frames if peer is set to **receive** or **desired**.

Desired is not an available parameter option. Ethernet data ports cannot be set to **desired**. Management ports are set to **desired** by default and with the **no flowcontrol receive** command.

The port linking process includes flow control negotiation. Ports must have compatible flow control settings to create a link. [Table 11-7](#) lists the compatible flow control settings.

Table 11-7 Compatible Settings for Flow Control Negotiation

local port	peer port
receive on	send on or send desired
receive off	send off or send desired
receive desired	send on , send off, or send desired
send on	receive on or receive desired
send off	receive off or receive desired
send desired	receive on , receive off, or receive desired

Example

- These commands set the flow control receive and send to **on** on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#flowcontrol receive on
switch(config-if-Et5)#flowcontrol send on
switch(config-if-Et5)#
```

11.5.14 Displaying Ethernet Port Properties

Show commands are available to display various Ethernet configuration and operational status on each interface. Ethernet settings that are viewable include:

- Port Type
- PHY Status
- Negotiated Settings
- Flow Control
- Capabilities

Port Type

The port type is viewable from the output of [show interfaces status](#), [show interfaces hardware](#), and [show interfaces transceiver properties](#) commands.

Example

- This **show interfaces status** command displays the status of Ethernet interfaces 1-5.

```
switch>show interfaces status
Port      Name      Status      Vlan      Duplex  Speed  Type
Et1       Et1       connected   1         full    10G    10GBASE-SRL
Et2       Et2       connected   1         full    10G    10GBASE-SRL
Et3       Et3       connected   1         full    10G    10GBASE-SRL
Et4       Et4       connected   1         full    10G    10GBASE-SRL
Et5       Et5       notconnect  1         full    10G    Not Present
switch>
```

- This **show interfaces hardware** command displays the speed, duplex, and flow control capabilities of Ethernet interfaces 2 and 18.

```
switch>show interfaces ethernet 2,18 hardware
Ethernet2
  Model:      DCS-7150S-64-CL
  Type:       10GBASE-CR
  Speed/Duplex: 10G/full,40G/full,auto
  Flowcontrol: rx-(off,on,desired),tx-(off,on,desired)
Ethernet18
  Model:      DCS-7150S-64-CL
  Type:       10GBASE-SR
  Speed/Duplex: 10G/full
  Flowcontrol: rx-(off,on),tx-(off,on)
switch>
```

- This command displays the media type, speed, and duplex properties for Ethernet interfaces 1.

```
switch>show interfaces ethernet 1 transceiver properties
Name : Et1
Administrative Speed: 10G
Administrative Duplex: full
Operational Speed: 10G (forced)
Operational Duplex: full (forced)
Media Type: 10GBASE-SRL
```

PHY

PHY information for each Ethernet interface is viewed by entering the [show interfaces phy](#) command.

Example

- This command summarizes PHY information for Ethernet interfaces 1-3.

```
switch>show interfaces ethernet 1-3 phy
Key:
  U    = Link up
  D    = Link down
  R    = RX Fault
  T    = TX Fault
  B    = High BER
  L    = No Block Lock
  A    = No XAUI Lane Alignment
  0123 = No XAUI lane sync in lane N
```

Port	PHY state	State Changes	Reset Count	PMA/PMD	PCS	XAUI
Ethernet1	linkUp	14518	1750	U..	U....	U.....
Ethernet2	linkUp	13944	1704	U..	U....	U.....
Ethernet3	detectingXcvr	3	1			D..A0123

```
switch>
```

Negotiated Settings

Speed, duplex, and flow control settings are displayed through the [show interfaces hardware](#), [show interfaces phy](#), [show interfaces flow-control](#), and [show interfaces status](#) commands.

Example

- This command displays speed/duplex and flow control settings for Ethernet interface 1.

```
switch>show interfaces ethernet 1 hardware
Ethernet1
  Model:          DCS-7150S-64-CL
  Type:           10GBASE-SR
  Speed/Duplex:   10G/full
  Flowcontrol:    rx-(off,on),tx-(off,on)
switch>
```

- This command shows the flow control settings for Ethernet interfaces 1-2.

```
switch>show flow-control interface ethernet 1-2
Port          Send FlowControl  Receive FlowControl  RxPause      TxPause
              admin    oper      admin    oper
-----
Et1           off     off       off     off       0         0
Et2           off     off       off     off       0         0
switch>
```

- This command displays the speed type and duplex settings for management interfaces 1-2.

```
switch>show interfaces management 1-2 status
Port      Name              Status      Vlan      Duplex  Speed Type
Ma1              connected   routed     a-full  a-100M  10/100/1000
Ma2              connected   routed     a-full  a-1G    10/100/1000
switch>
```

11.5.15 Ingress Counters

The Ingress counters enables the switch to count the ingress traffic on the Layer 3 ports of the switch. Any ingress traffic on Layer 3 sub-interfaces and VLAN interface with IPv4 and IPv6 addresses are accounted irrespective of the routing decision. The VLAN counters are supported on DCS- 7050x, DCS-7250x, and DCS-7300x series switches and not supported on any routed ports.

11.5.15.1 Configuring Ingress Counters

The **hardware counter feature in** command enables the switch to count the ingress traffic on the Layer 3 port of the switch. Any traffic on Layer 3 sub-interfaces and VLAN interface with IPv4 and IPv6 addresses are accounted irrespective of the routing decision.

- This command configures the ingress traffic count on the sub-interfaces. The **no** form of the command disable the counter configuration from the switch ports.

```
switch#hardware counter feature subinterface in
```

- This command configures the ingress traffic count on the VLAN interface. The **no** form of the command disable the counter configuration from the VLAN configured switch ports.

```
switch#hardware counter feature vlan-interface in
```

11.5.15.2 Displaying the Ingress Counter Information

The **show interface counters** command displays the Layer 3 ingress traffic count information. Run this command to view the traffic counts on a sub-interface or VLAN interface of the switch. The **clear counters** command resets the counters to zero.

- This command displays the ingress traffic count on a VLAN interface **v112**.

```
switch#show interface v112 counters incoming
L3 Interface InOctets InUcastPkts InMcastPkts
v112          3136          47           2
```

11.5.16 Configuring Ingress Traffic-Class Counters

Ingress traffic class counter support is enabled in order to display per traffic-class counters on ingress interfaces, and supported on routed-ports and subinterfaces. Both packet and octet counts are displayed.

Example

- This command enables traffic-class counter support.

```
switch(config)#hardware counter feature traffic-class in  
switch(config)#
```
- This command enables TCAM profile 'tc-counters' if this profile is configured.

```
switch(config)#hardware tcam profile tc-counters  
switch(config)#
```

11.5.17 Configuring Power over Ethernet (PoE)

Power over Ethernet (PoE) is enabled by default on all Ethernet ports of PoE-capable switches, and the switch will detect IEEE-compliant powered devices (PDs) when they are plugged into a port and supply power appropriately.

Limitations

- Ethernet ports will not detect non IEEE-compliant devices by default, and may not be able to detect or power them even if configured to do so.
- If attached PDs overload the switch, it will power off. This can occur when an attached PD increases its power demand via LLDP, when too many PDs are connected to the switch, or when a power supply fails on a heavily loaded dual-supply switch.
- Power-cycling the switch will cause temporary loss of power to attached PDs.
- PoE is not available on management interfaces.

Disabling PoE on an Interface

On switches which support PoE, it is enabled by default on all Ethernet ports but can be disabled per-port with the [poe disabled](#) command.

Example

- These commands disable PoE on Ethernet interface 5.

```
switch(config)#interface ethernet 5  
switch(config-if-Et5)#poe disabled  
switch(config-if-Et5)#
```

PoE Power Settings

When an IEEE-compliant powered device (PD) is connected to a PoE-enabled Ethernet port, it is recognized by a specific resistor signature, and its initial power needs are determined by hardware negotiation, after which further negotiation is managed through the Link Layer Discovery Protocol (LLDP). For details, see [Configuring LLDP for Power over Ethernet](#).

PoE power output can be limited on a port using the [poe limit](#) command. The power limit represents the power output at the Ethernet port; actual power delivered to the PD will be lower due to power loss along the Ethernet cable.

Note

LLDP uses Power Via MDI type-length-value elements (TLVs) to allow the switch to dynamically negotiate power needs with PDs. LLDP will not include Power Via MDI TLVs for the interface if a power limit has been configured on it.

Example

- These commands limit nominal PoE power output on Ethernet interface 5 to 10 W.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#poe limit 10 watts
switch(config-if-Et5)#
```

- These commands limit nominal PoE power output on Ethernet interface 7 to 4 W.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#poe limit class 1
switch(config-if-Et7)#
```

Detecting Legacy PDs

IEEE-compliant powered devices (PDs) are recognized by a specific resistance signature to a test signal sent by the switch, but non-compliant (legacy or proprietary) PDs may use a capacitive signature instead. By default, legacy PD detection is disabled, and legacy devices are not powered.

To configure an interface to use hardware detection for these non-compliant PoE devices and attempt to power them, use the [poe legacy detect](#) command.

Note

Non IEEE-compliant PDs are not officially supported. Arista cannot guarantee compatibility with such devices, and they may not be detected even when legacy detection is enabled on the port they are connected to.

Example

- These commands configure Ethernet interface 5 to attempt to detect and power non-compliant PDs.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#poe legacy detect
switch(config-if-Et5)#
```

Displaying PoE Information

To display PoE information for a specific interface range or for all Ethernet interfaces, use the [show poe](#) command.

Example

- This command displays PoE information for Ethernet interface 46.

```
switch(config)#show poe interface ethernet 46
show poe interface ethernet 46
      PSE    LLDP    Power    Granted    Port
Port Enabled Enabled  Limit   Power    State   Class Power Current Voltage Temperature
-----
46      True     True  15.40W  15.40W  powered class0  1.40W  27.00mA  55.04V      41.25C
switch(config-if-Et7)#
```

11.5.18 Configuring Link Fault Signaling

As part of the Link Fault Signaling (LFS) configuration, a new configuration mode called the EOAM (Ethernet operations administration & management) mode is introduced. The EOAM profile has a link-error sub-mode wherein the threshold, action, and the period is configured for both FCS and Symbol errors. The period can be in seconds or in number of frames. The default values are – threshold 0, action syslog, and period 0 seconds. If the errors exceed the threshold within the given period, the configured action is executed. The recovery time configures the recovery timeout value for link fault signaling. Only one EOAM profile is associated with a port.

The following steps enable configuring the LFS parameters:

Step 1 Enable the EOAM mode.

```
switch(config)#monitor ethernet oam
```

Step 2 Create an EOAM profile named as *profile1*.

```
switch(config-eoam)#profile profile1
```

Step 3 Enter the EOAM link-error sub-mode.

```
switch(config-eoam-profile-profile1)#link-error
```

Step 4 Enter the commands in the profile link-error submode to configure a specific LFS parameter.

```
switch(config-eoam-profile-profile1-link-error)#symbol action errdisable
switch(config-eoam-profile-profile1-link-error)#symbol period 300 frames
switch(config-eoam-profile-profile1-link-error)#symbol threshold 20
switch(config-eoam-profile-profile1-link-error)#recovery-time 40
```

Step 5 Apply the EOAM profile *profile1* to the Ethernet interface 1/1.

```
switch(config)#interface ethernet 1/1
switch(config-if-Et1/1)#monitor ethernet oam profile profile1
```

Platform Compatibility

LFS parameter configuration is supported on the following platforms:

- DCS-7020
- DCS-7050X
- DCS-7060X
- DCS-7250X
- DCS-7260X
- DCS-7280R
- DCS-7300
- DCS-7320
- DCS-7500R

Note

The link fault action is not supported on the DCS-7050X, DCS-7250X, DCS-7060X, DCS-7260X, DCS-7300, DCS-7320 platforms.

11.5.19 Configuring Hardware TCAM

TCAM (ternary content-addressable memory) is a specialized type of high-speed memory that increase the speed of route look-up, packet classification, packet forwarding and access control list-based commands. The **hardware tcam** command is used to configure and place the switch in the TCAM mode. In this mode the user can configure few TCAM related commands such as feature, profile and system.

In the TCAM mode the **feature** command is used to configure the reservation of TCAM banks for the features like ACL, IPsec, flow-spec, I2-protocol, PBR, QoS, TCP-MSS-ceiling, traffic-policy. The **profile** command configures a new TCAM profile, or just copy the TCAM profile which is already created using the hardware tcam profile command such as default, mirroring-acl, pbr-match-nexthop-group, qos, tap-aggregation-default, tap-aggregation-extended, tc-counters, test, vxlan-routing. Similarly, the **system** command configures the system-wide TCAM profiles.

Examples

- This command places the switch in Hardware TCAM configuration mode.

```
switch(config)#hardware tcam  
switch(config-hw-tcam)#
```

These are the commands allowed to configure in Hardware TCAM mode.

- This commands allow the switch to configure the TCAM feature.

```
switch(config)#hardware tcam  
switch(config-hw-tcam)#feature
```

- This commands allow the switch to configure TCAM profile.

```
switch(config)#hardware tcam  
switch(config-hw-tcam)#profile
```

- This commands allow the switch to configure TCAM system profile.

```
switch(config)#hardware tcam  
switch(config-hw-tcam)#system
```

11.6 Ethernet Configuration Commands

Global Configuration Commands

- hardware port-group
- hardware tcam
- hardware counter feature in (DCS-7050x, 7350x, 7300x)
- interface ethernet
- interface ethernet create
- interface management
- monitor ethernet oam
- transceiver qsfp default-mode
- transceiver channel

Hardware TCAM Commands

- feature
- profile
- system

Interface Configuration Commands – Ethernet and Management Interfaces

- flowcontrol receive
- flowcontrol send
- link-debounce
- mac-address
- poe disabled
- poe legacy detect
- poe limit
- speed

EOAM Configuration Commands

- link-error
- monitor ethernet oam profile
- profile

Link-error Configuration Commands

- action
- period
- recovery-time
- threshold

Interface Display Commands

- show hardware counter
- show hardware port-group
- show interfaces counters
- show interfaces counters bins
- show interfaces counters errors
- show interfaces counters queue
- show interfaces counters rates
- show interfaces flow-control
- show interfaces hardware
- show interfaces hardware default
- show interfaces negotiation

- `show interfaces phy`
- `show interfaces status`
- `show interfaces status errdisabled`
- `show interfaces transceiver`
- `show interfaces transceiver channels`
- `show interfaces transceiver hardware`
- `show interfaces transceiver properties`
- `show monitor ethernet oam profile`
- `show platform fm6000 agileport map`
- `show poe`

action

The **action** command configures the link monitoring action that is specified for the link fault signaling event.

The **no action** command removes the action type specified for the chosen link fault signaling. The **default action** command configures the link monitoring action as system log type.

Command Mode

Link-error Configuration

Command Syntax

```
{fcs | symbol} action [linkfault | errdisable | log]
no {fcs | symbol} action [linkfault | errdisable | log]
default {fcs | symbol} action [linkfault | errdisable | log]
```

Parameters

- **fcs** Inbound packets with frame check sequence (FCS) error.
- **symbol** Inbound packets with symbol error.
- **linkfault** The link fault action type.
- **errdisable** The errdisable action type.
- **log** The system log action type.

Related Commands

- [period](#)
- [threshold](#)

Example

- These commands set the *errdisable* action type for the profile *profile1* in the Link-error configuration mode for symbol errors.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#link-error
switch(config-eoam-profile-profile1-link-error)#symbol action errdisable
```

feature

The **feature** command allows the user to reserve the number of TCAM banks for the following features such as ACL, flow-spec, IPsec, I2-protocol, PBR, QoS, TCP-MSS-ceiling, traffic-policy.

The **exit** command returns the switch to global configuration mode.

Command Mode

Hardware TCAM

Command Syntax

feature

Example

- This commands allow the switch to configure the TCAM flow-spec feature for IPv4 ports.

```
switch(config-hw-tcam)#feature flow-spec port ipv4 bank maximum count 12
```

Commands Available

- [hardware tcam](#)

flowcontrol receive

The **flowcontrol receive** command configures administrative settings for inbound flow control packets. Ethernet ports use flow control to delay packet transmission when port buffers run out of space. Ports transmit a pause frame when their buffers are full, signaling their peer ports to delay sending packets for a specified period.

The **flowcontrol receive** command configures the configuration mode port's ability to receive flow control pause frames.

- **off**: port does not process pause frames that it receives.
- **on**: port processes pause frames that it receives.
- **desired**: port autonegotiates flow control; processes pause frames if the peer is set to **send desired**.

Desired is not an available parameter option. Ethernet data ports cannot be set to **desired**. Management ports are set to **desired** by default and with the **no flowcontrol receive** command.

The port linking process includes flow control negotiation. Ports must have compatible flow control settings to create a link. Table 11-8 lists the compatible flow control settings.

Table 11-8 Compatible Settings for Flow Control Negotiation – Local Port Receiving

local port	peer port
receive on	send on or send desired
receive off	send off or send desired
receive desired	send on , send off, or send desired

The **no flowcontrol receive** and **default flowcontrol receive** commands restore the default flow control setting for the configuration mode interface by removing the corresponding **flowcontrol receive** command from **running-config**. The default setting is **off** for Ethernet data ports and **desired** for Management ports.

Command Mode

Interface-Ethernet Configuration
Interface-Management Configuration

Command Syntax

```
flowcontrol receive STATE
no flowcontrol receive
default flowcontrol receive
```

Parameters

- **STATE** flow control pause frame processing setting. Options include:
 - **on**
 - **off**

Examples

- These commands set the flow control received on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#flowcontrol receive on
switch(config-if-Et5)#
```

flowcontrol send

The **flowcontrol send** command configures administrative settings for outbound flow control packets. Ethernet ports use flow control to delay packet transmission when port buffers run out of space. Ports transmit a pause frame when their buffers are full, signaling their peer ports to delay sending packets for a specified period.

The **flowcontrol send** command configures the configuration mode port's ability to transmit flow control pause frames.

- **off**: port does not send pause frames.
- **on**: port sends pause frames.
- **desired**: port autonegotiates flow control; sends pause frames if the peer is set to **receive desired**.

Desired is not an available parameter option. Ethernet data ports cannot be set to **desired**. Management ports are set to **desired** by default and with the **no flowcontrol send** command.

The port linking process includes flow control negotiation. Ports must have compatible flow control settings to create a link. Table 11-9 lists the compatible flow control settings.

Table 11-9 Compatible Settings for Flow Control Negotiation – Local Port Transmitting

local port	peer port
send on	receive on or receive desired
send off	receive off or receive desired
send desired	receive on , receive off, or receive desired

The **no flowcontrol send** and **default flowcontrol send** commands restore the default flow control setting for the configuration mode interface by removing the corresponding **flowcontrol send** command from **running-config**. The default setting is **off** for Ethernet data ports and **desired** for Management ports.

Command Mode

Interface-Ethernet Configuration
Interface-Management Configuration

Command Syntax

```
flowcontrol send STATE
no flowcontrol send
default flowcontrol send
```

Parameters

- **STATE** flow control send setting. Options include
 - **on**
 - **off**

Examples

- These commands set the flow control sent on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#flowcontrol send on
switch(config-if-Et5)#
```

hardware counter feature in (DCS-7050x, 7350x, 7300x)

The **hardware counter feature in** command enables the switch to count the ingress traffic on the Layer 3 port of the switch. Any traffic on Layer 3 sub-interfaces and VLAN interface with IPv4 and IPv6 addresses are accounted irrespective of the routing decision.

The **no hardware counter feature in** command disable the counter configuration from the switch ports. By default the ingress counter is disabled on the switch.

Command Mode

Global Configuration

Command Syntax

```
hardware counter feature [INTERFACE] in
no hardware counter feature [INTERFACE] in
```

Parameters

- **INTERFACE** Layer 3 interface on the switch.
 - **subinterface** Displays the subinterface traffic count.
 - **vlan-interface** Displays the VLAN-interface traffic count.

Examples

- This command configures the ingress traffic count on the sub-interfaces.
`switch#hardware counter feature subinterface in`
- This command configures the ingress traffic count on the VLAN interface.
`switch#hardware counter feature vlan-interface in`

Example

- These commands enable the QSFP+ interface in port group 1 and SFP+ interfaces in port group 2 on a DCS-7050Q-16 switch, display the port group status, and display interface status.

```
switch(config)#hardware port-group 1 select Et15/1-4
switch(config)#hardware port-group 2 select Et21-24
switch(config)#show hardware port-group
```

```
Portgroup: 1      Active Ports: Et17-20
Port              State
-----
```

```
Ethernet17      ErrDisabled
Ethernet18      ErrDisabled
Ethernet19      ErrDisabled
Ethernet20      ErrDisabled
Ethernet15/1    Active
Ethernet15/2    Active
Ethernet15/3    Active
Ethernet15/4    Active
```

```
Portgroup: 2      Active Ports: Et16/1-4
Port              State
-----
```

```
Ethernet16/1    Active
Ethernet16/2    Active
Ethernet16/3    Active
Ethernet16/4    Active
Ethernet21      ErrDisabled
Ethernet22      ErrDisabled
Ethernet23      ErrDisabled
Ethernet24      ErrDisabled
```

```
switch(config)#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Et1/1		connected	in Po621	full	40G	40GBASE-CR4
Et1/2		errdisabled	inactive	unconf	unconf	40GBASE-CR4
<-----OUTPUT OMITTED FROM EXAMPLE----->						
Et15/1		connected	in Po711	full	40G	40GBASE-CR4
Et15/2		errdisabled	inactive	unconf	unconf	Not Present
Et15/3		errdisabled	inactive	unconf	unconf	Not Present
Et15/4		errdisabled	inactive	unconf	unconf	Not Present
Et16/1		errdisabled	inactive	unconf	unconf	Not Present
Et16/2		errdisabled	inactive	unconf	unconf	Not Present
Et16/3		errdisabled	inactive	unconf	unconf	Not Present
Et16/4		errdisabled	inactive	unconf	unconf	Not Present
Et17		errdisabled	inactive	unconf	unconf	Not Present
Et18		errdisabled	inactive	unconf	unconf	Not Present
Et19		errdisabled	inactive	unconf	unconf	Not Present
Et20		errdisabled	inactive	unconf	unconf	Not Present
Et21		connected	425	full	10G	10GBASE-SRL
Et22		connected	611	full	10G	10GBASE-SRL
Et23		connected	in Po998	full	10G	10GBASE-SLR
Et24		connected	in Po998	full	10G	10GBASE-SLR

```
switch(config)#
```

hardware port-group

The **hardware port-group** command configures a port group to activate a 40GBASE (QSFP+) interface or four 10GBASE (SFP+) interfaces, affecting QSFP+ and SFP+ availability.

The **no hardware port-group** and **default hardware port-group** commands restore a port group's default setting by removing the corresponding **hardware port-group** command from *running-config*. The QSFP+ interface is active by default in each port group.

The **hardware port-group** command is available on DCS-7050Q-16 and DCS-7050QX-32S switches, and has different parameters on each platform.

Command Mode

Global Configuration

Command Syntax

```
hardware port-group group_number select PORT_LIST
no hardware port-group group_number
default hardware port-group group_number
```

Parameters

- **group_number** label of the port group. Valid options are **1** and **2** on the 7050Q-16; only **1** is available on the 7050QX-32S.
- **PORT_LIST** ports activated by command. Options vary by platform and depend on **group_number** value.

DCS-7050Q-16

- **Et15/1-4** activates QSFP+ port on port group 1. Available when **group_number** is 1.
- **Et16/1-4** activates QSFP+ port on port group 2. Available when **group_number** is 2.
- **Et17-20** activates SFP+ ports on port group 1. Available when **group_number** is 1.
- **Et21-23** activates SFP+ ports on port group 2. Available when **group_number** is 2.

DCS-7050QX-32S

- **Et1-4** activates SFP+ ports on port group 1. Available when **group_number** is 1.
- **Et5/1-4** activates QSFP+ port on port group 1. Available when **group_number** is 1.

hardware tcam

The **hardware tcam** command places the switch in Hardware TCAM configuration mode.

The **exit** command returns the switch to global configuration mode.

Command Mode

Global Configuration

Command Syntax

```
hardware tcam
```

Example

- This command places the switch in Hardware TCAM configuration mode.

```
switch(config)#hardware tcam  
switch(config-hw-tcam)#
```

Commands Available

- [profile](#)
- [profile](#)
- [interface ethernet](#)

interface ethernet

The **interface ethernet** command places the switch in Ethernet-interface configuration mode for the specified interfaces. The command can specify a single interface or multiple interfaces.

Ethernet interfaces are physical interfaces and are not created or removed.

Interface management commands include:

- description
- exit
- load-interval
- mtu
- shutdown (Interfaces)

Ethernet management commands include:

- flowcontrol
- mac-address
- speed

Chapters describing supported protocols and other features list additional configuration commands available from Ethernet interface configuration mode.

Command Mode

Global Configuration

Command Syntax

```
interface ethernet e_range
```

Parameters

- *e_range* Ethernet interfaces (number, range, or comma-delimited list of numbers and ranges).
Valid Ethernet numbers depend on the switch's available Ethernet interfaces.

Example

- This command enters interface configuration mode for Ethernet interfaces 1 and 2:

```
switch(config)#interface ethernet 1-2  
switch(config-if-Et1-2)#
```
- This command enters interface configuration mode for Ethernet interface 1:

```
switch(config)#interface ethernet 1  
switch(config-if-Et1)#
```

interface ethernet create

The **interface ethernet create** command is used to configure a range of Ethernet subinterfaces. The command places the switch in Ethernet-interface configuration mode for the specified range of subinterfaces.

Command Mode

Global Configuration

Command Syntax

```
interface ethernet create sub_range
```

Parameters

- *sub_range* range of subinterfaces to be configured. Subinterfaces are named by adding a period followed by a unique subinterface number to the name of the parent interface.

Example

- This command enters interface configuration mode for Ethernet subinterfaces 1/1.1-100:

```
switch(config)#interface ethernet create 1/1.100  
switch(config-if-Et1/1.1-100)#
```


interface management

The **interface management** command places the switch in management-interface configuration mode for the specified interfaces. The list can specify a single interface or multiple interfaces if the switch contains more than one management interface.

Management interfaces are physical interfaces and are not created or removed.

Interface management commands include:

- description
- exit
- load-interval
- mtu
- shutdown (Interfaces)

Ethernet management commands include:

- flowcontrol
- mac-address
- speed

Chapters describing supported protocols and other features list additional configuration commands available from management-interface configuration mode.

Command Mode

Global Configuration

Command Syntax

```
interface management m_range
```

Parameters

- *m_range* Management interfaces (number, range, or comma-delimited list of numbers and ranges).

Valid management numbers depend on the switch's available management interfaces. A value of 0, where available, configures the virtual management interface on a dual-supervisor modular switch. Management interface 0 accesses management port 1 on the active supervisor of a dual-supervisor modular switch.

Examples

- This command enters interface configuration mode for management interfaces 1 and 2.

```
switch(config)#interface management 1-2  
switch(config-if-Ma1-2)#
```

- This command enters interface configuration mode for management interface 1:

```
switch(config)#interface management 1  
switch(config-if-Ma1)#
```

link-debounce

The **link-debounce** command configures the link debounce time for the configuration mode interface. Link debounce time is the time that advertisements for new link states are delayed after the link state is established. By default, debounce time is set to zero, disabling link debounce.

Debounce times for link-up and link-down transitions can be independently configured.

- Link-up debounce time: the delay before an interface advertises link down to link up transitions.
- Link-down debounce time: the delay before an interface advertises link up to link down transitions.

The **no link-debounce** and **default link-debounce** commands restore the default debounce setting for the configuration mode interface by removing the corresponding **link-debounce** command from *running-config*.

Command Mode

Interface-Ethernet Configuration
Interface-Management Configuration

Command Syntax

```
link-debounce time WAIT_TIME
no link-debounce
default link-debounce
```

Parameters

- **WAIT_TIME** link debounce period (milliseconds). Options include
 - **<0 - 30000>** One debounce value assigned as both link up and link down.
 - **<0 - 30000> <0 - 30000>** Two debounce values: link up is first, link down is second.

All debounce values range from 0 (disabled) to 30000 (30 seconds).

Examples

- These commands set the link-up and link-down debounce period to 10 seconds on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#link-debounce time 10000
switch(config-if-Et5)#
```
- These commands set the link-up debounce to 10 seconds and the link-down debounce period to zero on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#link-debounce time 10000 0
switch(config-if-Et5)#
```
- These commands set the link-up debounce to zero and the link-down debounce period to 12.5 seconds on Ethernet interface 5.

```
switch(config)#interface ethernet 5
switch(config-if-Et5)#link-debounce time 0 12500
switch(config-if-Et5)#
```

link-error

The **link-error** command places the Ethernet operations, administration, and management (EOAM) profile in the EOAM link-error sub-mode.

The **no link-error** and **default link-error** commands exit from the EOAM link-error sub-mode.

Command Mode

EOAM Configuration

Command Syntax

```
link-error
no link-error
default link-error
```

Related Commands

- [monitor ethernet oam profile](#)
- [show monitor ethernet oam profile](#)

Example

- These commands place the EOAM profile *profile1* in the link-error sub-mode.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#link-error
switch(config-eoam-profile-profile1-link-error)#
```

mac-address

The **mac-address** command assigns a MAC address to the configuration mode interface. An interface's default MAC address is its burn-in address.

The **no mac-address** and **default mac-address** commands revert the interface to its default MAC address by removing the corresponding **mac-address** command from *running-config*.

Command Mode

Interface-Ethernet Configuration
Interface-Management Configuration

Command Syntax

```
mac-address address
no mac-address
default mac-address
```

Parameters

- **address** MAC address assigned to the interface. Format is dotted hex notation (H.H.H). Disallowed addresses are 0.0.0 and FFFF.FFFF.FFFF.

Example

- This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#mac-address 001c.2804.17e1
switch(config-if-Et7)#show interface ethernet 7
Ethernet3 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)
  Description: b.e45
  MTU 9212 bytes, BW 10000000 Kbit
  Full-duplex, 10Gb/s, auto negotiation: off
  Last clearing of "show interface" counters never
  5 seconds input rate 7.84 kbps (0.0% with framing), 10 packets/sec
  5 seconds output rate 270 kbps (0.0% with framing), 24 packets/sec
    1363799 packets input, 222736140 bytes
    Received 0 broadcasts, 290904 multicast
    0 runts, 0 giants
    0 input errors, 0 CRC, 0 alignment, 0 symbol
    0 PAUSE input
    2264927 packets output, 2348747214 bytes
    Sent 0 broadcasts, 28573 multicast
    0 output errors, 0 collisions
    0 late collision, 0 deferred
    0 PAUSE output
switch(config-if-Et7)#
```

monitor ethernet oam

The **monitor ethernet oam** command places the switch in the Ethernet operations, administration, and management (EOAM) configuration mode.

The **no monitor ethernet oam** and **default monitor ethernet oam** commands exit from the EOAM configuration mode.

Command Mode

Global Configuration

Command Syntax

```
monitor ethernet oam
no monitor ethernet oam
default monitor ethernet oam
```

Example

- This command places the switch in the EOAM configuration mode.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#
```

monitor ethernet oam profile

The **monitor ethernet oam profile** command applies the EOAM profile to the specific interface in interface configuration mode.

The **no monitor ethernet oam profile** and **default monitor ethernet oam profile** commands remove the EOAM profile from the interface.

Command Mode

Interface Configuration

Command Syntax

```
monitor ethernet oam profile name
no monitor ethernet oam profile
default monitor ethernet oam profile
```

Parameters

- *name* The EOAM profile name. An EOAM profile cannot be named as *summary*.

Related Commands

- [link-error](#)
- [show monitor ethernet oam profile](#)

Example

- These commands apply the EOAM profile *profile1* to the Ethernet interface 1/1.

```
switch(config)#interface ethernet 1/1
switch(config-if-Et1/1)#monitor ethernet oam profile profile1
```

period

The **period** command configures the link monitoring period that is specified for a link error in terms of number of frames or seconds.

The **no period** command removes the period type specified on the chosen link error. The **default period** command configures the link monitoring period as zero seconds.

Command Mode

Link-error Configuration

Command Syntax

```
{fcs | symbol} period num {seconds | frames}
no {fcs | symbol} period num {seconds | frames}
default {fcs | symbol} period num {seconds | frames}
```

Parameters

- **fcs** Inbound packets with frame check sequence (FCS) error.
- **symbol** Inbound packets with symbol error.
- **num** The link monitoring period in frames or seconds. The frames' value ranges from 1 to 4000000000. The seconds' value ranges from 2 to 200 seconds. The default value is 2 seconds.
- **seconds** The monitor errors per *num* seconds.
- **frames** The monitor errors per *num* frames.

Related Commands

- [action](#)
- [threshold](#)

Example

- These commands set the *frames* period type for the profile *profile1* in the Link-error configuration mode for 300 frames.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#link-error
switch(config-eoam-profile-profile1-link-error)#symbol period 300 frames
```

poe disabled

Power over Ethernet (PoE) is enabled on all Ethernet ports by default on switches that support PoE. The **poe disabled** command disables PoE on the configuration-mode interface.

The **no poe disabled** and **default poe disabled** commands restore PoE on the interface by removing the corresponding **poe disabled** command from *running-config*.

Command Mode

Interface-Ethernet Configuration

Command Syntax

```
poe disabled
no poe disabled
default poe disabled
```

Example

- These commands disable PoE on Ethernet interface 7.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#poe disabled
switch(config-if-Et7)#
```


poe legacy detect

IEEE-compliant powered devices (PDs) are recognized by a specific resistance signature to a test signal sent by the switch, but non-compliant (legacy or proprietary) PDs may use a capacitive signature instead. The **poe legacy detect** command causes the configuration-mode interface to attempt to use hardware detection for these non-compliant PoE devices and power them. By default, legacy PD detection is disabled, and legacy devices are not powered.

Note

Non IEEE-compliant PDs are not officially supported. Arista cannot guarantee compatibility with such devices, and they may not be detected even when legacy detection is enabled on the port they are connected to.

The **no poe legacy detect** and **default poe legacy detect** commands restore the default behavior by removing the corresponding **poe legacy detect** command from *running-config*.

Command Mode

Interface-Ethernet Configuration

Command Syntax

```
poe legacy detect
no poe legacy detect
default poe legacy detect
```

Example

- These commands configure Ethernet interface 7 to attempt to detect and power capacitive PDs.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#poe legacy detect
switch(config-if-Et7)#
```

poe limit

Power over Ethernet (PoE) power output is limited by the hardware-negotiated power level and by the total power capacity of the switch. The **poe limit** command sets an additional maximum power output for the configuration-mode interface. The power limit represents the power output at the Ethernet port; actual power delivered to the PD will be lower due to power loss along the Ethernet cable.

Note

If a power limit is set by this command, Power Via MDI TLVs will not be sent from the interface. See [Configuring LLDP for Power over Ethernet](#) for details.

The **no poe limit** and **default poe limit** commands restore the default power limitation by removing the corresponding **poe limit** command from *running-config*.

Command Mode

Interface-Ethernet Configuration

Command Syntax

```
poe limit {class class_num | watt_num watts}
no poe limit
default poe limit
```

Parameters

- **class_num** specifies the power output limit by power class. Values range from 0-6 as follows:
 - Class 0 = 15.4 W
 - Class 1 = 4 W
 - Class 2 = 7 W
 - Class 3 = 15.4 W
 - Class 4 = 30 W
 - Class 5 = 45 W
 - Class 6 = 60 W
- **watt_num** specifies the power output limit in watts. Values range from 0-60. A value of 0 watts will prevent the port from providing PoE power.

Example

- These commands limit nominal PoE power output on Ethernet interface 7 to 10 W.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#poe limit 10 watts
switch(config-if-Et7)#
```

- These commands limit nominal PoE power output on Ethernet interface 7 to 4 W.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#poe limit class 1
switch(config-if-Et7)#
```

profile

The **profile** command allows the user to configure a new TCAM profile, or just copy the TCAM profile which is already created using the **hardware tcam profile** command such as default, mirroring-acl, pbr-match-nextthop-group, qos, tap-aggregation-default, tap-aggregation-extended, tc-counters, test, vxlan-routing.

The **exit** command returns the switch to global configuration mode.

Command Mode

Hardware TCAM

Command Syntax

```
profile <name>
```

Parameter

- *name* TCAM profile name.

Example

- This commands allow the switch to configure the TCAM profile “**test**”.

```
switch(config-hw-tcam) #profile test
```

Commands Available

- [hardware tcam](#)

profile

The **profile** command creates an Ethernet operations, administration, and management (EOAM) profile in the EOAM configuration mode.

The **no profile** and **default profile** commands exit from the EOAM configuration mode.

Command Mode

EOAM Configuration

Command Syntax

```
profile profile_name
no profile profile_name
default profile profile_name
```

Parameters

- *profile_name* the profile name that is specified.

Related Commands

- [monitor ethernet oam profile](#)
- [show monitor ethernet oam profile](#)

Guidelines

Run the **shutdown** or **no shutdown** command to bring the port back to the normal state.

Example

- These commands create an EOAM profile *profile1* in the EOAM configuration mode.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#
```

recovery-time

The **recovery-time** command configures the recovery timeout value for link fault signaling.

The **no recovery-time** command and the **default recovery-time** command removes the recovery timeout value specified for the chosen link error.

Command Mode

Link-error Configuration

Command Syntax

```
recovery-time value
no recovery-time value
default recovery-time value
```

Parameters

- **value** Specifies the recovery timeout value for LFS. The value ranges from 20 to 200.

Related Commands

- [action](#)
- [period](#)
- [threshold](#)

Example

- These commands set the *recovery time* value of 40 for the profile *profile1* in the Link-error configuration mode.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#link-error
switch(config-eoam-profile-profile1-link-error)#recovery-time 40
```

show hardware counter

The **show hardware counter** command displays counter events across time intervals.

Command Mode

EXEC

Command Syntax

show hardware counter

Example

- This command displays counter events across all time intervals, which are currently more than one standard deviation apart from a given time interval.

```
switch(config-handler-eventHandler1-counters)#show hardware counter events
```

Interval	Event Name	Chip	First	Last	Count	Z-Score
		Name	Occurrence	Occurrence		
5 Min	MacCounters	All	2017-01-31 09:31:35	2017-01-31 09:44:32	5	-6.9430
10 Min	MacCounters	All	2017-01-31 09:39:43	2017-01-31 09:44:32	3	-4.8123

```
switch(config-handler-eventHandler1-counters)#
```

show hardware port-group

The **show hardware port-group** command displays the status of DCS-7050Q-16 port-groups. Port groups contain one QSFP+ interface and a set of four SFP+ interfaces. In each port group, either the QSFP+ interface or the SFP+ interface set is enabled. The port groups are configured independent of each other.

- Port group 1 contains interface 15 (QSFP+) and interfaces 17-20 (SFP+).
- Port group 2 contains interface 16 (QSFP+) and interfaces 21-24 (SFP+).

Command Mode

EXEC

Command Syntax

```
show hardware port-group
```

Guidelines

The **hardware port-group** command is available on on DCS-7050Q-16 switches.

Example

- This command displays the status of ports in the two port groups on a DCS-7050Q-16 switch.

```
switch>show hardware port-group
```

```
Portgroup: 1      Active Ports: Et15/1-4
Port              State
-----
Ethernet17        ErrDisabled
Ethernet18        ErrDisabled
Ethernet19        ErrDisabled
Ethernet20        ErrDisabled
Ethernet15/1      Active
Ethernet15/2      Active
Ethernet15/3      Active
Ethernet15/4      Active

Portgroup: 2      Active Ports: Et16/1-4
Port              State
-----
Ethernet16/1      Active
Ethernet16/2      Active
Ethernet16/3      Active
Ethernet16/4      Active
Ethernet21        ErrDisabled
Ethernet22        ErrDisabled
Ethernet23        ErrDisabled
Ethernet24        ErrDisabled
switch>
```

show interfaces counters

The **show interface counters** command displays the Layer 3 ingress traffic count information. Run this command to view the traffic counts on a sub-interface or VLAN interface. The **clear counters** command resets the counters to zero. Counters displayed by the command include:

- inbound bytes
- inbound unicast packets
- inbound multicast packets
- inbound broadcast packets
- outbound bytes
- outbound unicast packets
- outbound multicast packets
- outbound broadcast packets

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] counters [incoming]
```

Parameters

- **INTERFACE** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet e_range** Ethernet interface range specified by *e_range*.
 - **management m_range** Management interface range specified by *m_range*.
 - **port-channel p_range** Port-Channel Interface range specified by *p_range*.
 - **subinterface** Displays the subinterface traffic counts.
 - **vlan-interface** Displays the VLAN-interface traffic counts.
- **incoming** Displays the traffic count for the ingress port.

Note

When no interface is specified, the output will start with ingress and egress counters section for regular interfaces, followed by section for the ingress L3 Interface counters.

Related Commands

- [show interfaces counters bins](#)
- [show interfaces counters errors](#)
- [show interfaces counters queue](#)
- [show interfaces counters rates](#)

Examples

- This command displays byte and packet counters for Ethernet interfaces 1 and 2.

```
switch>show interfaces ethernet 1-2 counters
```

Port	InOctets	InUcastPkts	InMcastPkts	InBcastPkts
Et1	99002845169	79116358	75557	2275
Et2	81289180585	76278345	86422	11

Port	OutOctets	OutUcastPkts	OutMcastPkts	OutBcastPkts
Et1	4347928323	6085482	356173	2276
Et2	4512762190	5791718	110498	15

```
switch>
```

- This command displays the ingress traffic count on a VLAN interface **vl12**.

```
switch#show interface vl12 counters incoming
```

L3 Interface	InOctets	InUcastPkts	InMcastPkts
Vl12	3136	47	2

show interfaces counters bins

The **show interfaces counters bins** command displays packet counters, categorized by packet length, for the specified interfaces. Packet length counters that the command displays include:

- 64 bytes
- 65-127 bytes
- 128-255 bytes
- 256-511 bytes
- 512-1023 bytes
- 1024-1522 bytes
- larger than 1522 bytes

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] counters bins
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
 - **port-channel *p_range*** Port-Channel Interface range specified by *p_range*.

Related Commands

- [show interfaces counters](#)
- [show interfaces counters errors](#)
- [show interfaces counters queue](#)
- [show interfaces counters rates](#)

Examples

- This command displays packet counter results for Ethernet interfaces 1 and 2.

```
switch>show interfaces ethernet 1-2 counters bins
Input
Port          64 Byte          65-127 Byte          128-255 Byte          256-511 Byte
-----
Et1            2503            56681135            1045154            1029152
Et2              8            50216275            1518179            1086297

Port          512-1023 Byte          1024-1522 Byte          1523-MAX Byte
-----
Et1           625825            17157823            8246822
Et2           631173            27059077            5755101
switch>
```

show interfaces counters errors

The **show interfaces counters errors** command displays the error counters for the specified interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] counters errors
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
 - **port-channel *p_range*** Port-Channel Interface range specified by *p_range*.

Display Values

The table displays the following counters for each listed interface:

- FCS: Inbound packets with CRC error and proper size.
- Align: Inbound packets with improper size (undersized or oversized).
- Symbol: Inbound packets with symbol error and proper size.
- Rx: Total inbound error packets.
- Runts: Outbound packets that terminated early or dropped because of underflow.
- Giants: Outbound packets that overflowed the receiver and were dropped.
- Tx: Total outbound error packets.

Related Commands

- [show interfaces counters](#)
- [show interfaces counters bins](#)
- [show interfaces counters queue](#)
- [show interfaces counters rates](#)

Examples

- This command displays the error packet counters on Ethernet interfaces 1-2.

```
switch>show interfaces ethernet 1-2 counters errors
Port          FCS    Align  Symbol    Rx    Runts  Giants    Tx
Et1            0       0       0         0       0       0         0
Et2            0       0       0         0       0       0         0
switch>
```

show interfaces counters queue

The **show interfaces counters queue** command displays the queue drop counters for the specified interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] counters queue
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
 - **port-channel *p_range*** Port-Channel Interface range specified by *p_range*.

Related Commands

- [show interfaces counters](#)
- [show interfaces counters bins](#)
- [show interfaces counters errors](#)
- [show interfaces counters rates](#)

Example

- This command displays the queue drop counters for Ethernet interfaces 1 and 2.

```
switch>show interfaces ethernet 1-2 counters queue
Port                InDrops
Et1                  180
Et2                  169
switch>
```

show interfaces counters rates

The **show interfaces counters rates** command displays the received and transmitted packet rate counters for the specified interfaces. Counter rates provided include megabits per second (Mbps), kilopackets per second (Kpps) and utilization percentage.

All port rates are approximately calculated. Note that, when displaying the rate information of a port channel, the rate value of the port channel will likely differ from the sum of the rates for the member ports. The discrepancy is likely to be larger for port channels with fewer ports except for port channels with single ports. The rate values of individual member ports are less inaccurate than the rate values of the port channel as a whole.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] counters rates
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
 - **port-channel *p_range*** Port-Channel Interface range specified by *p_range*.

Related Commands

- [show interfaces counters](#)
- [show interfaces counters bins](#)
- [show interfaces counters errors](#)
- [show interfaces counters queue](#)

Example

- This command displays rate counters for Ethernet interfaces 1 and 2.

```
switch>show interfaces ethernet 1-2 counters rates
Port      Intvl   In Mbps    %   In Kpps  Out Mbps    %   Out Kpps
Et1       0:05    53.3      0.5%    5       31.2      0.3%    2
Et2       0:05    43.3      0.4%    4        0.1      0.0%    0
switch>
```

show interfaces flow-control

The **show interfaces flow-control** command displays administrative and operational flow control data for the specified interfaces. Administrative data is the parameter settings stored in **running-config** for the specified interface; the switch uses these settings to negotiate flow control with the peer switch. Operational data is the resolved flow control setting that controls the port's behavior.

Command Mode

EXEC

Command Syntax

```
show flow-control [INTERFACE]
show [INTERFACE] flow-control
```

Parameters

- **INTERFACE** Interface type and number for which flow control data is displayed.
 - <no parameter> all interfaces.
 - **ethernet e_range** Ethernet interfaces in the specified range.
 - **management m_range** Management interfaces in the specified range.

Valid **e_range** and **m_range** formats include number, number range, or comma-delimited list of numbers and ranges.

Example

- This command shows the settings for Ethernet interfaces 1-10.

```
switch>show flow-control interface ethernet 1-10
```

Port	Send FlowControl		Receive FlowControl		RxPause	TxPause
	admin	oper	admin	oper		
Et1	off	off	off	off	0	0
Et2	off	off	off	off	0	0
Et3	off	off	off	off	0	0
Et4	off	off	off	off	0	0
Et5	off	off	off	off	0	0
Et6	off	off	off	off	0	0
Et7	off	off	off	off	0	0
Et8	off	off	off	off	0	0
Et9	off	off	off	off	0	0
Et10	off	off	off	off	0	0

```
switch>
```

show interfaces hardware

The **show interfaces hardware** command displays the model number, interface type, duplex mode, and flow control settings of the specified interfaces. The capabilities command is available on Ethernet and management interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] hardware
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:

- <no parameter> all interfaces.
- **ethernet *e_range*** Ethernet interface range specified by *e_range*.
- **management *m_range*** Management interface range specified by *m_range*.

Valid *e_range* and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.

Examples

- This command displays the model number, interface type, duplex mode and flow control settings for Ethernet interfaces 2 and 18.

```
switch>show interfaces ethernet 2,18 hardware
Ethernet2
  Model:          DCS-7150S-64-CL
  Type:           10GBASE-CR
  Speed/Duplex:   10G/full, 40G/full, auto
  Flowcontrol:    rx- (off, on, desired), tx- (off, on, desired)
Ethernet18
  Model:          DCS-7150S-64-CL
  Type:           10GBASE-SR
  Speed/Duplex:   10G/full
  Flowcontrol:    rx- (off, on), tx- (off, on)
switch>
```

show interfaces hardware default

The **show interfaces hardware default** command displays the static interface capability information of the specified interfaces. This command displays information related to the speed, auto-negotiation, error correction, and modulation capabilities (when applicable) of a system's ports. The command also provides information displayed by the **show interfaces hardware** command, such as model number, interface type, duplex mode, and flow control settings of the specific interface. Compared to the **show interfaces hardware** command, this command accounts for the capabilities of the system architecture only, and does not consider the capabilities of a transceiver.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] hardware default
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:

- **<no parameter>** all interfaces.
- **ethernet *e_range*** Ethernet interface range specified by *e_range*.
- **management *m_range*** Management interface range specified by *m_range*.

Valid *e_range* and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.

Examples

- This command displays the static interface capability information at the default level.

```
switch>show interfaces hardware default
Ethernet1
  Model:      DCS-7020TR-48
  Type:       1000BASE-T
  Speed/Duplex: 100M/full,1G/full
  Flowcontrol: rx-(off,on,desired),tx-(off)
  Autoneg CL28: 100M/full,1G/full
  Autoneg CL37: 1G/full
  ...
  ...
switch>
```

- This command displays the static interface capability information for Ethernet interface 4/1/1.

```
switch>show interfaces ethernet 4/1/1 hardware default
Ethernet4/1/1
  Model:      7500R2AK-36CQ-LC
  Type:       40GBASE-CR4
  Speed/Duplex: 1G/full,10G/full,25G/full,40G/full,50G/full,100G/full
  Flowcontrol: rx-(off,on,desired),tx-(off)
  Autoneg CL28: 1G/full,10G/full
  Autoneg CL73:
    IEEE:      25G/full,40G/full,100G/full
    Consortium: 25G/full,50G/full
  Error Correction:
    Reed-Solomon: 25G,50G,100G
    Fire-code: 25G,50G
```


show interfaces negotiation

The **show interfaces negotiation** command displays the speed, duplex, and flow control auto-negotiation status for the specified interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] negotiation [INFO_LEVEL]
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> Display information for all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.

Valid *e_range* and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.
- ***INFO_LEVEL*** amount of information that is displayed. Options include:
 - <no parameter> displays status and negotiated setting of local ports.
 - **detail** displays status and negotiated settings of local ports and their peers.

Examples

- This command displays the negotiated status of management 1 and 2 interfaces

```
switch>show interface management 1-2 negotiation
Port      Autoneg      Negotiated Settings
Status    Speed        Duplex      Rx Pause    Tx Pause
-----
Ma1        success    100M        full        off         off
Ma2        success    auto        auto        off         off
switch>
```

- This command displays the negotiated status of management 1 interface and its peer interface.

```
switch>show interface management 1 negotiation detail
Management1 :

Auto-Negotiation Mode      10/100/1000 BASE-T (IEEE Clause 28)
Auto-Negotiation Status    Success

      Advertisements      Speed      Duplex      Pause
      -----
      Local              10M/100M/1G  half/full  Disabled
      Link Partner       None         None       None

      Resolution          100Mb/s     full       Rx=off,Tx=off

switch>
```

show interfaces phy

The **show interfaces phy** command displays physical layer characteristics for the specified interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] phy [INFO_LEVEL]
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> All interfaces.
 - **ethernet *e_range*** Ethernet interfaces in specified range.
Valid *e_range* formats include number, number range, or comma-delimited list of numbers and ranges.
- ***INFO_LEVEL*** amount of information that is displayed. Options include:
 - <no parameter> command displays table that summarizes PHY data.
 - **detail** command displays data block for each specified interface.

Examples

- This command summarizes PHY information for Ethernet interfaces 1-5.

```
switch>show interfaces ethernet 1-5 phy
```

Key:

```
U      = Link up
D      = Link down
R      = RX Fault
T      = TX Fault
B      = High BER
L      = No Block Lock
A      = No XAUI Lane Alignment
0123 = No XAUI lane sync in lane N
```

Port	PHY state	State Changes	Reset Count	PMA/PMD	PCS	XAUI
Ethernet1	linkUp	14518	1750	U..	U....	U.....
Ethernet2	linkUp	13944	1704	U..	U....	U.....
Ethernet3	linkUp	13994	1694	U..	U....	U.....
Ethernet4	linkUp	13721	1604	U..	U....	U.....
Ethernet5	detectingXcvr	3	1			D..A0123

```
switch>
```

- This command displays detailed PHY information for Ethernet interface 1.

```
switch>show interfaces ethernet 1 phy detail
Current System Time: Mon Dec 5 11:32:57 2011
Ethernet1
```

	Current State	Changes	Last Change
PHY state	linkUp	14523	0:02:01 ago
HW resets		1751	0:02:07 ago
Transceiver	10GBASE-SRL	1704	0:02:06 ago
Transceiver SN	C743UCZUD		
Oper speed	10Gbps		
Interrupt Count		71142	
Diags mode	normalOperation		
Model	ael2005c		
Active uC image	microInit_mdio_SR_AEL2005C_28		
Loopback	none		
PMA/PMD RX signal detect	ok	11497	0:37:24 ago
PMA/PMD RX link status	up	11756	0:37:24 ago
PMA/PMD RX fault	ok	11756	0:37:24 ago
PMA/PMD TX fault	ok	0	never
PCS RX link status	up	9859	0:02:03 ago
PCS RX fault	ok	9832	0:02:03 ago
PCS TX fault	ok	330	0:27:44 ago
PCS block lock	ok	9827	0:02:03 ago
PCS high BER	ok	8455	0:02:05 ago
PCS err blocks	255		0:02:03 ago
PCS BER	16	50092	0:02:05 ago
XFI/XAUI TX link status	up	1282	0:27:44 ago
XFI/XAUI RX fault	ok	585	0:27:44 ago
XFI/XAUI TX fault	ok	2142	0:02:05 ago
XFI/XAUI alignment status	ok	2929	0:02:05 ago
XAUI lane 0-3 sync	(0123) = 1111	2932	0:02:05 ago
XAUI sync w/o align HWM	0		never
XAUI sync w/o align max OK	5		
XAUI excess sync w/o align	0		never
Xcvr EEPROM read timeout		46	4 days, 6:33:45 ago
Spurious xcvr detection		0	never
DOM control/status fail		0	
I2C snoop reset	0		
I2C snoop reset (xcvr)	0		
Margin count	5	last > 0	0:00:00 ago
EDC resets	1		0:02:03 ago
EDC FFE0 - FFE11	-4 -5 57 -6 -6 -2 1 0 -2 -1 1 -1		
EDC FBE1 - FBE4	6 -1 5 -1		
EDC TFBE1 - TFBE4	1 2 1 2		
EDC VGA1, VGA3	12 115		
TX path attenuation	3.0 dB		
TX preemphasis	(0,63,4) (pre,main,post)		

```
switch>
```

show interfaces status

The **show interfaces status** command displays the interface name, link status, vlan, duplex, speed, and type of the specified interfaces. When the command includes a link status, the results are filtered to display only interfaces whose link status match the specified type.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] status [STATUS_TYPE]
```

Parameters

- **INTERFACE** Interface type and numbers. Options include:
 - <no parameter> All existing interfaces.
 - **ethernet e_range** Ethernet interfaces in the specified range.
 - **management m_range** Management interfaces in the specified range.
 - **port-channel p_range** All existing port-channel interfaces in the specified range.

Valid *e_range*, *m_range*, and *p_range* formats include number, number range, or comma-delimited list of numbers and ranges.
- **STATUS_TYPE** interface status upon which the command filters output. Options include:
 - <no parameter> command does not filter on interface status.
 - **connected** interfaces connected to another port.
 - **notconnect** unconnected interfaces that are capable of connecting to another port.
 - **disabled** interfaces that have been powered down or disabled.
 - **sub-interfaces** L3 subinterfaces configured on the switch.

Command may include multiple status types (**connected notconnect disabled**), which can be placed in any order.

Example

- This command displays the status of Ethernet interfaces 1-5.

```
switch>show interfaces ethernet 1-5 status
Port      Name      Status      Vlan      Duplex  Speed  Type
Et1       Et1       connected   1         full    10G    10GBASE-SRL
Et2       Et2       connected   1         full    10G    10GBASE-SRL
Et3       Et3       connected   1         full    10G    10GBASE-SRL
Et4       Et4       connected   1         full    10G    10GBASE-SRL
Et5       Et5       notconnect  1         full    10G    Not Present
switch>
```

This command displays status information for all subinterfaces configured on the switch.

```
switch>show interfaces status sub-interfaces
Port      Name      Status      Vlan      Duplex  Speed  Type      Flags
Et1.1     Et1.1     connect     101       full    10G    dot1q-encapsulation
Et1.2     Et1.2     connect     102       full    10G    dot1q-encapsulation
Et1.3     Et1.3     connect     103       full    10G    dot1q-encapsulation
Et1.4     Et1.4     connect     103       full    10G    dot1q-encapsulation
switch>
```

show interfaces status errdisabled

The **show interfaces status errdisabled** command displays interfaces that are in errdisabled state, including their link status and errdisable cause.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] status errdisabled
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> Display information for all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
 - **port-channel *p_range*** Port-Channel Interface range specified by *p_range*.

Valid *e_range* and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.

Examples

- This command displays the error-disabled ports.

```
switch>show interfaces status errdisabled
```

Port	Name	Status	Reason
Et49/2		errdisabled	multi-lane-intf
Et49/3		errdisabled	multi-lane-intf
Et49/4		errdisabled	multi-lane-intf

```
switch>
```

show interfaces transceiver

The **show interfaces transceiver** command displays operational transceiver data for the specified interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] transceiver [DATA_FORMAT]
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.

Valid *e_range*, and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.
- ***DATA_FORMAT*** format used to display the data. Options include:
 - <no parameter> table entries separated by tabs.
 - **csv** table entries separated by commas.

Related Commands

- [show interfaces transceiver properties](#)

Examples

- This command displays transceiver data on Ethernet interfaces 1 through 4.

```
switch>show interfaces ethernet 1-4 transceiver
```

If device is externally calibrated, only calibrated values are printed.

N/A: not applicable, Tx: transmit, Rx: receive.

mA: milliamperes, dBm: decibels (milliwatts).

Port	Temp (Celsius)	Voltage (Volts)	Bias Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Last Update (Date Time)
Et1	34.17	3.30	6.75	-2.41	-2.83	2011-12-02 16:18:48
Et2	35.08	3.30	6.75	-2.23	-2.06	2011-12-02 16:18:42
Et3	36.72	3.30	7.20	-2.02	-2.14	2011-12-02 16:18:49
Et4	35.91	3.30	6.92	-2.20	-2.23	2011-12-02 16:18:45

```
switch>
```

show interfaces transceiver channels

The **show interfaces transceiver channels** command displays current wavelength/frequency settings for the specified channels.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE e_range] transceiver channels
```

Parameters

- **INTERFACE** Interface type and port numbers.
 - **ethernet e_range** Ethernet interface range specified by *e_range*.

Related Commands

- [transceiver channel](#)
- [show interfaces transceiver hardware](#)

Examples

- This command displays the supported wavelengths/frequencies and their corresponding channel numbers on Ethernet interface 4 to slot 3 through 4.

```
switch(config-as-if-Et4/1/3)#show interfaces ethernet 4 / 3 / 4 transceiver
channels
Name: Et4/3/4
100GHz- 50GHz-
Wavelength      Frequency spacing spacing
(nm)             (GHz)      Channel Channel
-----
1567.95          191,200          1          1
1567.54          191,250          2          2
1567.13          191,300          2          3
1566.72          191,350          2          4
....
1529.16          196,050          50         98
1528.77          196,100          50         99
1528.38          196,150          50        100
switch(config-as-if-Et4/1/3)#
```

show interfaces transceiver hardware

The **show interfaces transceiver hardware** command displays current wavelength/frequency settings for the specified transceiver interfaces.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE e_range] transceiver hardware
```

Parameters

- **INTERFACE** Interface type and port numbers.
 - **ethernet e_range** Ethernet interface range specified by *e_range*.

Related Commands

- [transceiver channel](#)
- [show interfaces transceiver channels](#)

Examples

- This command displays the current wavelength/frequency settings on Ethernet interface 4 to slot 3 through 4.

```
switch(config-as-if-Et4/1/3)#show interfaces ethernet 4 / 3 / 4 transceiver
hardware
Name: Et4/3/4
Media Type: 10GBASE-DWDM
Configured Channel : 39
Configured Grid (GHz) : 50
Computed Frequency (GHz) : 193,100
Computed Wavelength (nm) : 1552.52
Operational Channel : 39 (Default)
Operational Grid (GHz) : 50 (Default)
Operational Frequency (GHz): 193,100
Operational Wavelength (nm): 1552.52
switch(config-as-if-Et4/1/3)#
```


show interfaces transceiver properties

The **show interfaces transceiver properties** command displays configuration information for the specified interfaces. Information provided by the command includes the media type, interface speed-duplex settings, speed-duplex operating state.

Command Mode

EXEC

Command Syntax

```
show interfaces [INTERFACE] transceiver properties
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> Display information for all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.
 - **management *m_range*** Management interface range specified by *m_range*.
- Valid *e_range* and *m_range* formats include number, number range, or comma-delimited list of numbers and ranges.

Related Commands

- [show interfaces transceiver](#)

Examples

- This command displays the media type, speed, and duplex properties for Ethernet interfaces 1-3.

```
switch>show interfaces ethernet 1-3 transceiver properties
```

```
Name : Et1
Administrative Speed: 10G
Administrative Duplex: full
Operational Speed: 10G (forced)
Operational Duplex: full (forced)
Media Type: 10GBASE-SRL
```

```
Name : Et2
Administrative Speed: 10G
Administrative Duplex: full
Operational Speed: 10G (forced)
Operational Duplex: full (forced)
Media Type: 10GBASE-SRL
```

```
Name : Et3
Administrative Speed: 10G
Administrative Duplex: full
Operational Speed: 10G (forced)
Operational Duplex: full (forced)
Media Type: 10GBASE-SRL
```

```
switch>
```

show monitor ethernet oam profile

The **show monitor ethernet oam profile** command displays configuration information for the specified ethernet OAM profile name or the summary information of all configured profile names.

Command Mode

EXEC

Command Syntax

```
show monitor ethernet oam profile {name | summary}
```

Parameters

- **name** The EOAM profile name.
- **summary** The EOAM summary of all profiles that are configured.

Related Commands

- [link-error](#)
- [monitor ethernet oam profile](#)

Examples

- This command displays the OAM profile configuration information for the specific profile name.

```
switch#show monitor ethernet oam profile [ <name> ]

Ethernet OAM Profile : p

Error Type : symbol

                Threshold :    20  frames
                Action    :        log
                Period    :    20 seconds

Error Type : fcs

                Threshold :    10  frames
                Action    :   linkfault
                Period    :   100 frame

Recovery Timeout : 20
```

- This command displays the OAM profile configuration summary for all profiles configured.

```
switch>show monitor ethernet oam profile [ <name> ] summary

Eoam Profile : p
Configured on: Et3/1-4,5
```

show platform fm6000 agileport map

The **show platform fm6000 agileport map** command displays the list of Ethernet interfaces that are combinable to form a higher speed port.

Command Mode

Privileged EXEC

Command Syntax

```
show platform fm6000 agileport map
```

Example

- These commands displays the agile port map for the switch, then configures Ethernet interface 13 as a 40G port, subsuming Ethernet interfaces 15, 17 and 19.

```
switch#show platform fm6000 agileport map
```

```
-----
Agile Ports      |          Interfaces subsumed in 40G link
-----
Ethernet1        | Ethernet3      Ethernet5      Ethernet7
Ethernet2        | Ethernet4      Ethernet6      Ethernet8
Ethernet13       | Ethernet15     Ethernet17     Ethernet19
Ethernet14       | Ethernet16     Ethernet18     Ethernet20
```

```
switch#config
```

```
switch(config)#interface ethernet 13
```

```
switch(config-if-Et13)#speed forced 40gfull
```

```
WARNING!  Executing this command will cause the forwarding agent
           to be restarted. All interfaces will briefly drop links
           and forwarding on all interfaces will momentarily stop.
```

```
Do you wish to proceed with this command? [y/N]
```

```
Ethernet13 configured for 40G.
```

```
Ethernet15, Ethernet17 and Ethernet19 are now subsumed.
```

```
switch(config-if-Et13)#
```

show poe

The **show poe** command displays PoE information for a specified port range or for all ports.

Command Mode

Privileged EXEC

Command Syntax

```
show poe [INTERFACE]
```

Parameters

- ***INTERFACE*** Interface type and numbers. Options include:
 - <no parameter> Display information for all interfaces.
 - **ethernet *e_range*** Ethernet interface range specified by *e_range*.

Example

- This command displays PoE information for Ethernet interface 46.

```
switch(config)#show poe interface ethernet 46
show poe interface ethernet 46
      PSE    LLDP   Power  Granted  Port
Port Enabled Enabled  Limit   Power   State  Class Power Current Voltage Temperature
-----
46      True     True  15.40W  15.40W powered class0 1.40W 27.00mA  55.04V      41.25C
switch(config-if-Et7)#
```

speed

The **speed** command configures the transmission speed and duplex setting for the configuration mode interface. The scope and effect of this command depends on the interface type. Interface types include:

- 40GBASE (QSFP+): Default is 4x10G-full. **Speed forced 40gfull** and **Speed auto 40gfull** configure interface as a 40G port.
- 10GBASE-T: Default is 10G-full. **Speed** command affects interface.
- 10GBASE (SFP+): Default is 10G-full. **Speed** command does not affect interface.
- 1000BASE (copper): Default is 1G-full. **speed auto 100full** affects interface.
- 1000BASE (fiber): Default is 1G-full. **Speed** command does not affect interface.
- 10/100/1000: Default is *auto-negotiation*. **Speed** command (10/100/1000 options) affects interface.

The **speed forced 40gfull** and **auto 40gfull** commands configure a QSFP+ Ethernet interface as a 40G port. The **no speed** and **no auto 40gfull** commands configure a QSFP+ Ethernet interface as four 10G ports. These commands must be applied to the /1 port. These commands are hitless on the 7050X, 7060X, 7250X, 7260X, 7280SE, 7300X, 7320X and 7500E series platforms. On all other platforms, these commands restart the forwarding agent, which will result in traffic disruption.

The **no speed** and **default speed** commands restore the default setting for the configuration mode interface by removing the corresponding **speed** command from *running-config*.

Command Mode

Interface-Ethernet Configuration

Interface-Management Configuration

Command Syntax

```
speed MODE
no speed
default speed
```

Parameters

- **MODE** transmission speed and duplex setting. Options include:
 - **speed auto** auto negotiation mode. (For SFP-1G-T, auto-negotiates 1Gbps, this is because no speed is specified, and we are defaulting to advertise 1G)
 - **speed auto 40gfull** auto negotiation mode with clause 73 auto negotiation.
 - **speed auto 1G full/ speed 1G** auto-negotiated 1Gbps (note that per BASE-T standard, 1G must be negotiated)
 - **speed auto 100full** auto-negotiated 100Mbps.
 - **speed 100full** non-negotiated and true-forced 100Mbps.

Important! Interfaces using clause 73 auto negotiation must connect to a device that runs clause 73 auto negotiation.

- **sfp-1000baset auto** auto-negotiation mode (1000BASE-T interfaces only).
- **forced 10000full** 10G full duplex.
- **forced 1000full** 1G full duplex.
- **forced 1000half** 1G half duplex.
- **forced 100full** 100M full duplex.

- **forced 100gfull** 100G full duplex.
- **forced 100half** 100M half duplex.
- **forced 10full** 10M full duplex.
- **forced 10half** 10M half duplex.
- **forced 40gfull** 40G full duplex.

On 40GBASE and 100GBASE interfaces, options that change the SFP+ and MXP interfaces (the **auto 40gfull**, the **forced 40gfull**, and the **no speed** options) may restart the forwarding agent on some switch platforms, disrupting traffic on all ports for more than a minute.

Guidelines

Note

The **SFP-1G-T** transceivers advertise one speed at a time only. Hence, the desired speed and negotiation must be configured explicitly using the **speed auto**, **speed auto 1G full/speed 1G**, **speed auto 100full**, and **speed 100full** commands.

Examples

- This command configures a 40GBASE interface as a 40G port.

```
switch(config)#interface ethernet 49/1
switch(config-if-Et49/1)#speed forced 40gfull
switch(config-if-Et49/1)#show interface ethernet 49/1 - 49/4 status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Et49/1		connected	in Po999	full	40G	40GBASE-CR4
Et49/2		errdisabled	inactive	unconf	unconf	40GBASE-CR4
Et49/3		errdisabled	inactive	unconf	unconf	40GBASE-CR4
Et49/4		errdisabled	inactive	unconf	unconf	40GBASE-CR4

```
switch(config-if-Et49/1)#
```

- This command configures a 40GBASE interface as four 10G ports (default configuration).

```
switch(config-if-Et49/1)#no speed
switch(config-if-Et49/1)#show interface ethernet 49/1 - 49/4 status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Et49/1		connected	routed	full	10G	40GBASE-SR4
Et49/2		connected	routed	full	10G	40GBASE-SR4
Et49/3		connected	routed	full	10G	40GBASE-SR4
Et49/4		notconnect	inactive	full	10G	40GBASE-SR4

```
switch(config-if-Et49/1)#
```

system

The **system** command allows the user to configure the system-wide TCAM profiles such as default, mirroring-acl, mpls-evpn, pbr-match-nexthop-group, qos, tap-aggregation-default, tap-aggregation-extended, tc-counters, test, vxlan-routing.

The **exit** command returns the switch to global configuration mode.

Command Mode

Hardware TCAM

Command Syntax

```
system profile <name>
```

Parameter

- *name* TCAM profile name.

Example

- This commands allow the switch to configure the TCAM profile “qos”.

```
switch(config-hw-tcam)#system profile qos
```

Commands Available

- [hardware tcam](#)

threshold

The **threshold** command configures the link monitoring threshold value that is specified for a link error.

The **no threshold** and the **default threshold** commands remove the threshold value specified for the chosen link error.

Command Mode

Link-error Configuration

Command Syntax

```
{fcs | symbol} threshold threshold_value
no {fcs | symbol} threshold threshold_value
default {fcs | symbol} threshold threshold_value
```

Parameters

- **fcs** Inbound packets with frame check sequence (FCS) error.
- **symbol** Inbound packets with symbol error.
- **threshold_value** Specifies the threshold value in number of errors. The value ranges from 1 to 100.

Related Commands

- [action](#)
- [period](#)

Example

- These commands set the *threshold* value of 20 for the profile *profile1* in the Link-error configuration mode.

```
switch(config)#monitor ethernet oam
switch(config-eoam)#profile profile1
switch(config-eoam-profile-profile1)#link-error
switch(config-eoam-profile-profile1-link-error)#symbol threshold 20
```


transceiver channel

The **transceiver channel** command displays transceiver wavelength/frequency by channel number. The channel numbering depends on the selected grid-spacing mode. The default grid-spacing mode is 50GHz-spacing.

- If the startup configuration does not specify the channel number for the interface, the transceiver will automatically tune to the default channel (i.e. channel-39 of 50GHz-spacing grid) when it is inserted.
- If the configured wavelength/frequency is not supported by the transceiver, the transceiver will be tuned to the default channel (i.e. channel-39 of 50GHz-spacing grid).

The interface is shutdown before the channel number is configured.

Command Mode

Global Configuration

Command Syntax

```
transceiver channel CHANNEL_NUMBER grid-spacing <SPACING_GRID>
no transceiver channel CHANNEL_NUMBER [GRID_SPACING <SPACING_GRID>]
default transceiver channel CHANNEL_NUMBER [GRID_SPACING <SPACING_GRID>]
```

Parameters

- **CHANNEL-NUMBER** The default channel is 39 (50GHz-spacing grid) which corresponds to a frequency of 193,100 GHz and a wavelength of 1552.52 nm.
- **GRID_SPACING** Grid-spacing mode (optional) depends on the selected grid-spacing mode. The default grid-spacing mode is 50GHz-spacing. For example, channel 39 of 50GHz-spacing grid is equivalent to channel 20 of 100GHz-spacing grid, which corresponds to a frequency of 193,100 GHz and a wavelength of 1552.52 nm.
 - <SPACING_GRID> default grid-spacing mode in GHz.

Related Commands

- [show interfaces transceiver channels](#)
- [show interfaces transceiver hardware](#)

Example

- This command tunes the transceiver on slot number 4 to slot 1 through 3 of 50GHz-spacing grid.

```
switch(config-as)#interface ethernet 4 / 1 / 3
switch(config-if-Et4/1/3)#transceiver channel 1 grid-spacing 50
switch(config-if-Et4/1/3)#
```

transceiver qsfp default-mode

The **transceiver qsfp default-mode** command specifies the transmission mode of all QSFP transceiver modules that are not explicitly configured.

Each QSFP+ module Ethernet interface is configurable as a single 40G port or as four 10G ports. The switch displays four ports for each interface. Each port's status depends on the interface configuration:

- The /1 port is active (**connected** or **not connected**), regardless of the interface configuration.
- The /2, /3, and /4 ports are **error-disabled** when the interface is configured as a single 40G port.
- all ports are active (**connected** or **not connected**), when the interface is configured as four 10G ports.

The only available default-mode value is 4x10G; QSFP modules that are not configured through a **speed** command are operated as four 10G ports.

The **no transceiver qsfp default-mode** and **default transceiver qsfp default-mode** commands restore the default-mode transceiver setting to its default value of 4x10G.

Command Mode

Global Configuration

Command Syntax

```
transceiver qsfp default-mode 4x10G
no transceiver qsfp default-mode
default transceiver qsfp default-mode
```

Guidelines

The **transceiver qsfp default-mode 4x10g** statement is always in **running-config** and cannot be modified or removed in the current release.